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User Guide, iControl with DC Drive, Release 3 & 4

ATTENTION!

iView application screen and parameter descriptions have been moved to on-line help so that they are immediately available to you when setting parameters. They are no longer in this manual.

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Important Precautions and Useful Information

This preface contains information that will help you understand and safely maintain MCE equipment. We strongly recommend you review this preface and read this manual before installing, adjusting, or maintaining Motion Control Engineering equipment. This preface discusses:

- Safety and Other Symbol Meanings
- Safety Precautions
- [Environmental Considerations](#)

Safety and Other Symbol Meanings



Danger

This manual symbol is used to alert you to procedures, instructions, or situations which, if not done properly, might result in personal injury or substantial equipment damage.



Caution

This manual symbol is used to alert you to procedures, instructions, or situations which, if not done properly, might result in equipment damage.



Note

This manual symbol is used to alert you to instructions or other immediately helpful information.

Safety Precautions



Danger

This equipment is designed to comply with ASME A17.1, National Electrical Code, CE, and CAN/CSA-B44.1/ASME-A17.5 and must be installed by a qualified contractor. It is the responsibility of the contractor to make sure that the final installation complies with all local codes and is installed in a safe manner.

This equipment is suitable for use on a circuit capable of delivering not more than 10,000 rms symmetrical amperes, 600 volts maximum. The three-phase AC power supply to the Drive Isolation Transformer used with this equipment must originate from a fused disconnect switch or circuit breaker sized in conformance to all applicable national, state, and local electrical codes in order to provide the necessary motor branch circuit protection for the Drive Unit and motor. Incorrect motor branch circuit protection will void the warranty and may create a hazardous condition.

Proper grounding is vitally important to safe and successful operation. Bring your ground wire to the system subplate. You must choose the proper conductor size and minimize the

resistance to ground by using the shortest possible routing. See National Electrical Code Article 250 or the applicable local electrical code.

Before applying power to the controller, physically check all the power resistors and other components located in the resistor cabinet and inside the controller. Components loosened during shipment may cause damage.

For proper operation of the Drive Unit in your controller, you must make sure that: 1) A direct solid ground is provided in the machine room to properly ground the controller and motor. Indirect grounds such as the building structure or a water pipe may not provide proper grounding and could act as an antenna to radiate RFI noise, thus disturbing sensitive equipment in the building. Improper grounding may also render any RFI filter ineffective. 2) The incoming power to the controller and the outgoing power wires to the motor are in their respective, separate, grounded conduits.

This equipment may contain voltages as high as 1000 volts. Use extreme caution. Do not touch any components, resistors, circuit boards, power devices, or electrical connections without ensuring that high voltage is not present.

Environmental Considerations

- Keep the machine room clean.
- Controllers are generally in NEMA 1 enclosures.
- Do not install the controller in a dusty area.
- Do not install the controller in a carpeted area.
- Keep room temperature between 32 and 104 degrees F (0 to 40 degrees C).
- Prevent condensation on the equipment.
- Do not install the controller in a hazardous location or where excessive amounts of vapors or chemical fumes may be present.
- Make certain that power line fluctuations are within plus or minus 5% of proper value.

Air Conditioned Equipment Cabinets

If your control or group enclosure is equipped with an air conditioning unit, it is very important to observe the following precautions. (Failure to do so can result in moisture damage to electrical components.)

- Maintain the integrity of the cabinet by using sealed knockouts and sealing any holes made during installation.
- Do not run the air conditioning while the cabinet doors are open.
- If you turn the air conditioner off while it is running, wait at least five minutes before restarting it. Otherwise, the compressor may be damaged.
- Observe the recommended thermostat setting (75 degrees) and follow recommended maintenance schedules.
- Make certain that the air conditioning drain tube remains clear to avoid water accumulation in the unit.



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iControl Description

iControl Overview

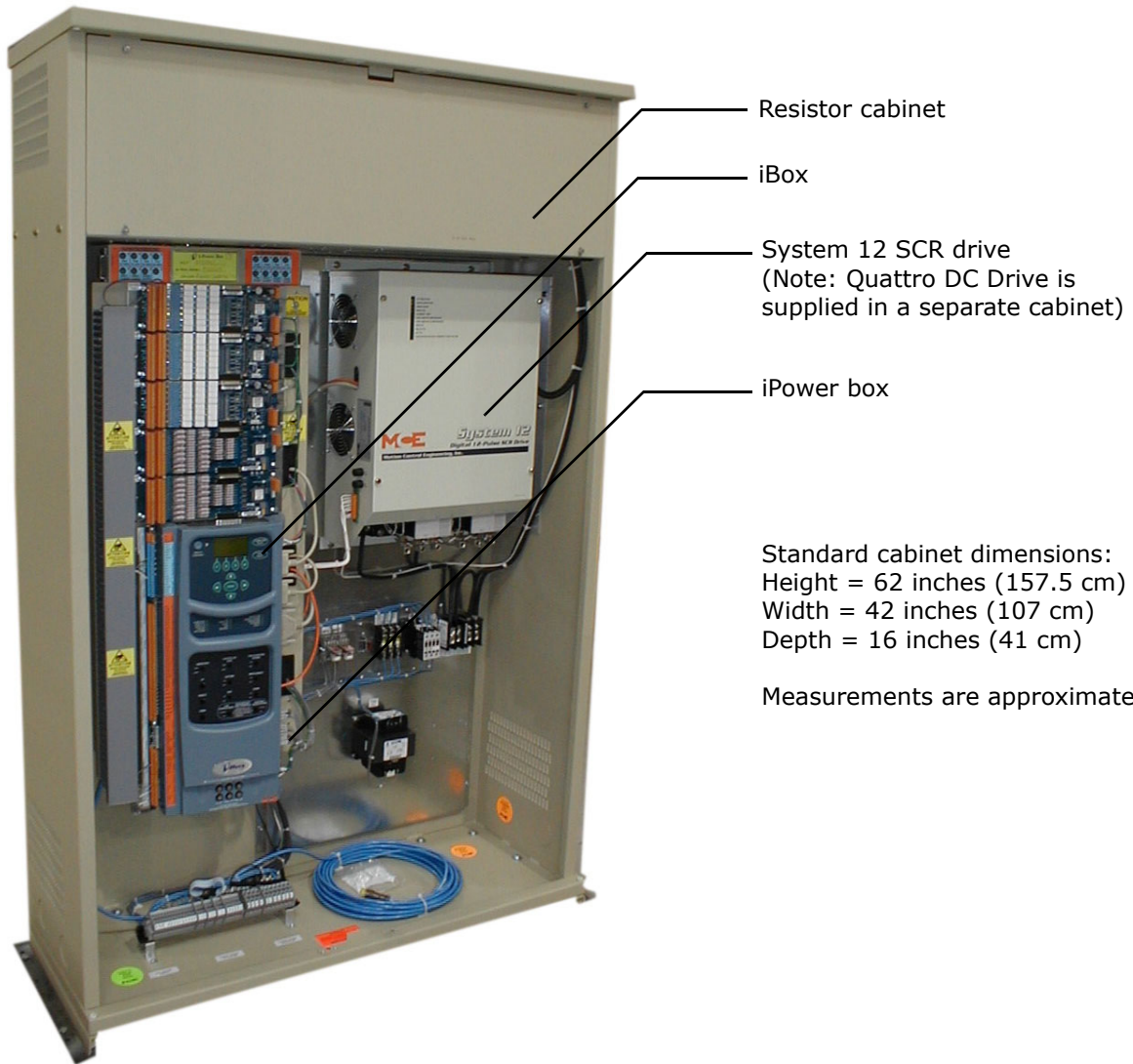
This section provides:

- A general description of the iControl system, [page 1-2](#)
- System interconnect diagrams, [page 1-4](#)
- Installation Specifications, [page 1-7](#)

iControl Description

General Description

Figure 1.1 Cabinet Layout (typical)



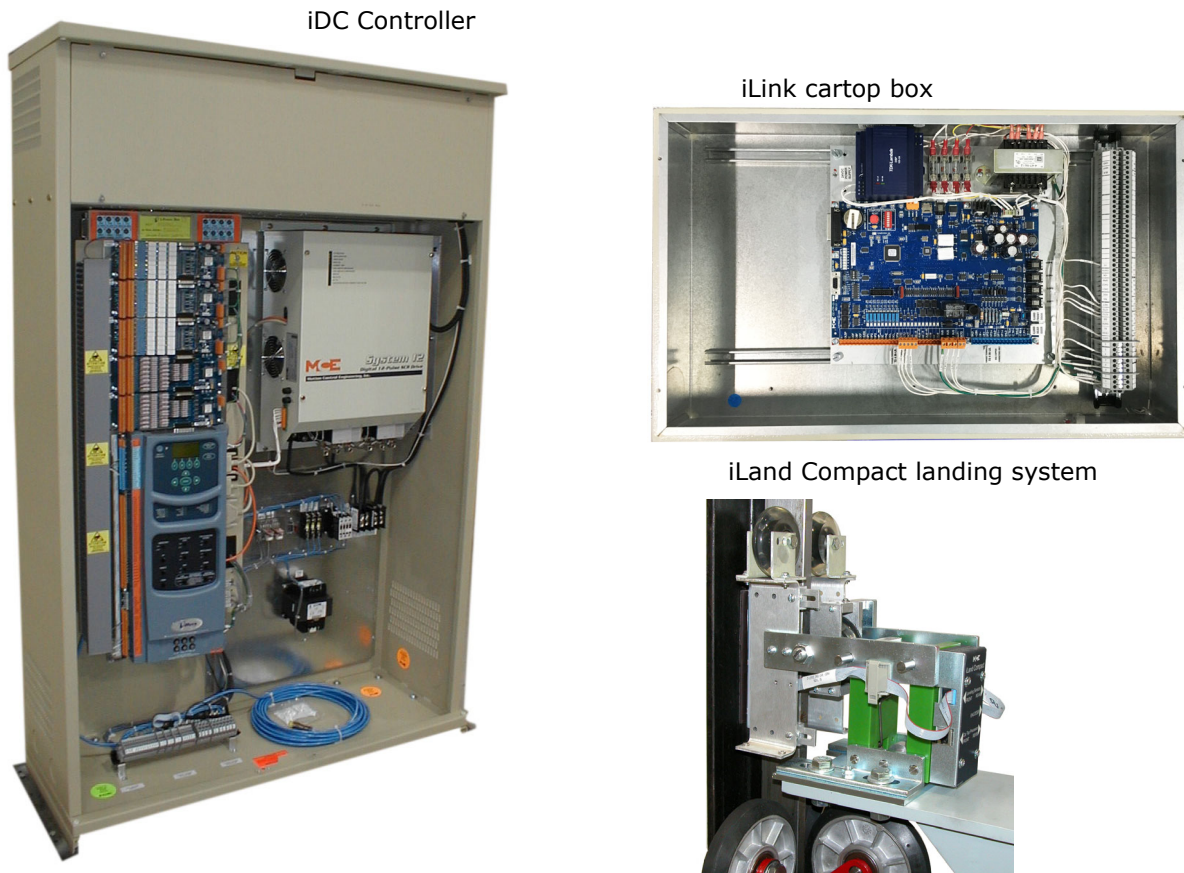
Component Assemblies

- iControl enclosure containing iBox elevator control, AC or DC drive, and expansion circuit boards as required for the specific job
- Landing system, per job requirements
 - iLand: Rail face encoder wheel, rail mounted floor magnets, roller guided sensors
 - iLand slide guide: As above but with slide sensor guides instead of rollers
 - iLand NEMA: Vane and sensor system, ambient temperature to 125 degrees F, fully sealed against dirt and moisture
 - LS-EDGE: Perforated steel tape, door zone and terminal magnets
- Cartop-mounted interconnect box
- iControl specific traveler and hoistway cable assemblies, optional

- Load weighers (optional)
 - Rope Tension (LW-EMCO)
 - Isolated Platform (LW-MCEIP)
- Cross Head Deflection (K-Tech International)

Figure 1.2 Single Car Component Assembly Illustrations

1



Group Dispatching

For multiple car installations requiring centralized dispatching and parking control:

- iCentral: Separate enclosure for complex dispatching requirements, destination based dispatching, security system interaction, groups to 15 cars (maximum 8 cars with destination dispatching)
- Local: Groups to 6 cars with one car providing dispatching for the others. A central inter-connect box is used for hall call risers and inter-car communications.
- iCentral backup: A second iCentral unit may be used or dispatching may be assumed by one of the cars in the elevator group.
- Local backup: Dispatching assumed by a different car in the elevator group.

iControl Description

System Interconnect Diagrams

It can be helpful to have a general understanding of the way the entire iControl system is inter-connected.

- System Interconnection: Basic car control and dispatcher interconnections.
- [iControl Interconnection](#): More detail for car controller interconnections.
- [Cartop Interconnection](#): More detail for cartop interconnections.
- [Dispatcher Interconnection](#): More detail for dispatcher interconnections.

Figure 1.3 iControl System Interconnection

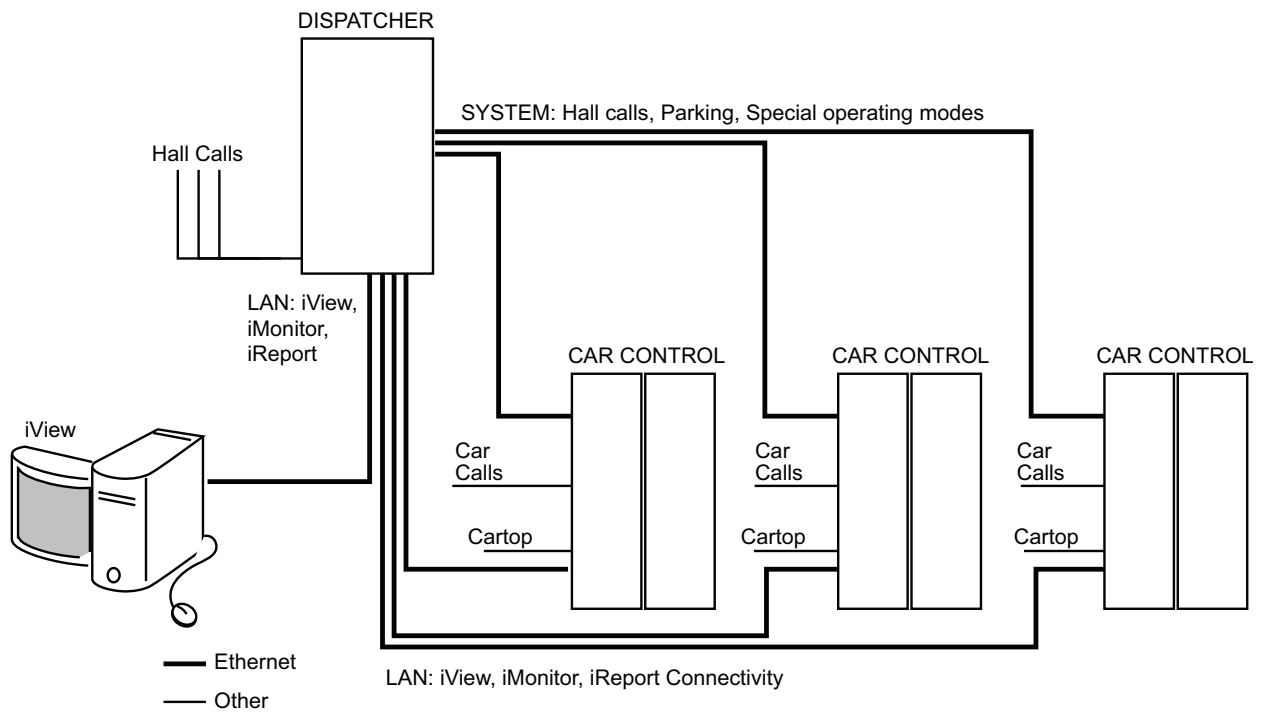


Figure 1.4 Car Control Interconnection

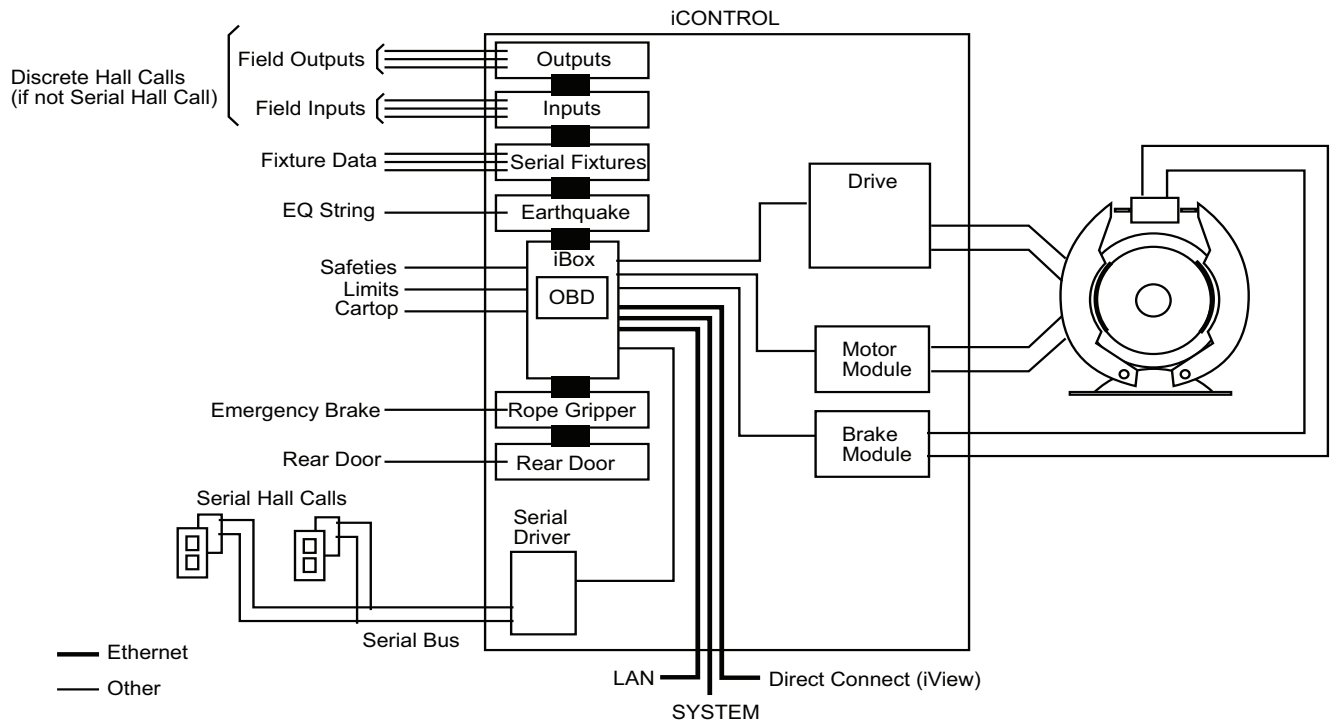
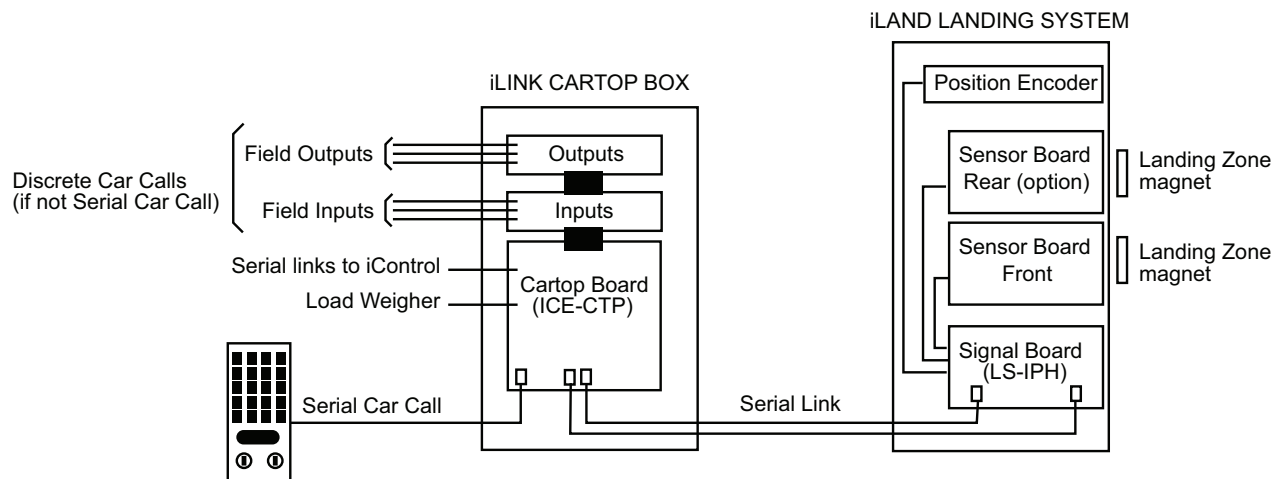


Figure 1.5 Cartop Interconnection



iControl Description

Figure 1.6 Central Dispatcher (iCentral) Interconnection

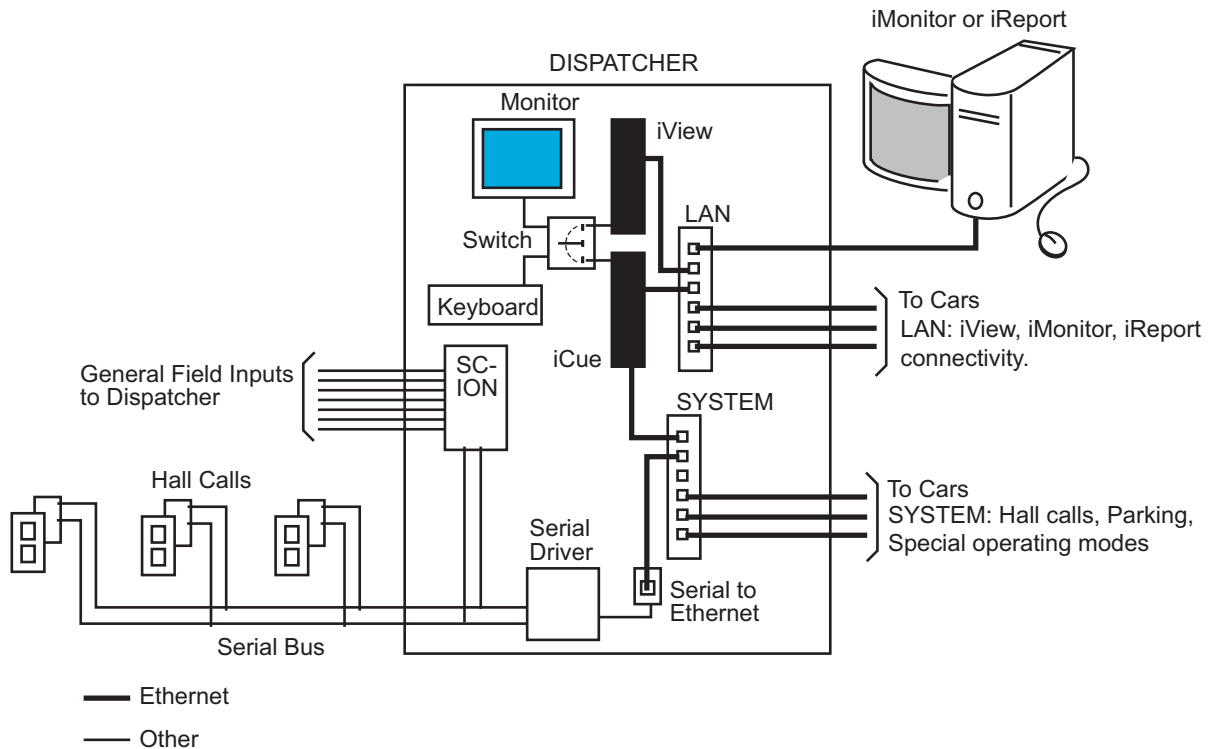
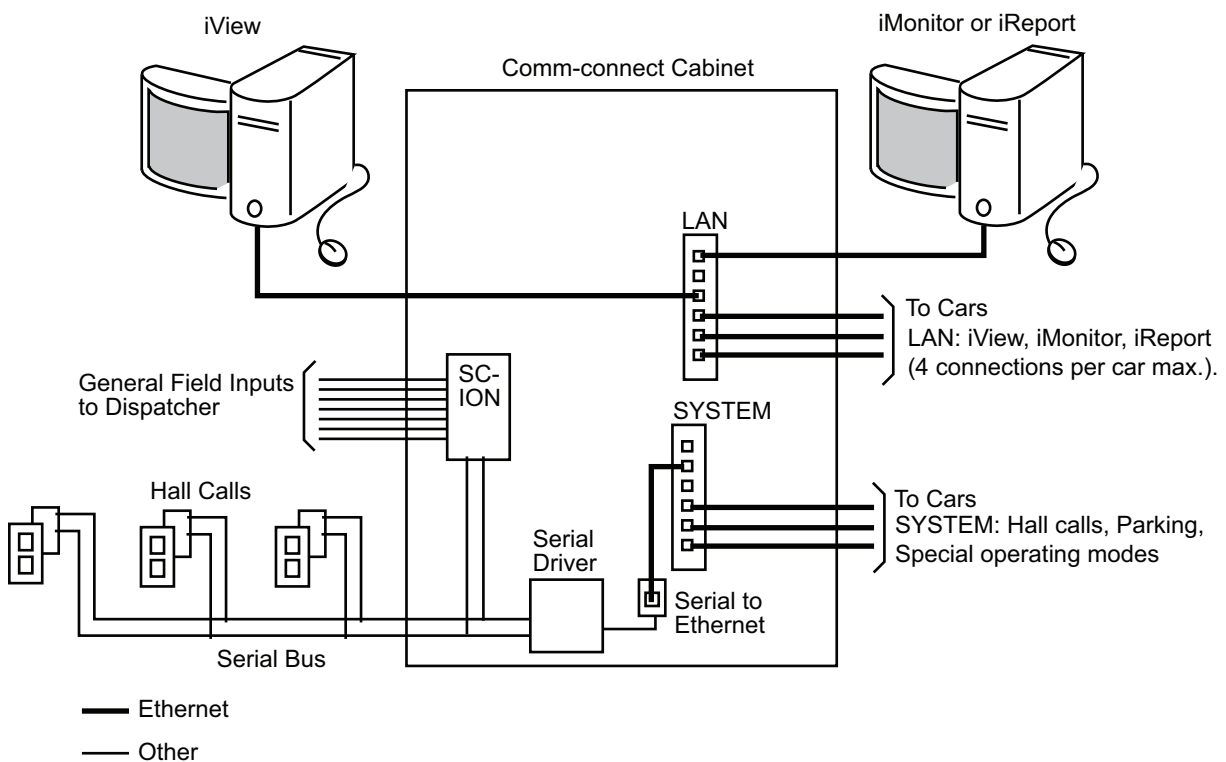


Figure 1.7 Local/Dispatcher (Comm-connect) Interconnections



Installation Specifications

This section contains specifications pertinent to installing the controller.

Table 1.1

1

Topic	Description
Controller dimensions (floor mount)	NEMA 1: Height = 62 inches (157.5 cm) Width = 42 inches (107 cm) Depth = 16 inches (41 cm)
iCentral cabinet (floor mount)	Height = 72 inches (183 cm) Width = 28 inches (71 cm) Depth = 23 inches (58 cm)
iComm-Connect cabinet (wall mount)	Height = 26 inches (66 cm) Width = 16 inches (41 cm) Depth = 10.25 inches (26 cm)
Machine room conditions	32 to 104 degrees F (0 to 40 degrees C), non-condensing. No installation on carpet. No excessive vapors or dust.
Input power	+/- 10% of job specification
Ground	Direct, solid ground per NEC 250
Mounting	Standard controller and iCentral cabinets mount to machine room floor according to controlling local and national codes. Local dispatching cabinet, iComm-Connect is wall mounted.
Conduit	All connections to/from the controller must be in conduit per controlling local and national codes. Control/low voltage wiring must be routed in separate conduit from high voltage wiring. 1.5-inch diameter conduit is recommended for the encoder cable so that the non-removable end connectors will fit through.

iControl Description



Construction Mode

In This Section

This section provides the information you need to install iControl and get the elevator running in Construction Mode:

- **Machine Room Preparation** (see page 2-4).
- **Controller Cabinet Installation** (see page 2-6).
- **Equipment Grounding** (see page 2-6).
- **Check for Shorts to Ground** (see page 2-7).
- **AC Voltage Verification and Wiring** (see page 2-8).
- **Motor and Brake Wiring** (see page 2-10).
- **Tachometer or Encoder Installation** (see page 2-11 or page 2-13)
- **Safety String Wiring** (see page 2-15).
- **Applying Power** (see page 2-16).
- **LAN Connections** (see page 2-17).
- **Initial Parameter Settings** (see page 2-17).
- **Drive Startup (System 12 SCR Drive)** (see page 2-23).
- **Motor Field Calibration (System 12 SCR Drive)** (see page 2-29).
- **Running on Machine Room Inspection (System 12 SCR Drive)** (see page 2-38).
- **Drive Startup (Quattro DC Drive)** (see page 2-47).
- **Running on Machine Room Inspection (Quattro DC Drive)** (see page 2-57).

Construction Mode

Before You Begin

Review the warnings and information in this section.



Danger

This equipment contains voltages up to 1000V, rotating motor parts, and driven machinery that can cause serious or fatal injury. Only qualified personnel who are familiar with this manual and driven machinery should attempt to start up or troubleshoot this equipment.

- **USE EXTREME CAUTION** — Do not touch circuit boards, resistors, or motor electrical connections without ensuring that the unit is properly grounded and no high voltage is present. Do not apply AC power before grounding the equipment in accordance with applicable local codes, the job prints, and instructions contained in this manual.
- **BE CERTAIN** — that any possible violent motion of the motor shaft and driven machinery will not cause personal injury or damage. Peak torques of up to ten times rated motor torque can occur during a control failure.
- **HIGH VOLTAGE** — may be present on the motor and drive whether or not AC power is applied, even if the motor is not rotating.
- **BEFORE BEGINNING WORK** — read these instructions. Become familiar with procedures. Proceed cautiously. These instructions assume adequate electrical troubleshooting experience. Follow procedures carefully and, if the elevator does not respond correctly, obtain necessary assistance.

Overview of Construction Mode

Construction mode operation allows the car to be run on Machine Room Inspection and Cartop Inspection with a bare minimum of field wiring. For Construction Mode operation, only the following are needed to run the car:

- Motor, brake, and drive
- Velocity encoder/tachometer
- Safety String
- Normal limit switches
- Door locks and door position monitor (if used)
- The Construction Mode option (iView > View > Setup > Safety > Configuration tab) must be enabled to run the controller in Construction mode.

The cartop wiring interconnect box (iLink) is not required for Construction mode operation. Instead, temporary wiring may be used to “bypass” the cartop safety string.

Required Connections The following connections are necessary to run the car on Construction Mode:

- Motor, Brake, and Drive
- Velocity Encoder or Tachometer
- SAFH, GOV, ESC, Rope Gripper (if enabled)
- SAFC (provide temporary Emergency stop switch between SAFH and SAFC if iLink is not yet installed)
- UNTD and DNTD (Up and Down Normal Limit Switches)
- GS, DLMS, DLAT, DLAB, DPM (Verify the iView/Safety Configuration screen settings for these options)
- INCT, ICTU, and ICTD
- Emergency Power Input

Connections not required for Construction Mode operation include:

- Cartop Communication (TX, RX)
- Quadrature signal (DP1, DP2)
- EQ signal
- Terminal Switches (U/DNTx and U/DETS)
- Fire Sensor
- DZ, ULM, DLM

Please refer to “iBox Field Connections” on page 9-7 for definitions of iBox inputs and outputs.

Faults While operating in Construction Mode, faults may be generated due to incomplete installation. These may be disregarded in this phase and include:

- Invalid Front and/or Rear Doors
- Terminal Sync
- System Sync
- Floor Sync

Construction Mode

Machine Room Preparation

When preparing the machine room for elevator controller installation, consider:

- Machine room environment
- Ethernet and Internet access

Environmental Considerations

- Ambient temperature should remain within 32° to 104° Fahrenheit (0° to 40° Celsius). Temperatures outside these guidelines may be tolerated, but will shorten equipment life. Adequate ventilation is required. Air conditioning may be necessary.
- The air in the machine room should be free of excessive dust, corrosive elements, and excessive moisture. A NEMA 4 or NEMA 12 enclosure can help meet these requirements if machine room conditions are inadequate.
- Very high levels of radio frequency (RF) radiation from nearby sources should be avoided. RFI may interfere with controller components, degrading elevator performance. Using hand-held communication devices close to the controller may also cause interference. Interference from permanently installed radio transmitting antennas is not common.
- Power line voltage fluctuation should not be greater than $\pm 10\%$.
- If any areas in the machine room are subject to vibration, they should be avoided or reinforced to prevent equipment from being adversely affected.

Ethernet and Internet Considerations

The iBox supports three Ethernet connections:

- The #3 port is for direct local connection of a laptop or desktop PC for elevator configuration, program uploading, system diagnosis, or parameter adjustment using MCE iView software. Fixed IP address: 192.168.193.001
- For multi-car, centrally dispatched installations, the #2 port provides connection between iBoxes. The required Ethernet hub is provided by MCE and mounted in the iCentral cabinet. See the table below for the factory default.
- The #1 port allows the elevator controller to be connected to Local Area Network. This allows a PC to be used to administer and monitor multiple elevator controllers using iView software. See the table below for the factory default address for this port.

Through a net modem, ISDN, DSL or other Internet access, this port may provide remote access to the controller. Elevator parameters are protected from meddling or accidental change because in order to write data to a controller, permission must be granted in the machine room. If you are working from the single iView/iCue PC in the iCentral cabinet, permission is granted automatically.

Table 2.1 System, LAN, & 3=PC TCP/IP Addresses

Hub	Group	Group IP, Primary & Backup	Car ID	Car IP	System/Serial Hall Call Bus 1 - 4	iView PC
System	all	192.168.192.201-202	1-20	192.168.192.001-020	192.168.192.211-214	
LAN	A	192.168.191.201-202	1-20	192.168.191.001-020		192.168.192.101-200*
LAN	B	192.168.191.203-204	1-20	192.168.191.021-040		
LAN	C	192.168.191.205-206	1-20	192.168.191.041-060		
LAN	D	192.168.191.207-208	1-20	192.168.191.061-080		
LAN	E	192.168.191.209-210	1-20	192.168.191.081-100		
Port #3 = PC (iBox ONLY), NO HUB				192.168.193.001		

*192.168.191.101 is typically used for the iView PC.

Construction Mode

Controller Cabinet Installation



Note

Review the wiring guidelines in this section before bringing wires into the controller.



Caution

When drilling or cutting access holes or during other machining, do not allow any metal chips to fall into the electronics. Keep drive or other covers in place while wiring to prevent damage to components.

1. Mount cabinets securely to the machine room floor.
2. Cut holes to permit bringing wires in as shown in the following illustration.

MCE applies labels inside the cabinet to identify suggested wiring hole locations. The MCE controller cabinet does not require rear access.

- Field wiring should enter the cabinet from the side at the lower left corner or from the bottom directly under the wiring trough. **The wires must be routed through the wiring trough on the left side of the controller cabinet in a way that allows the power box door to open fully.**
- All conductors entering or leaving the controller cabinet must be through conduit. High voltage, high current conductors, such as power conductors from the fused disconnect or isolation transformer, must be separated from control wires. It is essential that Tachometer/Velocity Encoder control wires be routed through a separate conduit away from high current conductors.
- The traveling cable must have at least four twisted shielded pairs to be used for the position pulser quadrature signal and the *iLink* Communication link from the Car Top Processor board (ICE-CTP) to the *iBox* Safety Processor board (ICE-SAF). The shielded cable should be used all the way to the controller. If there are more shielded pairs still available, route the ULM, DLM and DZ signals from the *iLink* Car Top Processor board through a shielded pair (especially if the building has more than eight floors). The shields must be grounded at both ends by connecting them to a “SHLD” terminal.

Grounding

Grounding must conform to all applicable codes. Proper grounding is essential for system safety and to reduce noise-induced problems.

- Ground equipment in accordance with NEC Article 250 and/or the local electrical code.

Check for Shorts to Ground

Check for shorts to ground before powering up the system. **Power must be OFF at the main disconnect.** If any shorts to ground are discovered, they must be corrected before proceeding. A short to ground is defined as having a resistance of less than 20 ohms between the 1 bus (Common) and the terminal being tested.



Danger

Be certain that power is OFF at the main disconnect before proceeding.



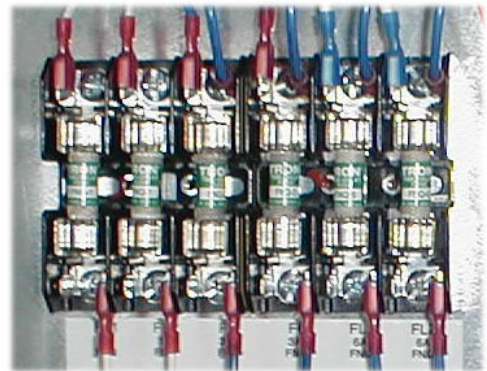
Caution

Typically, the iLink cartop box has not been installed at this point. If the cartop box has been installed **and connected**, it **MUST** be disconnected before checking for shorts in the controller cabinet. This is easily done by simply unplugging all field-wired connectors in the cartop box before checking for shorts to ground.

1. Using a standard screwdriver, temporarily disengage all fuses at the top of the iPower box by turning them counterclockwise until they pop up. **Don't place a cap on a fuse holder without a fuse in it. The cap can get stuck and be hard to remove.**



2. Disengage all fuses at the bottom of the iBox (just below the logo).
3. Release the screws that hold the iPower box closed and open the enclosure. Disengage all the fuses from the fuse block inside (towards the top of) the iPower box by lifting them clear of their sockets at one end.
4. Measure the resistance between the iBox #1 (Common) bus and terminals that have a field connection (DZ down to SP4 on the left side of the iBox).
5. Measure the resistance between the #2 (120VAC) bus terminals and the #1 bus.
6. Measure the resistance between the #3 (110VDC) bus terminals and the #1 bus.
7. Check for shorts to ground on motor power terminals L1, L2, and L3.
8. Check for shorts to ground on brake terminals B1 and B2.
9. If no shorts to ground are discovered, re-engage the fuses. Refer to the job prints for fuse location if necessary.



Construction Mode

Main Line Power and Wiring the Controller

1. Consult the job prints. Verify that AC supply is as specified.



Note

Proper motor branch circuit protection in the form of a fused disconnect switch or circuit breaker must be provided for each elevator according to applicable electrical code. Each disconnect or breaker must be clearly labeled with the elevator number. The electrical contractor must determine the wire size for the main AC power supply and for the wiring from the disconnect or breaker to the drive isolation transformer.

2. If the car is part of a group, the cars in the group must also be wired to provide power to the group cabinet. If this is the case, refer to the Group Supervisor Field Wiring Print in the job prints. Group power is provided by the car controllers as shown in drawing -2. The main AC power supply wiring size must be determined by the electrical contractor.
 - 2a. Check the phase-offset of the individual car ST2-bus lines before connecting them to the Group cabinet. Use a voltmeter set to AC volts to measure between adjacent car ST2-bus terminals in the Group cabinet. The meter must read less than 10VAC. If the reading is higher, reverse the power leads going to the car T1 transformer at L1 and L2 and measure again.



Caution

All 2 bus power from car to Group cabinets must be in phase. **Connecting out-of-phase power WILL cause damage.**

- 2b. A separate conduit or wiring trough must be provided for the System (car-to-car) Ethernet network. Wiring is fully detailed in the job prints. These details must be followed exactly.
 - 2c. If applicable, also wire according to the Group Interconnects to Individual Car Cabinets print. Be sure to ground all cabinets according to instructions.
 - 2d. Refer to the iCentral (Group Supervisor) Field Wiring Print for Group Controller field wiring instructions.
3. If an isolation transformer is used, connect AC supply wiring to the transformer, and transformer outputs to the controller, as shown in the job prints. If required, the prints will detail auxiliary power connections for the brake iField module.
 4. If no isolation transformer is used, connect AC supply wiring to the controller as shown in the job prints.

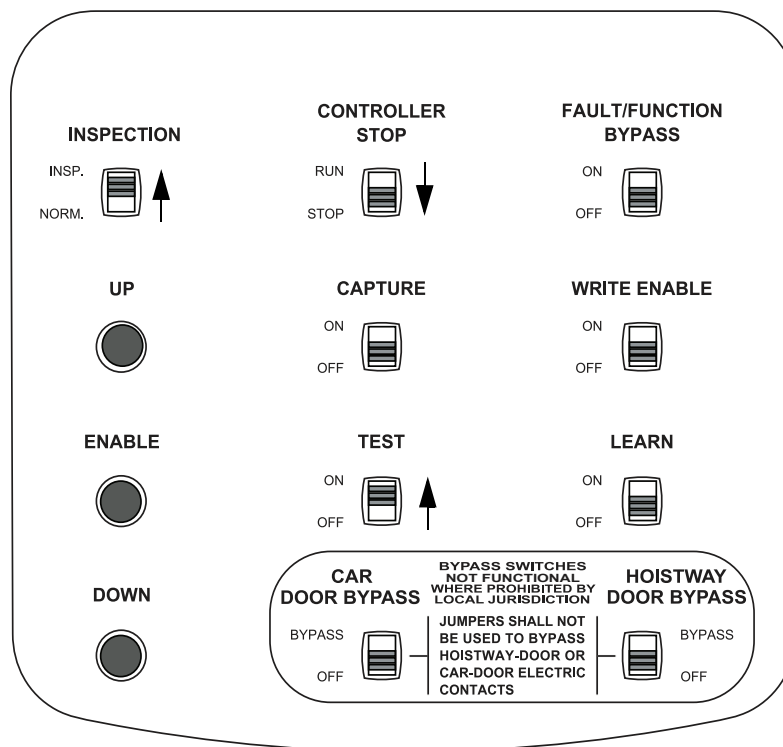
Initial Controller Power Up

After AC power is connected, temporarily power up the controller and check to see that power buses inside the controller cabinet are providing proper outputs.

1. On the iBox, verify:
 - Inspection switch UP (Inspection mode selected)
 - Controller Stop Switch DOWN (Stop selected)
 - Test switch ON
 - All other iBox slide switches DOWN (Off)

These switch settings prevent the elevator from moving when the controller is powered up.

2



Note

The controller microprocessor board has battery backup for logic retention. An insulator prevents the battery from discharging during shipment. Remove the insulator now if has not already been done.

2. Power up the controller. The system will take about 60 seconds to boot.
3. If the controller fails to power up, refer to the job prints and check supply connections and fuses.

Construction Mode

DC Hoist Motor, Brake, and Encoder/Tachometer

This section describes:

- Checking the hoist motor for insulation breakdown or shorts
- Wiring the hoist motor to the controller
- Wiring the iField motor field module
- Verifying brake resistance and wiring the brake
- (Optional) brake pick switch installation and wiring
- Installing the velocity encoder

Checking the Hoist Motor

If this job reuses existing rotating equipment, the equipment must be checked for insulation breakdown.

1. Disconnect all motor and brake wiring.
2. Perform an insulation test between these wires and the frame of the related equipment using a Megohm meter to subject the insulation to the same high voltages that would be present during operation.
3. Minimum insulation resistance of 100k Ohms is required.
4. Correct any insulation problems before proceeding. Insulation problems may indicate a serious problem in the equipment.

Wiring the Hoist Motor to the Controller

Incoming power to the controller and outgoing power wires to the motor must be in their respective grounded conduit.

Keep DC motor wires separate from control wires both inside and outside the controller cabinet. Encoder or tachometer wiring must use a separate grounded conduit.

1. Refer to job print drawing -D1 for DC drive connections to rotating equipment.
2. Make connections as shown:
 - on the System 12 SCR Drive - be certain to follow schematic notes regarding wire size and specific motor connections.
 - on the Quattro DC Drive - follow the instructions in the section titled *EMC Compliance* in the appendix of the drive technical manual.

Wiring the iField Motor Field Module

(Quattro DC Drive: Refer to job print drawing -D1 for motor field wiring)

1. Measure the resistance of RM in the iPower box (the enclosure the iBox is mounted to). Verify that it is set according to the job prints.
2. Connect motor field leads from the motor to MF1 and MF2 terminals below the iBox as shown in the job prints.

Verifying Brake Current Resistance

High current brake systems use a brake (iField) module.

1. With brake leads disconnected from the controller, measure resistance through the brake coil.
2. Inside the controller cabinet, locate the screws, one at the top and one at the bottom right corner of the iPower box (the enclosure the iBox is mounted to). Turn the screws counter-clockwise to their stops and open the enclosure (it is hinged on the left).
3. Refer to job print drawing D2. Toward the right-top of the enclosure, locate the large ceramic resistor labeled RB.
4. Check the resistance across RB. As an initial working value, RB resistance should be about three times (3 X) the resistance measured across the brake coil.

2

Note

During adjustment, the resistance across RB may be further adjusted to achieve smooth brake setting. Too little resistance causes the brake to remain picked for too long. Refer to your job prints for instructions.

5. If necessary, adjust RB resistance by loosening and sliding the center-tap up or down. When the resistance is correct, retighten the center tap.

Wiring the Brake

- Refer to job print drawing D2. Connect brake wires to terminals B1 and B2 located just below the iPower box.

Brake wires must not be routed in the same conduit with DC motor wires or velocity encoder wires.

Tachometer or Encoder Installation and Wiring

A tachometer or a velocity encoder may be used.

Table 2.2 Selecting a Tachometer or a Velocity Encoder

Machine	Device	Shaft Mounting	Brake Drum Mounting	Sheave Mounting
Geared	Tachometer	Yes	No	No
	Encoder	Yes 1024PPR	No	No
Gearless	Tachometer	No	Yes	Yes
	Encoder	Yes 12,700PPR	Yes 1024PPR	Yes 1024PPR

Tachometer

(If you are using a velocity encoder, [please see the next topic](#).) When installing a tachometer, do not mount it near a magnetic field (for example, the motor field coils). Magnetic fields may cause the tachometer to report incorrect speeds. Note also that any vibration caused by the tachometer cannot be corrected inside the drive. The tachometer wheel and the surface on which it runs must be smooth and the tachometer must be mounted so that it can maintain contact without binding or bouncing.

Construction Mode

Alignment of the tachometer coupling is extremely important. Most vibration problems are caused by the tachometer or the way in which it was mounted. The tachometer mounting must be rigid and the tachometer wheel must be aligned precisely with the surface it is running on (i.e., the brake drum or drive sheave).



Caution

In geared applications, do not drive the tachometer from the sheave because gear lash cannot be compensated by the drive unit.

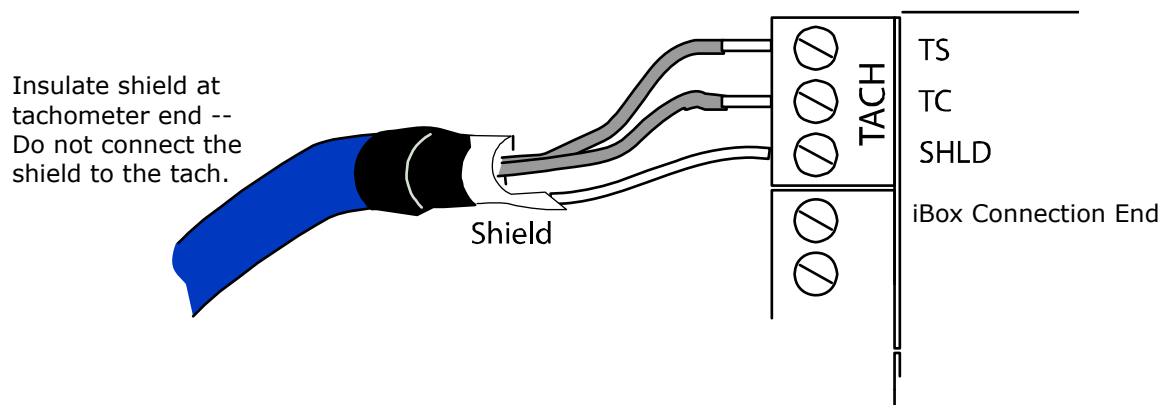
Tachometer Wiring

Note

The tachometer wiring must use a separate grounded conduit. Inside the controller cabinet, if control wires must cross power wires, they must cross at right angles to reduce the possibility of interference.

The cable must be routed into the controller cabinet in a separate conduit. The following illustration shows the wiring at the controller end.

Figure 2.1 Tachometer Wiring



1. Connect the cable from the tachometer as shown above.
2. The connection to the controller TS connection must be positive (+) with respect to the TC connection when the elevator is moving in the up direction.
3. DO NOT connect the cable shield at the tachometer end of the cable. Insulate any part of the shield exposed at the tachometer end to prevent it from accidentally shorting to ground. (Connecting the shield at the tachometer end may cause ground loop noise and affect ride quality.)

Velocity Encoder Installation and Wiring

(If you are using a tachometer, [please see the preceding topic](#).) The encoder must be mounted and wired according to the drawings. When installed, the encoder must be electrically isolated from the motor or any other ground. (Resistance between the encoder casing and the motor or other ground should be “infinite.”)

Do not mount the encoder or its wiring close to a magnetic field (the motor or brake coils). Magnetic fields can induce AC into the encoder signal, producing erratic control at lower speeds.

Note

Encoder wiring must use a separate, grounded conduit. Inside the controller cabinet, if control wires must cross power wires, they must cross at right angles to reduce the possibility of interference.

Encoder Isolation

The encoder housing must be electrically isolated from the machine (ground). To check this:

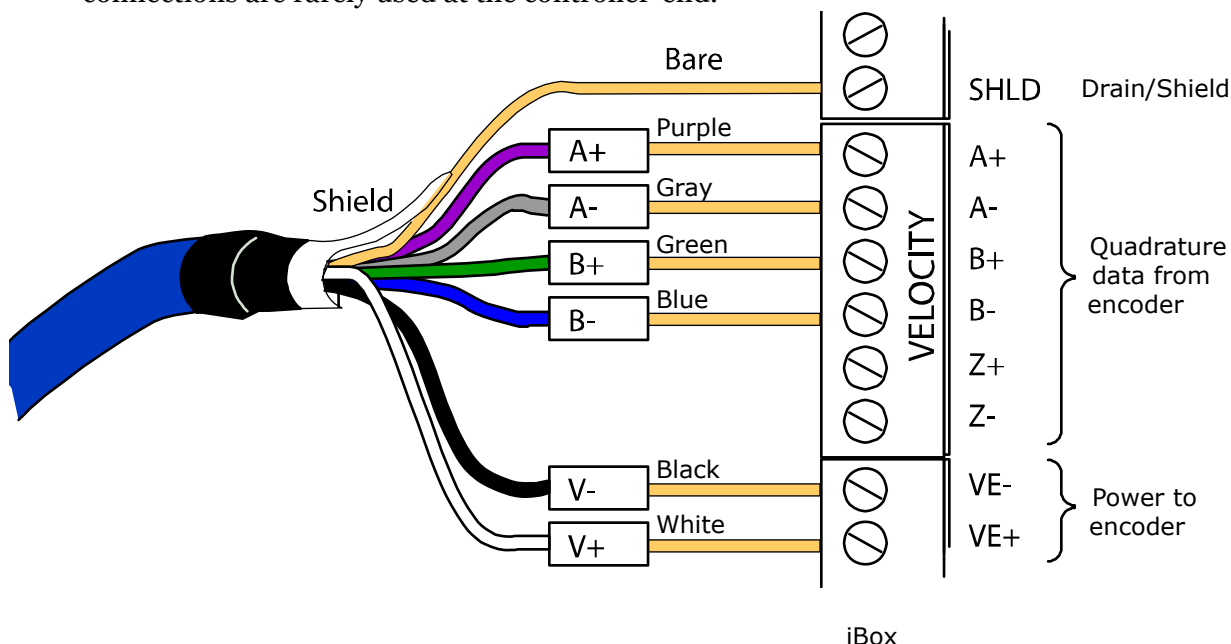
1. Measure the resistance between the encoder case and the frame of the motor. The measured value must be “infinite” for complete isolation.

Encoder Wiring

A shielded cable with an appropriate connector at the encoder end is provided. The controller end of the cable exposes trimmed and tinned individual conductors. The encoder cable must be routed into the controller cabinet in a separate conduit. The following illustration shows the encoder wiring at the controller end of the cable.

Note

These connections are shown for illustration purposes only. Follow the job print instructions for your specific encoder connections — they may be different than those shown here. Z+ and Z- connections are rarely used at the controller-end.



Construction Mode

1. Connect the cable to the encoder using the cable/connector provided.
2. Route the cable through a separate conduit to the controller cabinet.
3. Connect the controller end of the cable as shown in the job prints.
4. Verify that the encoder shield is soldered to the drain wire (wire without insulation).
Keep the cable shield connection as short as possible — connect it to the nearest shield terminal.

**Caution**

The encoder used must be rated up to 15-volts. Do not coil excess Encoder cable near high voltage components — noise may be induced. If the cable must be shortened, trim it at the controller end. Do not cut and re-splice in the middle of the cable or shorten at the Encoder end.

Basic Safety String and Associated Wiring

The elevator must not be run until the safety string is connected. Safety string wiring includes:

- Emergency Stop switch
- Hoistway safety switches
- Cartop safety CTS Relay temporary bypass (for Construction Mode use only)

Please refer to “Safety String Bypass Jumper” on page 6-3 for safety bypass related information.

Cartop Safety Switches

Depending upon the job, cartop safety switches may include:

- Safety Clamp Switch
- Emergency Exit Contact
- Emergency Stop Switch
- CTS Relay (iLink)

The wiring instructions for these switches are on the job prints.

1. Refer to the job prints.
2. Wire the cartop safety switches as shown.

Note

The Cartop Safety Relay is located in the cartop interconnect box. If the box is not yet installed, the relay must be temporarily bypassed to get the car operating in construction mode. For now, using the switches and terminals available to you, wire as much of the string as you are able.

Hoistway Safety Switches

The wiring instructions for these switches are on the job prints.

1. Refer to the job prints.
2. Wire the hoistway safety string switches as shown.

Temporary CTS Relay Bypass

If the iLink cartop interconnect box which contains the Cartop Safety (CTS) Relay is not yet installed, you must bypass the CTS relay temporarily (for Construction Mode only). (If you are installing the iLink cartop box now, please refer to the iLink instructions in Section 3.)

1. Refer to the job prints.
2. Connect the safety string in series between the iBox SAFH and SAFC terminals.
3. You must provide an Emergency Stop switch in series between SAFH and SAFC.



Danger

Make sure the Emergency Stop switch is wired in series between SAFH and SAFC to allow emergency stopping while working on the cartop.

Construction Mode

Access Locks and Contacts

1. Refer to the job prints.
2. Connect the switches for front and rear (if present) doors as shown.

Rope Gripper Wiring

An “emergency brake” may be connected between iControl terminals RG1 and RG2 to stop unexpected car motion. A rope gripper is used to apply braking pressure to the hoist ropes. After it is triggered, press the iBox Fault Reset button or the Rope Gripper board reset button to reset the rope gripper.

1. Refer to the job prints (MRW- machine room wiring sheets).
2. Connect the rope gripper to iControl RG1, RG2, RG5, and RG7 terminals as shown.

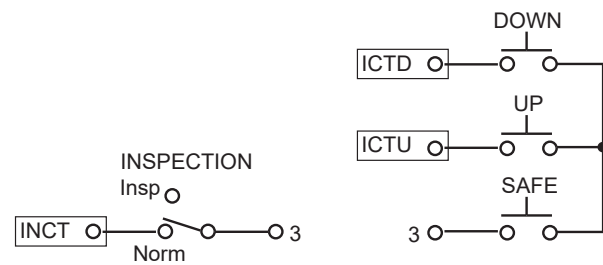
Temporary Rope Gripper Bypass

If a Rope Gripper will be installed later, you may temporarily bypass the input by installing a jumper between RG5 and RG7.

Temporary Cartop Inspection Wiring

Four cartop switches control car motion: An Inspection Enable switch, a Safe switch, an Up switch, and a Down switch.

1. Refer to job print drawing -CW, Cartop Inspection Station.
2. Connect the (Normally Closed) Cartop Inspection Enable switch between the #3 bus and the iControl INCT terminal as shown. (This switch is used to put the car on cartop inspection. INCT is active low.)
3. Connect a Safe push button switch between the #3 bus and the direction push buttons.
4. Connect a Down push button switch between the Safe switch and the iControl ICTD terminal as shown (active high).
5. Connect an Up push button switch between the Safe switch and the iControl ICTU terminal as shown (active high).



Applying Power

1. Set the iBox Inspection switch to the Inspection position.
2. Set the Controller Stop switch to the Stop position.
3. Set the Test switch to On.
4. Turn on power at the main disconnect.
5. Watch the front panel displays of the iBox, the controller will take about 60 seconds to initialize.
6. Check the iBox Computer, Safety A, and Safety B status LEDs. The LEDs should be lighted solid green.

Setting Initial Operating Parameters

Once all Construction mode connections are complete, certain iControl parameters must be set or verified. These settings must be accomplished using a computer running iView software.

The iBox may be accessed using iView or the iBox keypad. However, both are not allowed to make changes at the same time. By default, the iBox keypad has control but once an iView user has acquired write privileges (*Privilege/Acquire*) the keypad is prevented from making changes until the iView user relinquishes the write privilege.

2

Connecting the iView PC

If you purchased your iView PC from MCE, iView was installed at the factory. In addition, all of the network assignments (connections) for your job have been created and stored on the iView PC. Therefore, once the physical connections (cables) between each iController's iBox and the iCentral or Comm-Connect Ethernet Switches have been installed per the job prints, you are set to go. You can power up the iView PC and launch the iView.NET application.

There are two ways to connect the iBox to a PC:

- Direct Connection: Connect the PC directly to the iBox through the iBox 3=PC port.
- Peripheral LAN Connection: Connect the PC to the LAN hub supporting one or more iBox controllers (iBox #1 port).

Your job prints provide complete Ethernet instructions for your system.

iView Help

The iView application is documented through on line help. On line help is available from anywhere in the iView application.

Construction Mode



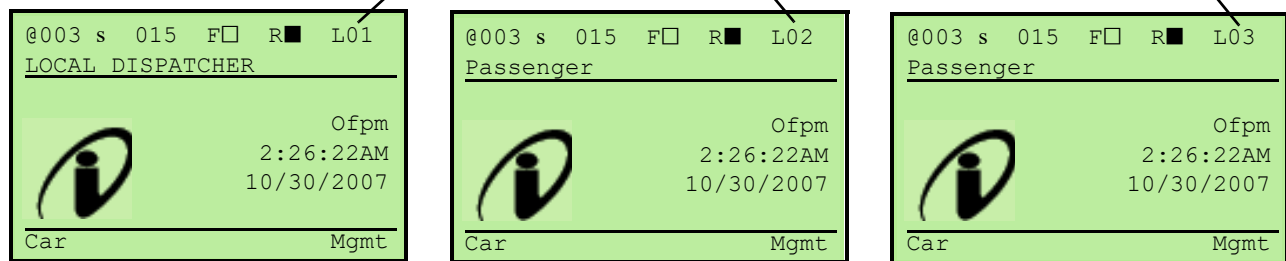
Caution

Before connecting the “System” Ethernet cable to the iBox:

1. Verify that the Car ID, in the upper right corner of the iBox display, is correct. Press the iBox “Computer Reset” button and when the display returns, verify that Car ID is still correct. The Car identifier is set on the iView > Controller > Configuration > General tab.
2. Verify that no other iBox in this group of controllers has the same Car ID (see Figure 2.10).
3. Check the “Alternate Dispatcher” settings on the iView > System > System Configuration > Building tab. Verify that the “Auto-select Preference Order” settings are identical on every car in this group of controllers.

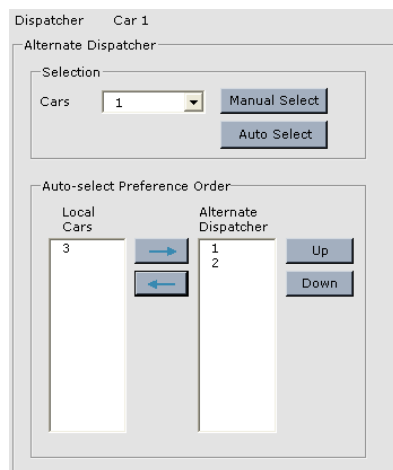
Figure 2.2 Check before connecting the “System” Ethernet cable to the iBox

Check for correct Car ID. Verify that no two Car IDs in the group are the same.

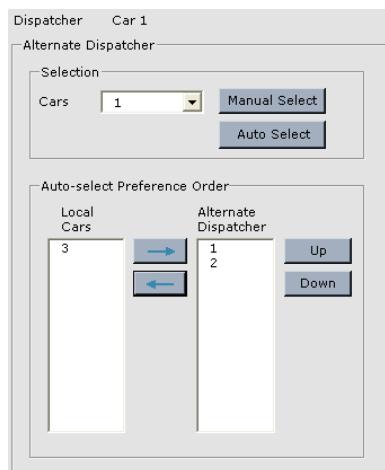


On the iView > System > System Configuration > Building tab, verify that the Alternate Dispatcher “Auto-select Preference Order” settings are identical for all cars in the group.

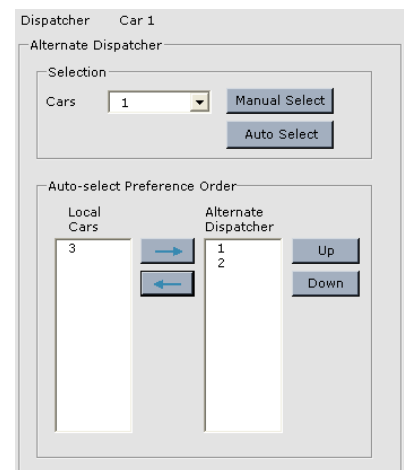
Car 01 System Configuration



Car 02 System Configuration



Car 03 System Configuration



Verifying Initial Parameter Settings

Refer to [Please refer to “Recommended Starting Parameter Values for Initial Operation” on page 2-20](#) for recommended initial settings.

1. Launch iView and connect to the iController.
2. Once connected, select *Acquire* from the *Write privilege* menu. This is necessary to allow iView to change parameters on the iController. (Note that, when you initially request privileges during each connection session, someone in the machine room must press the “yes” button on the iBox to grant those privileges. This is automatically granted if the iView is on the same PC in iCentral with the iCue application.)
3. From the *View* menu, select *Layouts* and click *Configuration*.
4. Select the *Pattern tab*. If the Pattern tab is not displayed, select Pattern from the View > Configuration menu.
5. On the *Pattern > Modes tab*, verify the Common, Standard, and Inspection profile settings. Refer to [Table 2 - 2.3 on page 2-20](#). Pattern shape preset can be used to enter pre-set values for the Standard profile parameters based on the high speed (contract speed) of the elevator and the selected shape type (Slow, Moderate or Fast). This provides an excellent starting point.
6. Edit and Send changes to iControl as needed.
7. Select the *General tab*. If the General tab is not displayed, select General from the View > Configuration menu.
8. On the *General > General tab* set the *Simplex car* selection as appropriate (see [Table 2 - 2.3 on page 2-20](#)). DO NOT ENABLE Simplex if the car is part of a group.
9. Edit and Send changes to iControl as needed.
10. Select the *Drive tab*. If the Drive tab is not displayed, select Drive from the View > Configuration menu.
11. On the *Drive > General tab*, verify the *Drive type*.
12. On the *Drive > Safety tab*, verify *Following error* (default 25%, final adjustment procedure in Section 4 of this guide). Refer to [Table 2 - 2.3 on page 2-20](#) and the iView - Controller View section of this manual (Section 9) for detailed descriptions.
13. Edit and Send changes to iControl as needed.



Note

If you change the drive type, you must press Computer Reset on the iBox so that iControl can “detect” the change on power up.

14. Select the *Safety tab*. If the Safety tab is not displayed, select Safety from the View > Configuration menu.
15. On the Safety tab, verify that *Construction Mode* is checked.
16. Edit and Send changes to iControl as needed.

Construction Mode

Table 2.3 Recommended Starting Parameter Values for Initial Operation

iView Screen Settings						
Pattern > Common tab						
Position Encoder resolution	348 if iLand-x-C Compact Landing system. 256 if iLand-x-H or LS-EDGE. Otherwise, consult manufacturer documentation.					
Job Contract Speed	200 fpm	350 fpm	400 fpm	500 fpm	600 + fpm	Unit
Pattern scaling	100%	100%	100%	100%	100%	%
Door pre-opening dis.	0.00	0.00	0.00	0.00	0.00	inches
Leveling speed	005	005	005	005	005	fpm
Releveling speed	008	008	008	008	008	fpm
Leveling distance	1.20	0.72	0.60	0.60	0.60	inches
Releveling distance	0.60	0.60	0.60	0.60	0.60	inches
Dead zone distance	0.25	0.25	0.25	0.25	0.25	inches
Relevel dead zone dis.	0.15	0.15	0.15	0.15	0.15	inches
Pattern > Modes tab – Standard Profile						
Job Contract Speed	200 fpm	350 fpm	400 fpm	500 fpm	600 + fpm	Unit
Initial jerk	6.00	6.00	5.00	5.00	6.0	ft/s ³
Acceleration	2.40	3.20	3.40	3.60	3.80	ft/s ²
High roll jerk	6.00	6.00	5.00	5.00	4.00	ft/s ³
High speed	200	350	400	500	600	ft/min
Low roll jerk	6.00	6.00	5.00	5.00	4.00	ft/s ³
Deceleration	2.20	2.90	3.20	3.30	3.50	ft/s ²
Flare jerk	3.00	3.00	3.00	3.00	3.00	ft/s ³
Approach deceleration	1.50	1.50	1.50	1.50	1.50	ft/s ²
Approach jerk	2.00	2.00	2.00	2.00	2.00	ft/s ³
Pattern > Modes tab – Inspection Profile						
Job Contract Speed	200 fpm	350 fpm	400 fpm	500 fpm	600 + fpm	Unit
Initial jerk	6.00	6.00	5.00	5.00	6.0	ft/s ³
Acceleration	2.40	3.20	3.40	3.60	3.80	ft/s ²
High roll jerk	6.00	6.00	5.00	5.00	4.00	ft/s ³
High speed	30	30	30	30	30	ft/min
Low roll jerk	6.00	6.00	5.00	5.00	4.00	ft/s ³
Deceleration	2.20	2.90	3.20	3.30	3.50	ft/s ²
Flare jerk	3.00	3.00	3.00	3.00	3.00	ft/s ³
Approach deceleration	1.50	1.50	1.50	1.50	1.50	ft/s ²
Approach jerk	2.00	2.00	2.00	2.00	2.00	ft/s ³
Low speed	10	10	10	10	10	ft/min
General > General tab						
Simplex car	Set to Simplex if the car is NOT in a group to enable dispatch and parking screens (limited group functionality for a single car).					

Table 2.3 Recommended Starting Parameter Values for Initial Operation

iView Screen Settings	
Drive > General tab	
Drive type	Factory set. Verify drive type selected is System12 or Quattro.
Speed Reference	Tachometer, Encoder, or Internal (per job).
Speed reference scaling	1.000
Speed ref resolution	Encoder resolution (pulses per revolution) or tachometer voltage output at 1000 RPM (V/k). Set per job.
Rated motor RPM:	Check value is as on motor plate.
Coupling rotational ratio	Encoder only. If encoder is motor-shaft mounted, set to 1.0. If encoder rotates on brake drum or sheave, enter value from computation: brake drum (or sheave) diameter ÷ encoder wheel diameter = Coupling rotational ratio.
Rated armature voltage	Verify value from motor plate.
Rated armature current	Verify value from motor plate.
Electric stop	Per job. Default 0.0
Normal rate limited stop	Per job. Default 1 ft/s.
Emerg rate limited stop	Per job. Default 7 ft/s.
Drive > Safety tab	
Following error	25% (factory shipped default)
Drive > Pretorque tab	
Pretorque option	Per job. On or Off.
Pretorque position comp	Per job, if Pretorque Option enabled.
Pretorque gain	Per job, if Pretorque Option enabled.
Pretorque balance adj	Per job, if Pretorque Option enabled.
Safety > General tab	
Pulses Per Foot	Display Only
Contract Speed	Display Only
Contract Overspeed	107% of Contract Speed
Inspection Overspeed	150 feet per minute
Leveling Overspeed	150 feet per minute
Limit One Margin	8%
Top Access Landing	Job specific, check job prints
Top Access Rear	Job specific, check job prints
Bottom Access Landing	Job specific, check job prints
Bottom Access Rear	Job specific, check job prints
No Main String	Job specific, check job prints
No Main String Rear	Job specific, check job prints
Frnt Door Close Contact	Job specific, check job prints
Rear Door Close Contact	Job specific, check job prints
Rear Doors	Job specific, check job prints
Freight Door Option 1	Job specific, check job prints
Rope Gripper	Check to see if a rope gripper is used
Car Top Exit	Check job prints.
Construction Mode	Set to ON .
Door Position Monitor	Check if used (see job prints)
In Car Panel Inspection	Check if used (see job prints)

Construction Mode

Learning the Safety Configuration

The controller is set to match the job safety configuration before shipping. By default, Construction Mode is also enabled before the controller is shipped. **You should not have to make changes to the Safety screen until you exit Construction Mode.**

The safety configuration for the job is stored in two locations in iControl (FLASH and EEPROM on the SAF board). iControl constantly checks current safety information against stored data and also compares the data in the two stored locations to make certain they continue to match. If you make a change on the Safety screen, you will need to do a “learn” operation to write the new data to iControl:

1. From the *View* menu select *Setup* and click *Safety*.
2. On the *Setup > Safety > Configuration tab*, make necessary changes.
3. Select *Acquire* from the *Write privilege* menu (if you have not yet acquired write privileges to the iBox), then click *Send* to save the changes to iControl.

The controller will generate a safety mismatch fault because the settings you have just sent do not match its stored information.

4. Verify that the iBox is in *Inspection* mode (Inspection switch set to INSP). Set the *Learn* switch to ON.
5. The *Learn* section of the *Safety > Configuration tab* should indicate that the controller is ready to learn.
6. Click on the *Learn* button. The controller will take a few seconds to learn the new information and will then confirm that the safety configurations again match.
7. Set the iBox Learn switch back to the OFF position.
The message window on the *Safety > Configuration tab* should report Safety Configurations OK.

While iControl is in Construction Mode, specific safety and operational features are automatically bypassed. These are:

- All cartop signals, including DP1 and DP2 (position encoder pulse streams).
- Normal and Emergency limit switches, NTS and ETS velocity and position logic. Except Normal Limit Switches DNTD and UNTD.
- Only Machine Room and Cartop Inspection are allowed. Will not allow Hoistway Access or COP Inspection.
- EQ signals, both seismic and counterweight derailment, are absent.
- Fire sensor signals are absent.
- No cartop comm.

Drive Startup (System 12 SCR Drive)

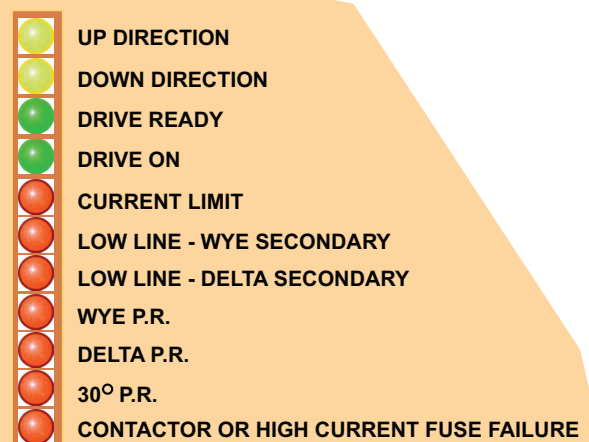
The following startup instructions pertain to the System 12 SCR Drive. For startup instructions for the Magnetek Quattro DC drive see [“Drive Startup \(Quattro DC Drive\)”](#) on page 2-47.

Check SCR Drive Voltage and Polarity

1. Ensure power is OFF at the main disconnect.
2. Set the iBox Inspection switch to the Inspection position.
3. Set the iBox Controller Stop switch to the Stop position.
4. Set the iBox Test switch to On.
5. Disable the hoist motor by lifting all sets of motor brushes and putting cardboard under them (or tie them back so that no contact is made).
6. Remove the brake wire from terminal B1 to prevent the brake from picking.
7. Turn on power at the main disconnect.
8. Watch the front panel displays of the iBox, the controller will take about 60 seconds to initialize.
9. Check the iBox Computer, Safety A, and Safety B status LEDs. The LEDs should be lighted solid green.
10. Check the 3-phase AC voltages at X1, X2, X3, and Y1, Y2, Y3 on the contactors at the bottom of the SCR drive. They should match the voltage for the secondary windings of the Drive Isolation Transformer as shown on page -D1 of the job prints.
11. Verify that the fan(s) in the resistor cabinet are functional.
12. Look for the Drive Ready indicator on the SCR drive. It should light within 5 seconds after the iBox initializes. If the DRIVE READY LED did not light, leave the motor disabled and the brake B1 lead disconnected, go to “If DRIVE READY Did Not Light” and follow the conditional steps below.
13. If the Drive Ready indicator did light, restore hoist motor brush contact. Reconnect the brake terminal B1 wire. [Please refer to “Motor Field Calibration \(System 12 SCR Drive\)”](#) on page 2-29.

If DRIVE READY Did Not Light:

1. Measure between 1 and 2D on the System 12 drive (should read 120VAC).
2. Check fuse F2D. Replace the fuse if necessary. If the Drive Ready LED does not light, make a note of any lighted LEDs on the SCR Drive, and turn power off at the main disconnect.



Construction Mode

3. The controller is fully tested according to the connections shown in the job prints before being shipped from MCE, however, depending upon lighted LEDs noted in Step 15 above:
 - If Delta P.R., Wye P.R., and 30° P.R. were all ON, interchange any two of the three wires on the primary winding of the Drive Isolation Transformer.
 - If Delta P.R. and 30° P.R. were ON, interchange the wires on the SCR Drive between terminals X1 and X2 or X1 and X3.
 - If Wye P.R. and 30° P.R. were ON, interchange the wires on the SCR Drive between terminals Y1 and Y2 or Y1 and Y3.
 - If only the 30° P.R. LED was ON, then move the wires on the SCR Drive from X1 to X2, X2 to X3, and X3 to X1. It may be necessary to repeat this step if the 30° P.R. LED is still ON after power up.
4. If the 30° P.R. LED remains on even after the X1, X2, and X3 wires have been moved a second time, verify Drive Isolation Transformer labeling:
 - Interchange any two of the three wires feeding the Drive Isolation Transformer primary.
 - Interchange wires X1 and Y1 on the SCR Drive.
 - Interchange wires X2 and Y2 on the SCR Drive.
 - Interchange wires X3 and Y3 on the SCR Drive.
 - Power up and check the 30° P.R. LED.
 - If the 30° P.R. LED remains ON, power down, then move the wires on the SCR Drive from X1 to X2, X2 to X3, and X3 to X1. It may be necessary to repeat this step if the 30° P.R. LED is still ON after an additional power up.
 - If all P.R. LEDs do not turn OFF at this point, there is a probable defect not related to transformer hookup.
5. If any of the Low Line red LEDs were on, power down and:
 - Remove the SCR Drive cover.
 - Check that the 20-pin header (U81) with resistors and jumper plugs is firmly plugged into the SCR-LGA board (top center) and that the number on the edge of the header matches the header number on page -SCR of the job prints. [Please refer to “Current Limit Adjustments \(System 12 SCR Drive\)” on page 2-39.](#)
6. If, after completing the checks and adjustments listed in Steps 14 through 18, the Drive Ready LED still does not light, contact MCE Technical Support.
7. If the Drive Ready indicator did light, restore hoist motor brush contact. Reconnect the brake terminal B1 wire. [Please refer to “Motor Field Calibration \(System 12 SCR Drive\)” on page 2-29.](#)

Drive Offsets Calibration (System 12 SCR Drive)

The iBox processes drive control voltages digitally. The digital signal is converted to its analog equivalent for output to the drive (DAC). Analog input control voltages are likewise converted from analog to digital for use by the iBox (ADC). Both of these conversions should be checked and any conversion offset corrected using the Output DAC and Input ADC parameters on the Configuration > Drive > Calibration tab.

This section describes both the automated and manual procedures which can be used to calibrate the System 12 drive analog circuitry. MCE recommends using the automated procedure first and then verifying the most critical offsets using the manual procedure.

Automated Drive Setup Procedure

Before adjusting the drive, verify that:

- CONTROLLER STOP switch is in the RUN position
- iBox Safety OK LED is ON
- iBox Door Locked LED is ON
- iBox Fault LED is OFF

1. Display the Drive setup layout (View > Layouts > Drive)

Setup

Drive

To perform drive offsets calibration, please do the following:
 1) Obtain 'Write Privilege'.
 2) Verify machine room 'INSPECTION' switch is in 'INSP' position.
 3) Toggle 'LEARN' switch to 'ON' position.
 4) Follow succeeding instructions.

Calibrate
Abort

Done
In progress
Ready
Not ready

Calibration Status

	Input ADC	Output DAC	Current sensor	Current loop integral
Inactive	●	●	●	●
Idle	●	●	●	●
N/A	●	●	●	●
Calibrating	●	●	●	●
Internal error	●	●	●	●
Threshold error	●	●	●	●
Calibrated	●	●	●	●
Saved	●	●	●	●

Calibration Data

Current loop integral 0.000
 Current sensor 0.000
 Output DAC 0.000

Input ADC

Tachometer 0
 Brake current 0
 Brake voltage 0
 Motor field weakening 0
 Armature current 0
 Armature voltage 0
 Abs armature current 0
 Motor field current 0
 Motor field voltage 0
 AC phase A current 0
 AC phase B current 0
 AC phase C current 0

Operational Status

Drive

General Safety Control Filters Dampening

Offsets

Current loop integral 1.000
 Current sensor 1.090
 Zero crossing 0.000
 Output DAC -0.006

Input ADC

Tachometer 0.000
 Brake current 0.000
 Brake voltage 0.000
 Motor field weakening 0.000
 Armature current 0.000
 Armature voltage 0.000
 Absolute armature current 0.000
 Motor field current 0.000
 Motor field voltage 0.000
 AC phase A current 0.000
 AC phase B current 0.000
 AC phase C current 0.000

Construction Mode

- Follow the on-screen instructions, “To perform the drive offsets calibration, ...” (calibrates Input ADC, Output DAC, Current Sensor, and Current Loop Integral Offset).
- Once the calibration is *Done*, the offset values shown on the Setup > Drive tab should match those shown on the Drive Configuration tab (Configuration > Drive > Calibration tab).

Manual Drive Setup Procedure (System 12 SCR Drive)

MCE recommends first performing the Automated Drive Setup Procedure previously described and then verifying the most critical offsets (**Output DAC**, **Current loop integral**, **Current sensor** and **Input ADC - Tachometer**) using the manual procedure. However, if the automated procedure is unsuccessful, the manual procedure must be used. Before adjusting the drive, verify:

- CONTROLLER STOP switch is in the RUN position
 - iBox Safety OK LED is ON
 - iBox Door Locked LED is ON
 - iBox Fault LED is OFF
 - Motor Field has been calibrated (see “Motor Field Calibration (System 12 SCR Drive)” on page 2-29.)
 - iView is connected, write privilege has been obtained (Write Privilege > Acquire selected and “Yes” softkey on iBox pressed in response).
- Display the *Configuration > Drive > Calibration tab*.

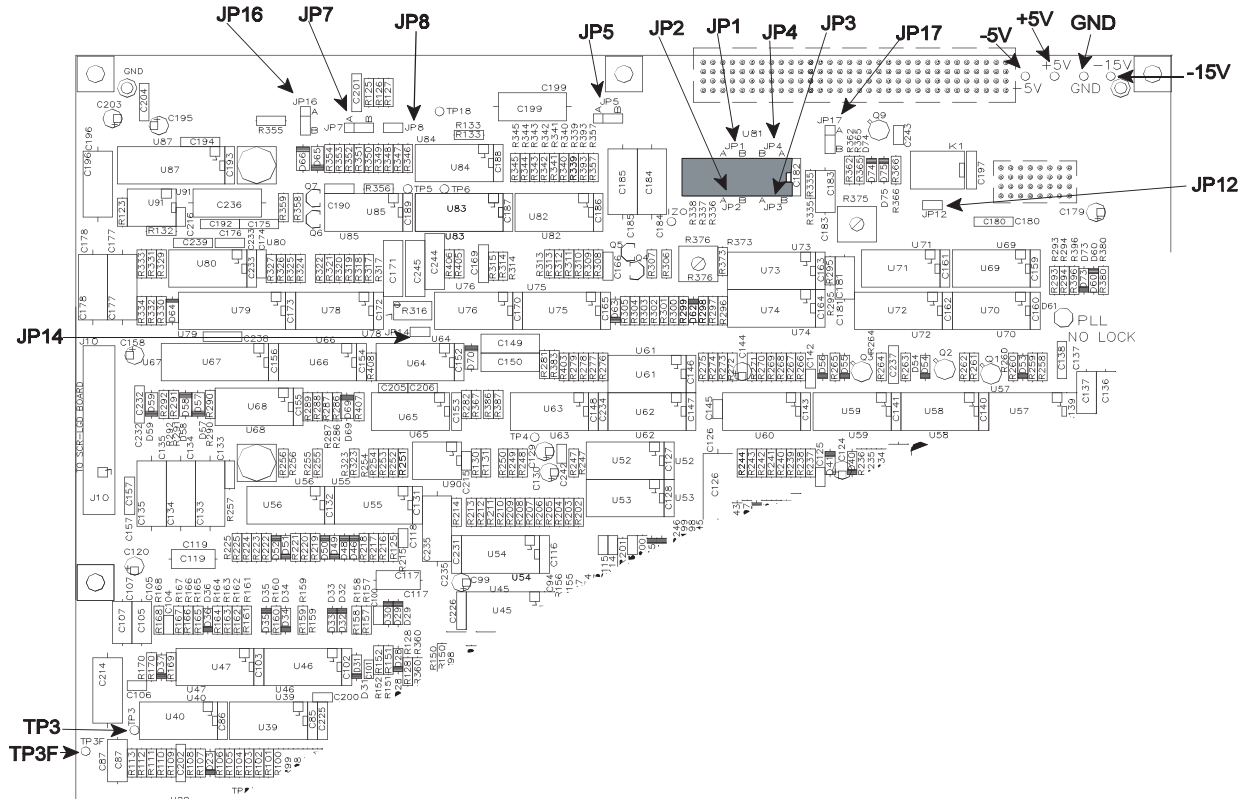
Offset	Value
Current loop integral	1.000
Current sensor	1.000
Zero crossing	0.000
Output DAC	0.000
Input ADC	
Tachometer	0.000
Brake current	0.000
Brake voltage	0.000
Motor field weakening	0.000
Armature current	0.000
Armature voltage	0.000
Absolute armature current	0.000
Motor field current	0.000
Motor field voltage	0.000
AC phase A current	0.000
AC phase B current	0.000
AC phase C current	0.000

2. Loosen the four captive screws securing the cover on the System 12 drive. Set the cover aside.

The SCR-LGA board is visible at the top left of the drive enclosure. (The LEDs visible through the drive cover are mounted on a small PC board which is, in turn, mounted on the SCR-LGA board.) Refer to the following illustration for the location of test points referenced in this procedure.

2

Figure 2.3 System 12 Drive SCR-LGA Board Test Points



3. **Output DAC:** With the multimeter, measure between jumper JP3 and ground. If necessary, adjust Output DAC on the iView screen until you measure as close to 0.0 volts as possible (less than 1mV). (Remember to increment or decrement the iView setting, then Send the value so the adjustment will take effect.)
4. **Current loop integral:** Use a multimeter to measure between jumper JP7 ('A' position on jumper) and ground. If necessary, adjust *Current loop integral* on the *Drive > Calibration tab* until you measure as close to 0.0 volts as possible (less than 1mV). (You will need to increment or decrement the iView setting, then Send the value before the adjustment will take effect.)
5. **Current sensor:** With the multimeter, measure between test point TP3F and ground. If necessary, adjust *Current sensor* on the iView screen until you measure as close to 0.0 volts as possible (less than 1mV). (Remember to increment or decrement the iView setting, then Send the value so the adjustment will take effect.)
6. **Zero crossing:** Note that the *Zero crossing* parameter is set to 0.0. This adjustment is used only if zero crossing must be adjusted for ride quality reasons and the zero crossing trim pot (R388 on the SCR-LGA board) does not allow sufficient adjustment. See the following Note.

Construction Mode

Note

Note trim pot R376 and test point IZO (near jumper JP2). These components are used to set the “zero crossing” point if necessary. Trim pot R376 is set and locked at the factory and should not require adjustment. If, when adjusting the ride quality of the car in later steps, you notice a sharp bump when transitioning from acceleration to steady speed or from steady speed to deceleration, you may need to adjust zero crossing.

7. Display the iView Virtual Oscilloscope (*View > Diagnostics > Virtual Oscilloscope*) and obtain Write Privilege.
8. On the Virtual Oscilloscope, set *Test point 1* = Tachometer Signal.
9. **Input ADC - Tachometer:** Adjust the Input ADC - *Tachometer* parameter by entering and sending small negative or positive values until the Test point 1 value is as close to 0.0 as possible. The ADC adjustment range is from -0.5 to $+0.5$.
10. **Input ADC - Brake current:** Set the Virtual Oscilloscope Test Point 1 = Brake Current Feedback and then adjust the Input ADC - *Brake current* parameter by entering and sending small negative or positive values until the Test point 1 value is as close to 0.0 as possible.
11. **Input ADC - Brake voltage:** Set the Virtual Oscilloscope Test Point 1 = Brake Voltage Feedback and then adjust the Input ADC - *Brake voltage* parameter by entering and sending small negative or positive values until the Test point 1 value is as close to 0.0 as possible.
12. **Input ADC - Armature current:** Set the Virtual Oscilloscope Test Point 1 = Armature Current Dampened Feedback and then adjust the Input ADC - *Armature current* parameter by entering and sending small negative or positive values until the Test point 1 value is as close to 0.0 as possible.
13. **Input ADC - Armature voltage:** Set the Virtual Oscilloscope Test Point 1 = Armature Voltage Dampened Feedback and then adjust the Input ADC - *Armature voltage* parameter by entering and sending small negative or positive values until the Test point 1 value is as close to 0.0 as possible.
14. **Input ADC - Absolute armature current:** Set the Virtual Oscilloscope Test Point 1 = Armature Current Dampened Feedback and then adjust the Input ADC - *Absolute armature current* parameter by entering and sending small negative or positive values until the Test point 1 value is as close to 0.0 as possible.
15. For the next two adjustments, the Armature Current Test must be enabled in order to shut off the armature current.
16. **Input ADC - Motor field current:** Set the Virtual Oscilloscope Test Point 1 = Field Current Feedback and then adjust the Input ADC - *Motor field current* parameter by entering and sending small negative or positive values until the Test point 1 value is as close to 0.0 as possible.
17. **Input ADC - Motor field voltage:** Set the Virtual Oscilloscope Test Point 1 = Field Voltage Feedback and then adjust the Input ADC - *Motor field voltage* parameter by entering and sending small negative or positive values until the Test point 1 value is as close to 0.0 as possible.

Motor Field Calibration (System 12 SCR Drive)

This topic includes:

- Check default values
- Calibrating the motor field
- Check calibration results
- (If necessary) Manual motor field gain adjustment — closed loop

2

Check Default Values

From the *View* menu select *Layouts* and click *Motor Field*. On the *Configuration > Motor Field > Control* tab, check the Voltage settings to verify that they are close to the field survey information for the job. If this information is not available, check the motor nameplate for manufacturer data. If no information is available, contact MCE or start out with the default settings shown here:

Voltage	
Field forcing voltage	50 Vdc
Field running voltage	50 Vdc
Field standing voltage	25 Vdc
Field weakening begin	10 %
Field weakening end	90 %

Motor Field Calibration Procedure



Danger

Do not attempt to move the car during calibration.

1. Display the Motor Field layout (*View > Layouts > Motor Field*).
2. On the *Configuration > Motor Field > Control* tab, set *Field Operation* to *Open Loop*.
3. Place the iBox Inspection switch in the INSP position. Verify that the iBox displays Machine room insp.

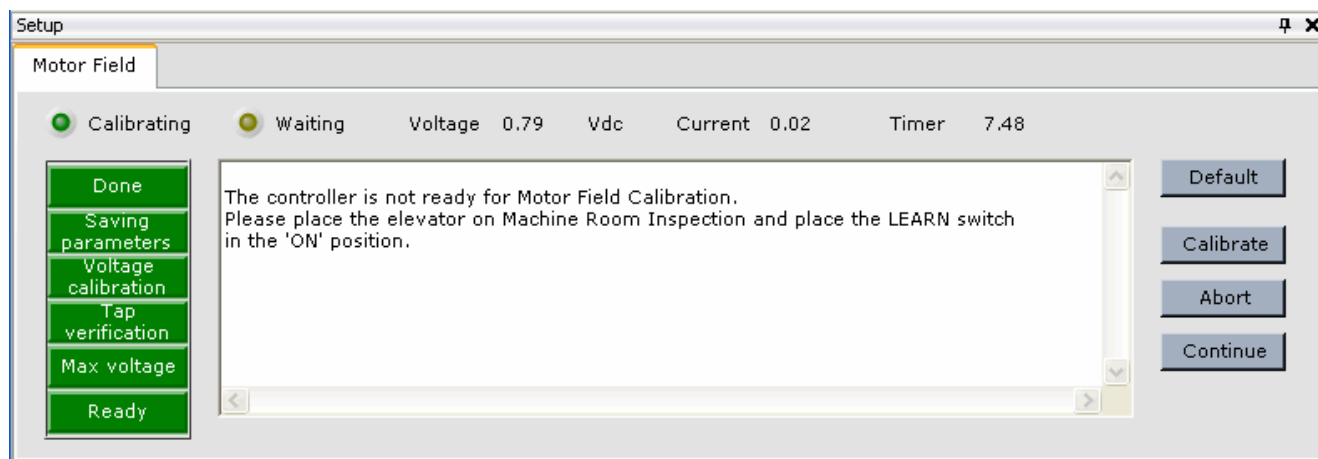
Note

If the iBox does not indicate that you are in Machine Room Inspection even though the Inspection switch is in the INSP position, another inspection mode (i.e., cartop inspection) is probably active. Other inspection modes must be OFF before Machine Room Inspection can be activated.

4. Place the iBox Learn switch in the ON position.
5. On the iView Controller screen, select *Acquire* from the *Write privilege* menu.
6. Press the “yes” switch on the iBox to grant the write privilege.

Construction Mode

7. On the *Setup > Motor Field* tab, verify that the *Ready* indicator is lighted. If it is not, set the Learn switch to OFF for two seconds, then set it back to ON. (The Learn switch has a fifteen minute timer. When the timer elapses, software generates a time-out fault, then ignores the switch setting until it is reset.)



8. Click *Calibrate*. The indicators show progress through the various phases of motor field calibration. The message window provides feedback and instructions as required. The Waiting LED will light while waiting for an instruction to be completed.
9. During calibration, the Calibrating LED will be lighted. When the Done indicator lights, calibration is complete.
10. Set the Learn switch to the OFF position.

Note

If the system detects a field failure fault, press the Fault Reset button on the iBox after the motor field is calibrated.

The following messages may be displayed while the Motor Field Calibration procedure is being performed.

Table 2.4 Motor Field Calibration Procedure Messages

Message/Meaning
The controller is not ready for Motor Field Calibration. Please place the elevator on Machine Room Inspection and place the LEARN switch in the ON position.
The system is waiting for the CONTINUE button to be pushed.
The system is ready to start the calibration process. Push the START button if you wish to start calibrating the motor field or push the DEFAULT button if you wish to load the default calibration values.
The controller is done with motor field calibration. Please turn the LEARN switch off.

Check Calibration Settings (System 12 SCR Drive)

1. On the Configuration > Motor Field > Control tab, note the *Field standing voltage* setting.
2. Set Field standing voltage to the same value as Field running voltage.
3. Click Send. Watch the Field voltage indicator on the Operational Status tab. It should rise to the Field Running Voltage setting.
4. Measure the motor field voltage on terminals MF1 and MF2 below the iBox. Verify that the voltage is close to the value entered for Field standing voltage.
5. Immediately return Field standing voltage to its previous value and click Send. The Field voltage indicator on the Operational Status tab should fall to the correct standing voltage.

2

If there is no motor field output voltage, verify the following:

1. Check the R-C network (RM and CM inside the iPower Box) to make certain that the connections are tight.
2. Verify that AC voltage between terminals FMX1 and FMX2 on the motor iField module is close to the specified value on page -D2 of the job prints.
3. Check that the DB-25 connector from the iField module to the iBox is properly seated.
4. Verify terminals 1 and 2 on the iField module measure 120VAC.
5. Check fuses FM1 and FM2 inside the iPower Box.
6. On the Configuration > Motor Field > Control tab, set *Field Operation* to *Closed Loop* and click *Send*.

**Caution**

The Motor Field > Configuration tab is populated with values learned during motor field calibration. These values affect motor operation and should not be changed without consulting MCE Technical Support.

Construction Mode

Manually Adjusting Motor Field Gains — Closed Loop (SCR)

Note

These manual adjustments are almost never necessary. They are useful only in instances of extremely poor motor field response.

If, after calibration and settings checks are complete, there are still performance issues, e.g. the drive Current Limit LED lights at the beginning and/or end of runs or you feel spotting (hesitation) coming into a floor, the hoist motor response to control inputs may not be rapid enough. In these instances you may be able to manually adjust motor field gains to compensate.

1. On the Configuration > Motor Field > Control tab, set *PID/Field proportional* to 1.0 and *PID Field integral* to 3.0.

If satisfactory performance is not achieved with the above settings:

2. Select *Virtual Oscilloscope* from the *View* menu.
3. Set *Test point 1* to Field Integral Gain.
4. Monitor iBox test point STP 1 with an oscilloscope.
5. Observe response while changing *Voltage/Field standing voltage* from the standing voltage value to the forcing voltage value and back again.

If oscillation or overshoot is observed:

6. Decrease *PID/Field proportional* by 0.2 and repeat step 4.
7. If reducing *PID/Field proportional* had no effect, reduce *PID/Field integral* by 0.2 and repeat step 4. UNDER NO CIRCUMSTANCES should *Field proportional* or *Field integral* be below 0.25.

If no oscillation or overshoot is observed:

8. Increase *PID/Field proportional* by 0.5 and repeat step 4. If there is still no oscillation or overshoot, continue increasing *Field proportional* by 0.5 increments and repeating step 4 until you see oscillation or overshoot. When you see oscillation or overshoot, reduce *Field proportional* to 50% of its value (not below 0.25).
9. Next, increase *PID/Field integral* in 0.5 increments while repeating step 4 until oscillation or overshoot is observed. (DO NOT set Field integral above 10.0.) When oscillation or overshoot is visible, reduce Field integral by 10%.

The preceding two steps are designed to achieve the desired response using the lowest *Field proportional and integral* values possible.

Brake Calibration

This section describes brake calibration for DC systems using the iField Module advanced braking system. The iField module electronically controls brake voltage output.

Rollback Compensation

In later adjustments, drive and motor settings will be adjusted to control rollback. Since that has not yet been done, we need to control rollback by adjusting Brake Pick Delay and offsetting Speed pick delay 1 so that the brake remains set until the motor builds sufficient torque.

2

1. From the Controller > View menu select *Layout* and click *Brake*.

The screenshot shows the 'Brake' configuration window in the iControl DC software. It is divided into several sections: 'Voltage', 'Filter', 'Timer', and 'Switch'. The 'Voltage' section contains five input fields, all set to 25.000 Vdc. The 'Filter' section contains two input fields: 'Current low pass frequency' at 3.000 Hz and 'Voltage low pass frequency' at 0.500 Hz. The 'Timer' section contains ten input fields for various delays, with 'Pick delay' and 'Speed pick delay 1' highlighted by red circles. The 'Switch' section contains two radio buttons for selecting the brake pick condition (high or low terminal), with the 'low' option selected, and two checkboxes for monitoring brake pick and drop faults, both of which are checked. A 'Send' button is located at the bottom right of the window.

2. On the Brake > Control tab, set *Pick delay* to 0.000 seconds.
3. Set *Speed pick delay 1* to 0.100 seconds.
4. Select *Acquire* from the *Write privilege* menu. Then press the “yes” button on the iBox to grant the privilege.
5. Click *Send* to send the changed values to the controller.

Construction Mode

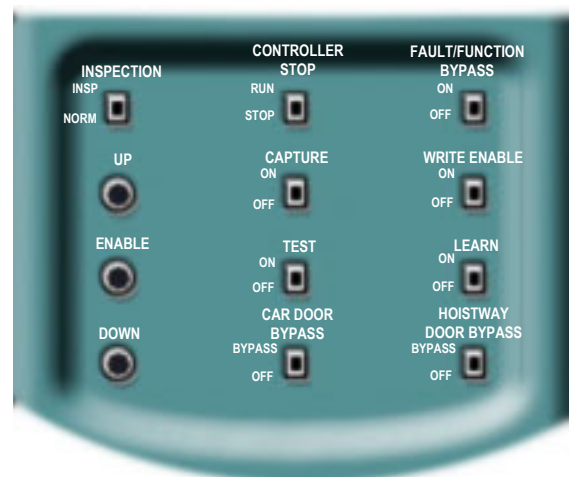
Calibration Procedure

Calibration allows iControl to learn the characteristics of the machine brake.

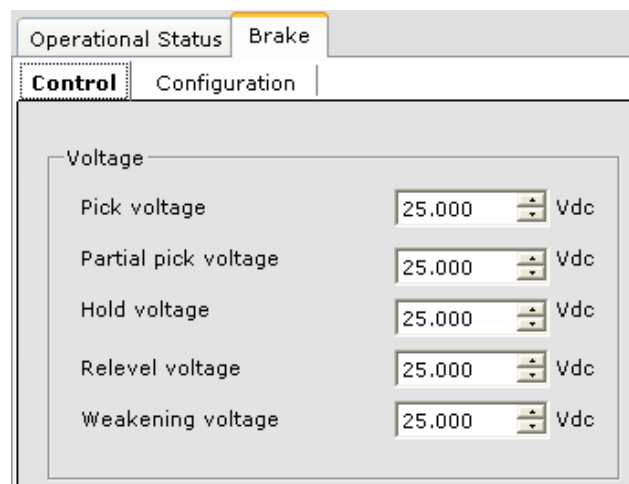
1. Verify that the iBox *Safety OK LED* is solidly on.
2. Set the iBox *Learn* switch to ON.
3. Place the iBox *Inspection* switch in the INSP position. Verify that the iBox displays Machine Room Insp.

Note

If the iBox does not indicate that you are in Machine Room Inspection even though the Inspection switch is in the INSP position, another inspection mode (i.e., cartop inspection) is probably active. Other inspection modes must be OFF before Machine Room Inspection can be activated.

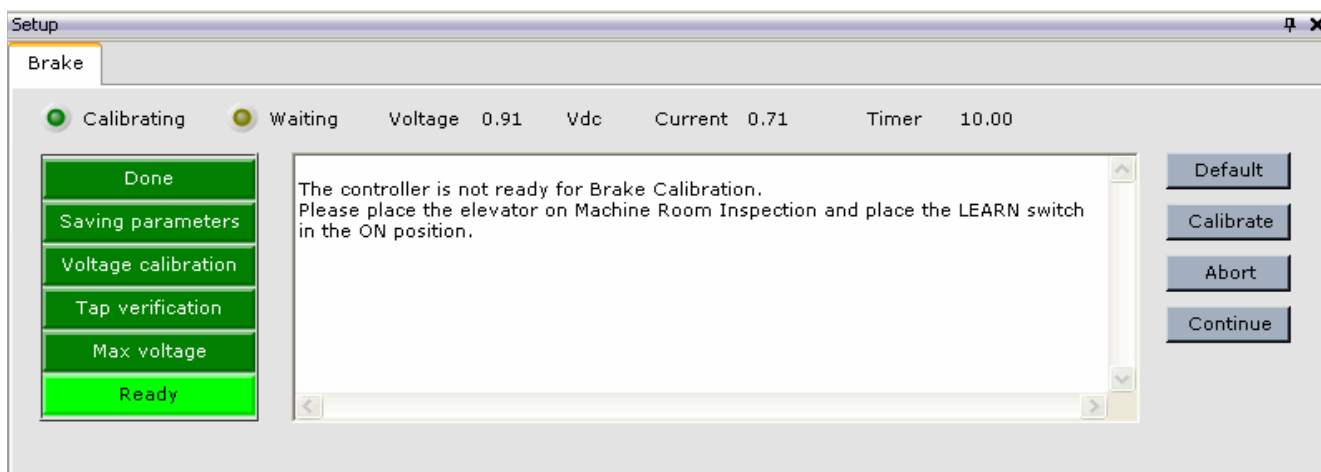


4. Display the *Brake > Control tab* (Configuration > Brake > Control tab).
5. Set *Pick voltage* and *Hold voltage* as shown on your job prints.
6. For now, set *Releveling voltage* and *Weakening voltage* to the same value as Pick voltage. (This parameter can be fine tuned during final adjustment.)



7. On the *Setup > Brake* tab the *Ready* indicator should be On. The text box will indicate any steps that need to be performed.
8. With the *Ready* indicator lighted, click the *Calibrate* button. As calibration begins, watch the display on the tab. The display will report calibration progress and will also display instructions if you need to complete additional steps along the way. The Waiting LED will light while waiting for an instruction to be completed. If necessary, click Continue to continue calibration after performing an instruction.

2



9. When iControl is ready to begin learning, the screen will display “The controller is waiting for a direction command in order to proceed. You may command either the Up or the Down direction.” When it does, press and hold the iBox Enable and Up (or Down) buttons. (The car will not be moved during this procedure.)
10. The Calibrating LED will light as calibration begins. Continue to hold the Enable and Up (or Down) buttons pressed. The progress indicators to the left of the display will keep you informed as calibration progresses.
11. When the Done indicator lights, release the Enable and Up (or Down) buttons. Calibration is complete.
12. Set the iBox Learn switch to OFF.

The following messages may be displayed during brake calibration.

Table 2.5 Brake Calibration Status Messages

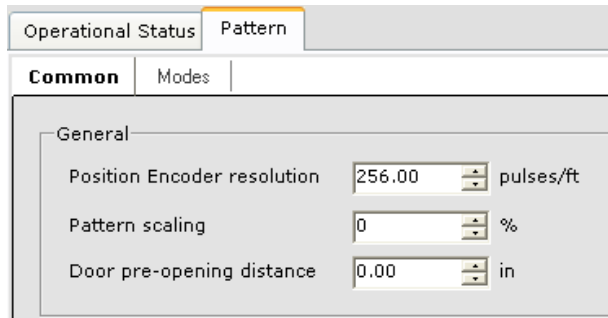
Message/Meaning
The controller is not ready for Brake Calibration. Please place the elevator on Machine Room Inspection and place the LEARN switch in the ON position.
The system is waiting for the CONTINUE button to be pushed.
The system is ready to start the calibration process. Push the CALIBRATE button if you wish to start calibrating the brake or push the DEFAULT button if you wish to load the default calibration values.
The controller is waiting for a Direction command in order to proceed. You may command either the UP or the DOWN direction.
The controller is done with brake calibration. Please drop direction and turn the LEARN switch OFF.

Construction Mode

Verify Brake Picking

To verify that the brake is picking properly:

1. Verify that the iBox *Safety OK LED* is solidly on. Display the *Pattern > Common tab* (View > Configuration > Pattern > Common tab).
2. Set Pattern Scaling to 0% and click Send to send the changed parameter to iControl.



3. Display the *Operational Status tab*. Note that Brake voltage is charted in the Machine section of the Operational Status tab.
4. With a digital volt meter set to DC volts, measure brake output voltage across terminals B1 and B2 (located just below the iBox panel). (A typical terminal block is shown to the right. B1 and B2 will be labeled.)
5. Press the Enable and Up (or Down) buttons to lift the brake. Verify that the voltages on the volt meter are the same as the commanded voltage (Pick voltage / Hold voltage parameters on the Brake > Voltages tab) and Brake voltage on the Operational Status tab.

The brake should lift but the car should not move since Pattern scaling is set to command zero speed.



6. Change the Pick and Hold voltages to one half the current value of the Pick voltage parameter and save the new values.
7. Press and hold Enable and Up (or Down) and verify brake voltage again. (The brake will probably not lift since we are outputting only half the Pick voltage.)
8. Change the Pick and Hold voltages back to their job print settings and save them.
9. Change Pattern scaling (Pattern > Common tab) to 100% and send that value to the controller.

Running on Machine Room Inspection

Once you are satisfied that the brake is picking properly, you need to verify proper car movement and motor current, troubleshoot if car movement is not as it should be, and calibrate speed using a handheld tachometer.

Verifying Car Movement (System 12 SCR Drive)

1. On the Pattern > Common tab, set Pattern scaling = 100%.
2. Set the iBox Inspection switch to INSP and run the car using the Enable and Up (or Down) switches.

If the car runs satisfactorily, but in the opposite direction commanded:

1. Display the Configuration > Drive > General tab and change the *Rotational direction* parameter in the Speed Reference section.



2. If you have not yet done so, select *Acquire* under the *Write privilege* menu and press the “Yes” softkey on the iBox to grant yourself write permission. In iView, click the *Send* button to send the changed value to iControl.
3. Reverse the motor field wires at MF1 and MF2.
4. Run the car using the Enable and Up (or Down) buttons. Verify that it travels in the direction commanded.

If the Car “Runs Away”

1. If using an encoder, reverse the Rotational direction as described above.
2. If using a tachometer, swap the TS (+) and TC (-) connections as described above.

Feedback from the encoder or tach controls car speed. If the tach is incorrectly connected or the encoder speed reference set incorrectly, the car is continuously accelerated rather than controlled.

If the Current Limit LED Lights

If the Current Limit LED on the System 12 SCR Drive turns ON:

1. Increase the value of *Armature current limit* on the Configuration > Drive > Safety tab slightly (10% increments) to allow more torque output.

If any of the System 12 SCR Drive protective devices trip, the DRIVE READY light will go OFF. Push the Fault Reset button on the iBox and the READY light will turn ON again after a few seconds (if there is no fault in the System 12 SCR Drive).

Construction Mode

Calibrating Actual Car Speed (System 12 SCR Drive)

Car speed settings on the Configuration > Drive > General tab may be used to make initial adjustments to car speed if necessary.

Note

If iLand and iLink are already installed, use the landing system speed (Speed/Actual on the Operational Status tab) as the speed reference for calibration. If not, use a hand-held tachometer.

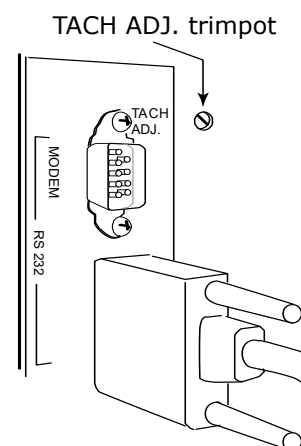
1. If you are using a hand-held tachometer, hold it against the hoist or governor rope on the machine. The car must run at the commanded inspection speed. (iView: Configuration > Pattern > Modes tab/Inspection - High speed). If the measured inspection speed (actual speed) does not match the commanded value, verify the following:
2. Verify that *Pattern scaling* is set to 100% (Configuration > Pattern > Common tab).

Analog Tachometer

1. If the job uses an analog tachometer, set the *Scaling* parameter (Configuration > Drive > General tab > Speed Reference section) to an initial value of 1.000.
2. Display the Virtual Oscilloscope (View > Diagnostics > Virtual Oscilloscope).
3. Set Test point 1 = Pattern (Command) and Test point 2 - Speed Feedback.
4. Run the car and verify that the Pattern (Command) and Speed Feedback (Test point 1 and 2 traces) are the same amplitude. On the iView oscilloscope (or a DVM connected between STP1 and STP2), compare Pattern Command and Speed Feedback readouts. They must match within 0.050 VDC while the car is running at steady state speed. If not, adjust the TACH ADJ trimpot (upper right corner of iBox). The iPower Box door can be opened slightly to improve access to the TACH ADJ. trimpot. *Turn the pot slowly.* This is a 15 turn trimpot, but the adjustment from maximum to minimum on the virtual oscilloscope is less than 1/2 turn.

If the trimpot adjustment is insufficient, adjust the Scaling parameter (Drive > General tab > Speed Reference section) up or down in 0.1 increments (remember to *Send* the value to the controller) and again adjust the TACH ADJ. trimpot.

Speed Reference	
Reference type	Tachometer
Resolution	60.000 V/k or pps
Rotational coupling ratio	1.000
Rated motor RPM	1150.000 RPM
Rotational direction	Forward
Scaling	1.000

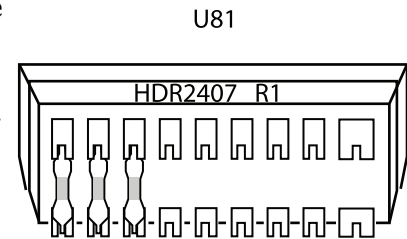


(Digital) Encoder

1. Adjust the *Rotational coupling ratio* (Configuration > Drive > General tab) up or down in 0.1 increments until the car is running at the correct speed.

Current Limit Adjustments (System 12 SCR Drive)

This section describes making current limit adjustments for the System 12 drive. Drive voltage and current capabilities are tailored to the needs of the job by placing a specific “header” in socket U81 on the drive SCR-LGA board. The header is labeled. For example, “HDR2407” in our example.



The first two numbers represent armature voltage; the last two represent the armature current for which the drive is set. Only the most significant two digits are used to represent values. For example, 24 and 07, indicate 240V and 75A respectively. Loosen the four captive screws holding the System 12 Drive cover in place and remove the cover.

The large circuit board at the top of the drive is the SCR-LGA board. The header is approximately at the top, center of the board.

- Check the header label and verify that it looks correct for the hoist motor being used on this job. (Motor plate armature voltage and armature current labels approximately “match” the drive header label.)

The drive header label should also match the armature voltage and current specifications shown in the prints for the job (see Output Ratings on page -D1).

Construction Mode

Armature Voltage Limit (System 12 SCR Drive)

- Calculate and set the Armature voltage limit for the job (Configuration > Drive > Safety tab) using the formula: $(\text{Motor Rated Armature Voltage} \div \text{Displayed Header Voltage}) \times 100$. Set the *Armature voltage limit* to the calculated value and Send the setting to iControl. (Example: $(350 \div 400) \times 100 = 87.5$, set Armature voltage limit to 87%.)

The screenshot shows the iControl software interface with the 'Drive' section selected. Under the 'Safety' tab, the 'Armature voltage limit' is set to 100%. A line points from the text in the preceding list item to this specific setting.

Parameter	Value	Unit
Following error	10	%
Tach failure	50	%
Voltage safety calibration	1.400	
Current safety calibration	0.000	
Synthetic armature voltage low-pass frequency	2.001	Hz
Synthetic armature current low-pass frequency	0.500	Hz
Armature voltage limit	100	%
Armature current limit	160	%
Rated loop over-current	180.000	amps
Loop over-current fault time	30.000	sec

Armature Current Limit (System 12 SCR Drive)

- Verify that the *Armature current limit* setting is near the default setting of 160%.
- Run the car and observe the System 12 drive Current Limit LED. If the LED lights, increase *Armature current limit* in 5% increments until the LED stays off when the car is run. (Remember you must *Send* changes to iControl before they take effect.) You should not have to go above about 180% if the car is counter-balanced correctly.

Car Response and Speed Loop Gain (System 12 SCR Drive)

Only if necessary, car response may be stiffened by increasing PID-Standard Integral error and/or Proportional error on the Configuration > Drive > Control tab. At this point, it is only necessary to prevent the car from sagging severely. Do not attempt fine tuning yet.

Increasing Standard Integral or Proportional gain provides stiffer response while decreasing them dampens and loosens response. If too little Integral gain (close to 0) is used, the car will drift when the brake is lifted and control may be sloppy during all aspects of operation, or severely affected by varying loads. Too much Integral gain and/or Proportional gain will cause unstable operation, violent oscillation, or overshoot. If some vibration is encountered throughout the run, increase Speed Control, Armature voltage/*Dampening-speed* (Configuration > Drive > Dampening tab) by 0.01 until the oscillation stops (adding Dampening speed voltage will add lag to the system). Integral gain must be a value greater than 0.0. Otherwise, there may be a steady-state speed error.

2

The screenshot displays the 'Control' tab of the iControl DC Drive Startup configuration window. The window is divided into several sections:

- Options:**
 - ☐ Start gain (normal)
 - ☐ Start gain (relevel)
 - ☐ Steady-state gain (normal)
 - ☐ Stop gain (normal)
 - ☐ Armature test
 - Current: 10 %
- Current:**
 - Continuous:**
 - Proportional: 1.000
 - Integral: 1.000
 - Discontinuous:**
 - Proportional: 1.000
 - Integral: 1.000
- Miscellaneous:**
 - Error compensation: 0.750
- PID:**
 - Standard:**
 - Proportional: 4.000
 - Integral: 4.000
 - Differential: 0.000
 - Start (normal):**
 - Proportional: 4.000
 - Integral: 4.000
 - Differential: 0.000
 - Transition time: 0.300 sec
 - Stop (normal):**
 - Integral: 4.000
 - Steady-state (normal):**
 - Proportional: 2.000
 - Integral: 2.000
 - Differential: 0.000
 - Transition delay: 1.000 sec
 - Transition time: 1.000 sec
 - Start (relevel):**
 - Proportional: 4.000
 - Integral: 4.000
 - Differential: 0.000
 - Transition time: 1.000 sec

Construction Mode

Speed Loop Gains (*System 12 SCR Drive*)

If there is oscillation while running:

1. On the Configuration > Drive > Control tab, slowly decrease PID-Standard Proportional error and Integral error until oscillation stops. Verify the *Option-Start gain (normal)* is not checked.

In the following steps, adjust the response of the car to reduce empty car rollback while avoiding the oscillations that can occur if too much feedback is adjusted into the system. For these adjustments, monitor Tachometer and Raw Pattern on the iView Virtual Oscilloscope.

1. The empty car may drift up due to counterweighting even when an attempt is made to move it down. Increase PID-Standard Proportional error on the Configuration > Drive > Control tab slowly while watching for severe overshoot or oscillations, such as rapid jiggling or slow bobbing. If jiggling begins, decrease PID-Standard Proportional error. While decreasing it, note a narrowing of the difference between pattern and tach signals.
2. Next, increase PID-Standard Integral error slowly. Now there will be less rollback at takeoff and the car will reach the desired speed faster. Too much Integral gain will cause a speed overshoot or a slower bobbing oscillation.
3. If the car snaps away from the floor, increase *Speed pick delay 1* on the Brake > Timers tab. At this point, a little rollback is not critical as later adjustments will compensate for it.
4. Monitor the actual car motion by viewing Raw Pattern on the Virtual Oscilloscope. Positive voltage should indicate the up direction and negative voltage the down direction. While monitoring, adjust the values of PID-Standard Proportional and Integral gains to achieve best response. For now, leave PID-Standard Differential Error = 0.00.

Error Compensation If oscillation or rollback is still excessive, try adjusting *Error compensation* on the Configuration > Drive > Control tab. The default setting for this parameter is 0.250.

1. Adjust *Error compensation* upward in 0.250 increments, sending the new value to the controller and running the car each time to see the effect on oscillation or rollback.

The final Error compensation setting should be below 9.0. The goal here is to obtain acceptable response during Inspection operation of the elevator. Fine tuning for turnover to normal operation is accomplished in Section 4 of this guide.

Following Error Margin

The Following error is used for fault detection purposes only. The Following error parameter (Configuration > Drive > Safety tab) sets the allowed margin of deviation from commanded speed, as a percentage. A Tach Error fault is generated when the difference between intended pattern speed and speed feedback exceeds the Following error margin. Calibrate speed feedback to match the intended pattern.

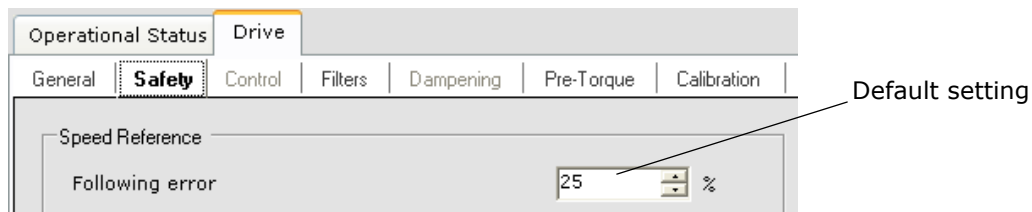
1. On the Configuration > Pattern > Modes tab, verify that Standard Profile/High Speed and Inspection Profile/High Speed parameters are set correctly for this job.
2. Verify that actual car speed on Inspection is equal to the Inspection High speed setting. [Please refer to “Calibrating Actual Car Speed \(System 12 SCR Drive\)” on page 2-38.](#)

Verify Pattern Command and Drive Speed Feedback

1. From the View > Diagnostics menu, select Virtual Oscilloscope, and set Test point 1 = *Pattern (Command)* and Test point 2 = *Speed Feedback*.
2. Run the car on Inspection and verify that the Speed Feedback trace is following the Pattern (Command) trace. (If Standard Profile/High Speed, Inspection Profile/High Speed, and actual car speed are correct, this will be the case. If not, verify and correct these settings.)

Set the Following Error

- Set the Following error parameter (Configuration > Drive > Safety tab). It is recommended to perform the Tach Error Tripping Threshold Adjustment procedure at this time. [Please refer to “Tach Error Tripping Threshold Adjustment” on page 2-44.](#)



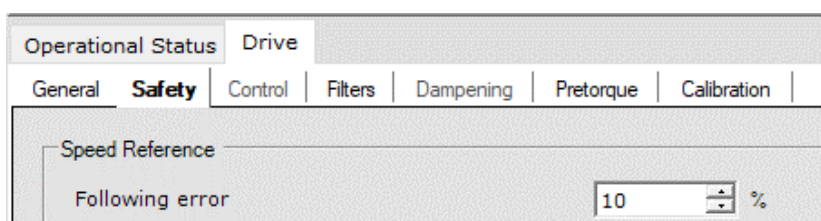
Caution

The default setting for the Following error parameter is 25%. For a car that has been properly adjusted as described above, after performing the Tach Error Tripping Threshold Adjustment, a Following Error setting of 10% is fairly typical. You may choose to leave the Following error parameter at the default setting or higher, but keep in mind that Following error is a percentage of speed. On a 500fpm job a 25% Following Error allows a 125fpm contract speed deviation before a fault is generated.

Construction Mode

Tach Error Tripping Threshold Adjustment

1. On the iView Virtual Oscilloscope, set Test point 1 to *Speed Feedback* and Test point 2 to *Tach Error Upper Limit*.
2. On Inspection, run the car several times between floors in both directions. Monitor the traces and verify that the Speed Feedback and Tach Error Upper Limit traces track but remain comfortably separated.
3. Set Test point 2 to *Tach Error Lower Limit*.
4. On Inspection, run the car several times between floors in both directions. Monitor the traces and verify that the Speed Feedback and Tach Error Lower Limit traces track but remain comfortably separated.
5. Estimate the smallest percentage of Following error that would allow the Feedback and Limit traces to remain separated.
6. Increase the calculated value by 1/2 and set Following error to this value. For example, if the calculated percentage is 6%, add that to 1/2 of 6 (3) and set Following error to 9%. Remember to send the change to iControl.
7. Repeat steps 1 through 4, verifying that Feedback and Limit traces remain separated. If they do not, recalculate and reset Following error.



Note

A Following error setting of 10% is fairly typical. Keep in mind that the Following error margin is a percentage of commanded speed. On a 500fpm job a 10% Following error allows a 50fpm deviation from contract speed before a fault is generated.

Tach Failure Calibration (System 12 SCR Drive)

- On the iView Virtual Oscilloscope, set the test points:
 - Test point 1 = Synthetic Signal
 - Test point 2 = Speed Feedback.
- On Inspection, run the car several times between floors in both directions. Monitor the traces and verify that the Speed Feedback and Synthetic Signal traces track.
- If not, adjust *Voltage safety calibration* (Configuration > Drive > Safety tab) as little as possible to get Synthetic Signal to track Speed Feedback. (If necessary to match the signals, adjust *Current safety calibration* (Drive > Safety tab) in small increments. This will bring the signals closer together, reducing one and increasing the other but with far less effect than Voltage safety calibration adjustment.)
- Estimate the smallest percentage value that would allow the Speed Feedback and Synthetic Signal traces to remain separated.
- Add 15% to 20% to the calculated value and set the *Tach failure* parameter to this value. For example, if the calculated percentage is 15%, add 15% to that and set Tach Failure to 30%. Remember to send the change to iControl.

2

Operational Status		Drive	
General	Safety	Control	Filters
Dampening Pretorque Calibration			
Speed Reference			
Following error	10	%	
Tach failure	50	%	
Voltage safety calibration	1.400		
Current safety calibration	0.000		
Synthetic armature voltage low-pass frequency	2.001	Hz	
Synthetic armature current low-pass frequency	0.500	Hz	

Construction Mode

Additional Adjustments and Checks

1. On the Configuration > Pattern > Common tab, set *Pattern scaling* to 100%.
2. On the Configuration > Pattern > Modes tab, set *Inspection/High Speed* to the desired value (maximum Inspection speed is 150 fpm). Set the *Inspection/Low Speed* to 25 fpm.



Note

If the Terminal Switches (UNT5/DNT5) have been installed, and you wish to use the reduced inspection speed option, you may enable it by checking *Reduced inspection speed* on the Configuration > Pattern > Modes tab. If not, you may enable Reduced Inspection speed after the Terminal Switches are installed. (Enabling it now, without switches, would cause the car to run at 25 fpm.)

3. Stop the car so that the car top can be accessed from the top hall door.



Note

Car Top Inspection operation automatically overrides Car Panel Inspection operation.

4. Run the car from the Car Top Inspection station, checking the up and down buttons and the stop switch.
5. While running the car, check clearances and door locks. When all doors are locked, remove all jumpers from door lock terminals.
6. Verify directional limit switch and final limit switch operation and position according to page MRW1 or MRW2 of the job prints. Ideally, when the car is on Inspection operation, the distance between the two switches should be greater than the distance required to stop the car after the direction command is removed.
7. Verify that the brake has sufficient tension to hold the car under all conditions likely to be encountered during the installation phase.
8. You may now proceed to Section 3, Inspection Mode.

Drive Startup (Quattro DC Drive)

For Drive Startup instructions for the MCE System 12 SCR Drive see [“Drive Startup \(System 12 SCR Drive\)” on page 2-23](#).

Each iController is shipped with completed drive parameter sheets and a drive manual. Based on the field survey information, all drive unit, field-adjustable parameters are set and noted on the parameter sheets. However, **it is essential to verify all drive parameter settings before startup.**



Danger

High voltage may be present in the motor circuit, even when the motor is not rotating. Remove AC power and wait for 5 to 10 minutes before removing the drive cover to allow capacitors to discharge. Do not touch any component without verifying that high voltage is not present.

Drive Keypad

Become familiar with the drive keypad. Refer to the Magnetek Quattro DC Drive manual to learn how to navigate the menus and change drive parameters (see Drive Operation and Feature Overview > Parameters).



Caution

Do not change drive parameters while the elevator is running. Incorrect settings can cause erratic elevator operation. Please refer to the drive parameters sheet provided with the controller or see [“Quattro DC Drive DC Parameters Quick Reference” on page 9-49](#).

Initial Drive Settings (Quattro DC Drive)

Verify the Quattro DC Drive parameters below before startup. Check the remaining parameters using the drive documentation or the Parameters Quick Reference shipped with the controller. If drive documentation is not available, a list of parameters is included in the Reference Section of this manual.

A1 Drive Menu Parameters

- Contract Car Spd = job specific
- Contract Mtr Spd = job specific
- Encoder Pulses = job specific
- Brake Pick Time = 0.00

A4 MS Pwr Convert Menu Parameters

- Arm Resistance = enter from A6-Save Meas Arm R after auto-tune
- Arm Inductance = enter from A6-Save Meas Arm L after auto-tune
- Motor Field Res = enter from A6-Save Field Res after auto-tune
- Motor Field Tc = enter from A6-Save Field Tc after auto-tune
- Gain selection = Use Saved Par

A5 Line Side Power Converter Menu Parameters

- Input L-L Volts = job specific

Construction Mode

A6 Motor Menu Parameters

- Rated Motor Curr = job specific
- Armature Voltage = job specific
- Full Fld Current = job specific
- Weak Fld Current = job specific
- Standby Field = job specific
- Armature IR Drop = enter from A6-Save IR Drop after auto-tune

C1 User Switches Menu Parameters

- Spd Command SRC = Analog Input
- Tach Filter = On
- Pretorque Source = Analog Input
- Ramped Stop Sel = Ramp On stop
- Ramp Down En Src = Run Logic
- DSPR Enable = Enable

C2 Logic Inputs Menu Parameters

- Logic Input 6 (TB1-6) = No Function
- Logic Input 7 (TB1-7) = No Function
- Logic Input 8 (TB1-8) = No Function

C3 Logic Outputs Menu Parameters

- Relay Coil 1 (TB2-1/3/5) = No Fault
- Relay Coil 2 (TB2-8/10/12) = Speed Reg Rls

iControl Parameter Settings (Quattro DC Drive)

Verify the following iControl parameter settings using iView:

Drive Configuration (Controller > View > Configuration > General tab)

- Options:
 - Drive type = Quattro
 - Drive interface = Analog
- System: > Normal rate limited Stop = drive tuning specific - initially set to 2.0
- Speed Reference: > Reference type = Tachometer

Brake Configuration (Controller > View > Configuration > Brake > Control tab)

- Timer:
 - Pick Delay = job specific - initially set to 1.500
 - Speed pick delay 1 = job specific - initially set to 2.25
 - Speed Pick delay 2 = job specific - initially set to 0.750

Pattern Configuration (Controller > View > Configuration > Pattern > Common tab)

- General: > Lag Delay = drive tuning specific - initially set to 0.3
- Leveling: > drive tuning specific - initially set to 2.0

Automated Drive Setup (Quattro DC Drive)

Before adjusting the drive, verify:

- the iBox Safety OK LED is ON
- the iBox Door Locked LED is ON
- the iBox Fault LED is OFF

1. Display the Drive setup layout (Controller > View > Layouts > Drive)

2

The screenshot displays the 'Setup' window for a Quattro DC Drive, specifically the 'Drive' tab. The interface is divided into several sections:

- Operational Status:** Includes tabs for General, Safety, Control, Filters, and Dampening.
- Offsets:** A list of parameters with numerical input fields:
 - Current loop integral: 1.000
 - Current sensor: 1.000
 - Zero crossing: 0.000
 - Output DAC: 0.000
- Input ADC:** A list of parameters with numerical input fields:
 - Tachometer: 0.000
 - Brake current: 0.000
 - Brake voltage: 0.000
 - Motor field weakening: 0.000
 - Armature current: 0.000
 - Armature voltage: 0.000
 - Absolute armature current: 0.000
 - Motor field current: 0.000
 - Motor field voltage: 0.000
 - AC phase A current: 0.000
 - AC phase B current: 0.000
 - AC phase C current: 0.000
- Calibration Status:** A table showing the status of various calibration steps.

	Input ADC	Output DAC	Current sensor	Current loop integral
Inactive	●	●	●	●
Idle	●	●	●	●
N/A	●	●	●	●
Calibrating	●	●	●	●
Internal error	●	●	●	●
Threshold error	●	●	●	●
Calibrated	●	●	●	●
Saved	●	●	●	●
- Calibration Data:** A list of parameters with numerical values:
 - Current loop integral: 0.000
 - Current sensor: 0.000
 - Output DAC: 0.000
 - Input ADC:**
 - Tachometer: 0
 - Brake current: 0
 - Brake voltage: 0
 - Motor field weakening: 0
 - Armature current: 0
 - Armature voltage: 0
 - Abs armature current: 0
 - Motor field current: 0
 - Motor field voltage: 0
 - AC phase A current: 0
 - AC phase B current: 0
 - AC phase C current: 0

2. Follow the on-screen instructions, "To perform the drive offsets calibration, ..." (calibrates Input ADC and Output DAC offset).
3. Once the calibration is *Done*, the offset values shown on the Setup > Drive tab should match those shown on the Drive Configuration tab (Configuration > Drive > Calibration tab).

Construction Mode

Manual Drive Setup Procedure (Quattro DC Drive)

MCE recommends performing the Automated Drive Setup Procedure previously described. However, if the automated procedure is unsuccessful, the manual procedure may be used. The

1. Verify that Pattern scaling is set to 100% (Configuration > Pattern > Common tab).
2. With zero speed commanded (car idle), observe the D1-Speed Command on the Quattro Drive operator and verify that the pattern voltage applied to the AC drive unit reads 0.0 volts. If not, adjust Output DAC on the Drive/Calibration screen by entering and sending small negative or positive values until the reading is 0 fpm. The DAC adjustment range is from -0.25 to $+0.25$ units.
3. On iView, display the Drive - Offsets (Configuration > Drive > Calibration tab). Also display the Virtual Oscilloscope (View > Diagnostics > Virtual Oscilloscope) and set Test point 1 = Tachometer Signal.
4. Adjust the Input ADC - Tachometer parameter by entering and sending small negative or positive values until the Test point 1 value is as close to 0.0 as possible (A 20mV). The ADC adjustment range is from -0.5 to $+0.5$.

Input ADC	
Tachometer	0.000
Brake current	0.000
Brake voltage	0.000

5. Set the Virtual Oscilloscope Test Point 1 = Brake Current Feedback and then adjust the Input ADC - Brake current parameter by entering and sending small negative or positive values until the Test point 1 value is as close to 0.0 as possible.

Set the Virtual Oscilloscope Test Point 1 = Brake Voltage Feedback and then adjust the Input ADC - Brake voltage parameter by entering and sending small negative or positive values until the Test point 1 value is as close to 0.0 as possible.

Auto Tune Procedure (Quattro DC Drive)

The Auto Tune Procedure is described in the Appendix of the Magnetek Quattro DC Drive manual. The procedure allows the drive to calculate the following motor parameters:

- Armature Inductance
- Armature Resistance
- Field Resistance
- Field Time Constant
- Armature Resistance Voltage Drop at Motor Rated Current

1. Temporarily jumper terminals TB1 to F2 and TB4 to F1 (located in the Quattro Drive Cabinet on the top). These terminals should also be available on the terminal block at the bottom of the Controller cabinet (please see prints). This will bypass the PM1 contacts and allow the Quattro DC Drive to pick its ME contactor (motor contactor).
2. Care must be taken not to short the secondary of the transformer that is the source of power for these terminals.
3. On the A4 MS Pwr Convert Menu, auto-tune the motor with the Auto Tune Motor parameter. With the parameter selected, press the Enter key twice to begin the process (please see Auto Tune Procedure in the Appendix of the Quattro Technical Manual).
4. After the auto-tune process is completed, transfer the tuned parameters from the A6 menu to the A4 menu.
5. Remove the temporary jumpers from terminals TB1/F2 and TB4/F1.

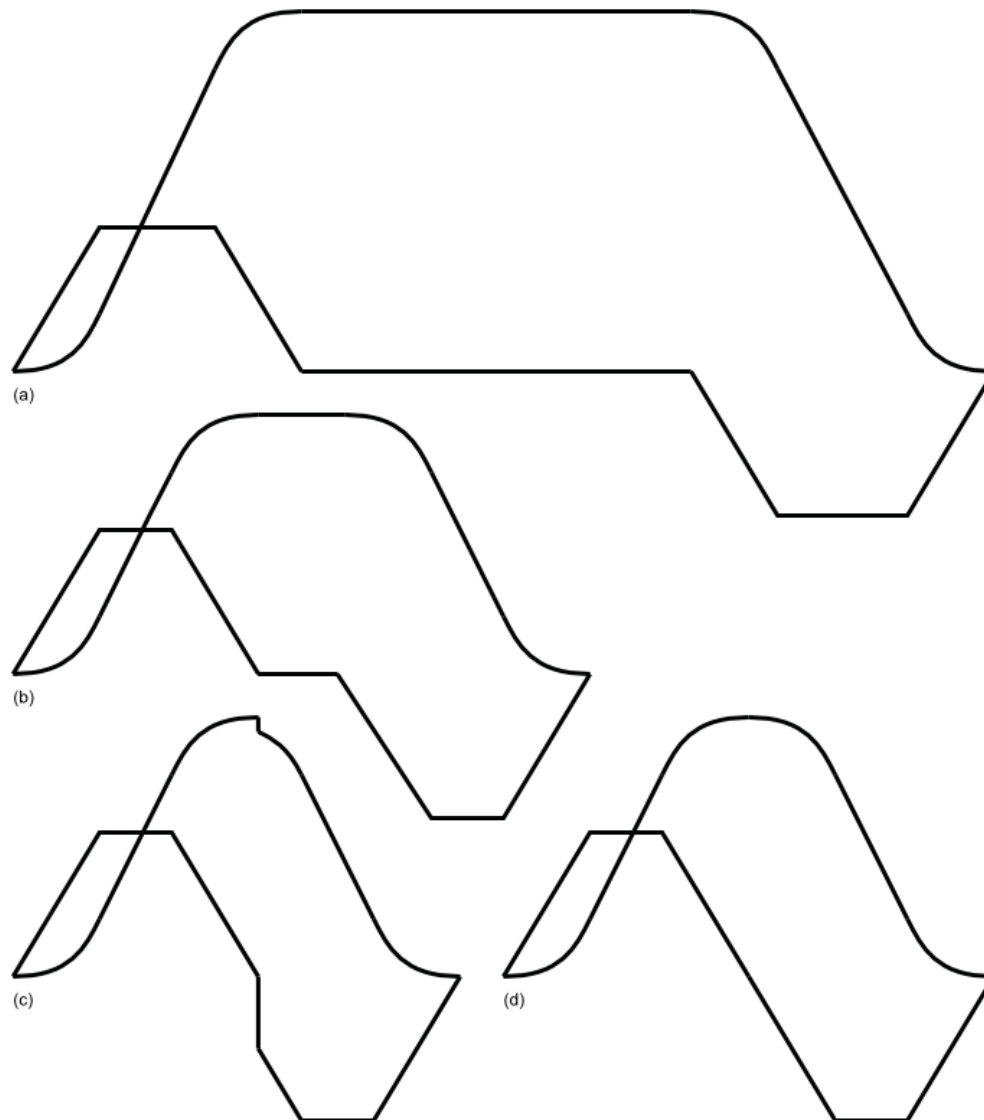
Drive Response Adjustments (Quattro DC Drive)

Please review the following description of Quattro DC Drive response adjustments:

1. For the initial setup, it is recommended to set Pick delay, Speed pick delay 1, and Speed pick delay 2 (Configuration > Brake > Timer tab) to a value long enough to allow time for the drive to respond to a run request.
 - If the Pick delay is too short, a DRO fault will occur.
 - Once the elevator is moving under control in the appropriate direction and at the commanded speed, these delays can be adjusted to a more optimum value.
 - Set Pick delay to 1.500 seconds.
 - Set Speed pick delay 1 to 1 to 1.600 seconds.
 - Set Speed pick delay 2 to 0.750 seconds.
2. The amount of lag between the commanded speed and the drive's response can vary depending on the tuning of the Quattro drive. As a result, as the drive is adjusted, the Lag delay parameter (View > Configuration > Pattern > Common > General) will need to change as well.
 - If the lag delay is insufficient, the elevator will plow into a landing. The acceleration and jerk rate during deceleration to a landing will be greater than profile values indicate.
 - If the lag delay is excessive, the elevator will drag into a landing. The acceleration and jerk rate during deceleration to a landing will be less than profile values indicate. In addition, a discontinuity in the profile will occur during the transition from acceleration to deceleration when moving between floors where a stabilized speed is not reached. Under normal operation, this would occur when contract speed is not reached.
 - To adjust the Lag delay, observe "Acceleration (Raw)" on the iView virtual oscilloscope (View > Diagnostics > Virtual Oscilloscope). Perform one-floor-runs and observe the transition through zero (peak acceleration transitioning to peak deceleration as the elevator reaches a peak speed that is less than contract speed). This transition should have no vertical discontinuity (too much Lag delay) or horizontal discontinuity (too little Lag delay). This transition adjustment is only valid when the elevator is unable to reach the maximum speed for a particular profile (unable to reach contract speed under normal operation). A physical oscilloscope may be required to see this transition properly. Adjust the Lag delay until the horizontal discontinuity is eliminated ([see "Velocity and Acceleration Curves" on page 2-52](#)).
 - For initial setup, set the Lag delay parameter to 0.3 seconds (View > Configuration > Pattern > Common > General).

Construction Mode

Figure 2.4 Velocity and Acceleration Curves



Velocity and acceleration: (a) profile at contract speed; (b) insufficient lag compensation with profile at less than contract speed; (c) excessive lag compensation with profile at less than contract speed; (d) optimum lag compensation with profile at less than contract speed

3. Depending on the tuning of the Quattro drive, the leveling distance may have to be generous to allow the elevator's speed to completely transition to the requested leveling speed.
4. For initial setup, set the Leveling distance parameter to 2.0 inches (View > Configuration > Pattern > Common > Leveling). Once the drive is tuned, this parameter may be adjusted to a more optimum value.
5. Depending on the tuning of the Quattro drive, the transition from leveling speed to zero speed may be sluggish.
6. For initial setup, set the Normal rate limited stop parameter to 2.0 ft/s² or more (View > Configuration > Drive > General > System). Once the drive is tuned, this parameter may be adjusted to a more optimum value.

Brake Calibration

This section describes brake calibration for DC systems using the iField Module advanced braking system. The iField module electronically controls brake voltage output.

Rollback Compensation

In later adjustments, drive and motor settings will be adjusted to control rollback. Since that has not yet been done, we need to control rollback by adjusting Brake Pick Delay and offsetting Speed pick delay 1 so that the brake remains set until the motor builds sufficient torque.

1. From the Controller > View menu select *Layout* and click *Brake*.

2. On the Brake > Control tab, verify that *Pick delay* is set to 1.500 seconds.
3. Verify that *Speed pick delay 1* is set to 1.600 seconds.
4. Select *Acquire* from the *Write privilege* menu. Then press the “yes” button on the iBox to grant the privilege.
5. Click *Send* to send the changed values to the controller.

Note

These initial settings should allow the Brake Calibration procedure to be performed without generating faults. They will be modified as the car’s performance is fine tuned.

Construction Mode

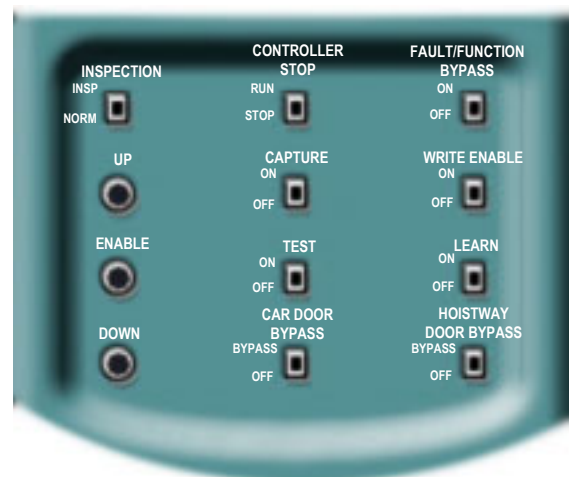
Calibration Procedure

Calibration allows iControl to learn the characteristics of the machine brake.

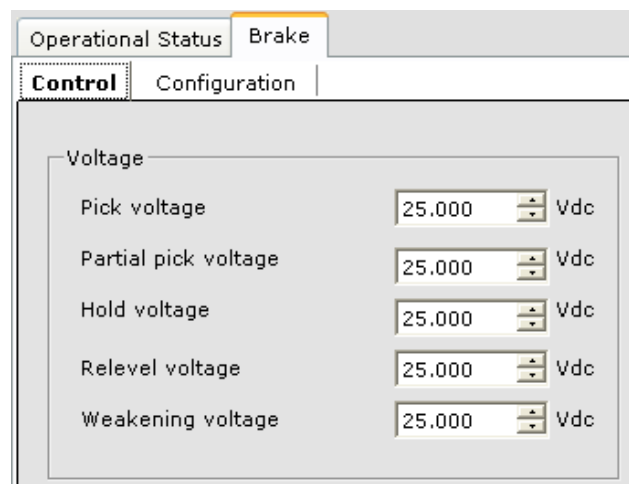
1. Verify that the iBox *Safety OK LED* is solidly on.
2. Set the iBox *Learn* switch to ON.
3. Place the iBox *Inspection* switch in the INSP position. Verify that the iBox displays Machine Room Insp.

Note

If the iBox does not indicate that you are in Machine Room Inspection even though the Inspection switch is in the INSP position, another inspection mode (i.e., cartop inspection) is probably active. Other inspection modes must be OFF before Machine Room Inspection can be activated.

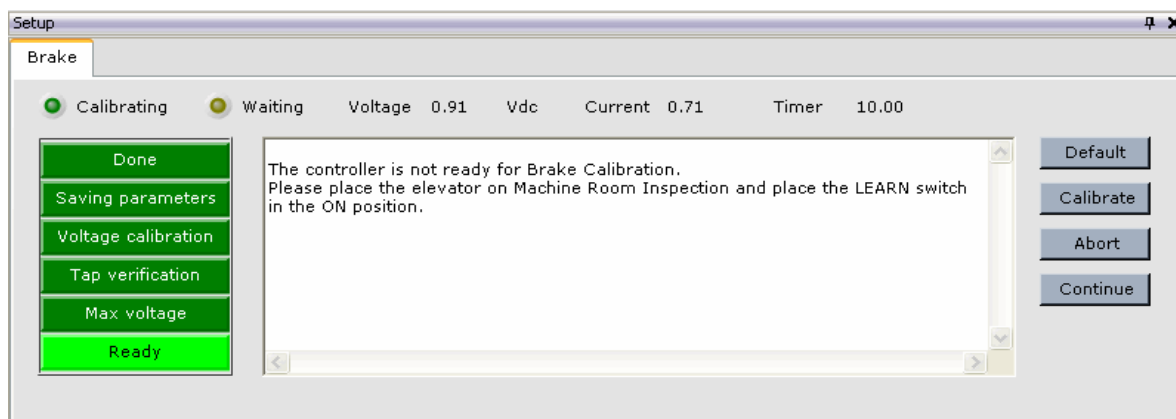


4. Display the *Brake > Control tab* (Configuration > Brake > Control tab).
5. Set *Pick voltage* and *Hold voltage* as shown on your job prints.
6. For now, set *Releveling voltage* and *Weakening voltage* to the same value as Pick voltage. (This parameter can be fine tuned during final adjustment.)



7. On the *Setup > Brake* tab the *Ready* indicator should be On. The text box will indicate any steps that need to be performed.
8. With the *Ready* indicator lighted, click the *Calibrate* button. As calibration begins, watch the display on the tab. The display will report calibration progress and will also display instructions if you need to complete additional steps along the way. The Waiting LED will light while waiting for an instruction to be completed. If necessary, click Continue to continue calibration after completing an instruction.

2



9. When iControl is ready to begin learning, the screen will display “The controller is waiting for a direction command in order to proceed. You may command either the Up or the Down direction.” When it does, press and hold the iBox Enable and Up (or Down) buttons. (The car will not be moved during this procedure.)
10. The Calibrating LED will light as calibration begins. Continue to hold the Enable and Up (or Down) buttons pressed. The progress indicators to the left of the display will keep you informed as calibration progresses.
11. When the Done indicator lights, release the Enable and Up (or Down) buttons. Calibration is complete.
12. Set the iBox Learn switch to OFF.

Note

If the motor runs away, see [“Verifying Motor Rotation and Control \(Quattro DC Drive\)”](#) on page 2-57.

Table 2.6 Brake Calibration Status Messages

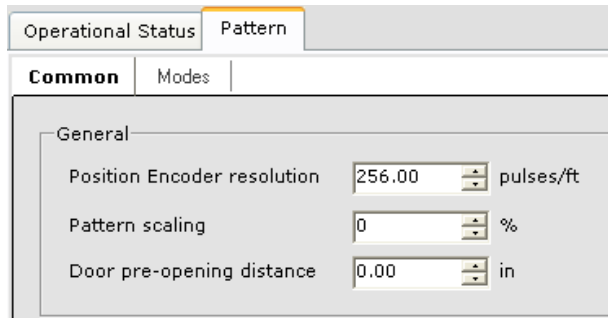
The following messages may be displayed during brake calibration
The controller is not ready for Brake Calibration. Please place the elevator on Machine Room Inspection and place the LEARN switch in the ON position.
The system is waiting for the CONTINUE button to be pushed.
The system is ready to start the calibration process. Push the CALIBRATE button if you wish to start calibrating the brake or push the DEFAULT button if you wish to load the default calibration values.
The controller is waiting for a Direction command in order to proceed. You may command either the UP or the DOWN direction.
The controller is done with brake calibration. Please drop direction and turn the LEARN switch OFF.

Construction Mode

Verify Brake Picking

To verify that the brake is picking properly:

1. Verify that the iBox *Safety OK LED* is solidly on. Display the *Pattern > Common tab* (View > Configuration > Pattern > Common tab).
2. Set Pattern Scaling to 0% and click Send to send the changed parameter to iControl.



3. Display the *Operational Status tab*. Note that Brake voltage is charted in the Machine section of the Operational Status tab.
4. With a digital volt meter set to DC volts, measure brake output voltage across terminals B1 and B2 (located just below the iBox panel). (A typical terminal block is shown to the right. B1 and B2 will be labeled.)
5. Press the Enable and Up (or Down) buttons to lift the brake. Verify that the voltages on the volt meter are the same as the commanded voltage (Pick voltage / Hold voltage parameters on the Brake > Voltages tab) and Brake voltage on the Operational Status tab.

The brake should lift but the car should not move since Pattern scaling is set to command zero speed.



6. Change the Pick and Hold voltages to one half the current value of the Pick voltage parameter and save the new values.
7. Press and hold the Enable and Up (or Down) buttons and verify brake voltage again. (The brake will probably not lift since we are outputting only half the Pick voltage.)
8. Change the Pick and Hold voltages back to their job print settings and save them.
9. Change Pattern scaling (Pattern > Common tab) to 100% and send that value to the controller.

Running on Machine Room Inspection

Once you are satisfied that the brake is picking properly, verify proper car movement and motor current. Troubleshoot movement if needed. Calibrate speed using a handheld tachometer.

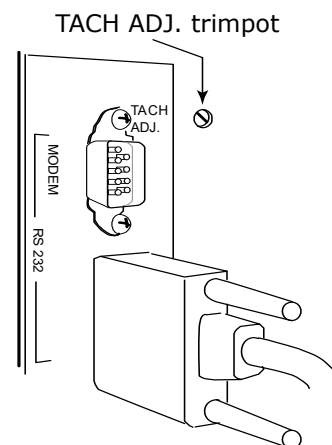
Verifying Motor Rotation and Control (*Quattro DC Drive*)

2

1. On the Pattern > Common tab, set Pattern scaling = 100%.
2. Set the iBox Inspection switch to INSP and run the car using the Enable and Up (or Down) switches.
3. Move the elevator on Inspection and verify that the motor is under control and rotating in the proper direction.
4. If the motor is rotating under control in the proper direction, skip the remaining steps.
5. If the motor runs away in the proper direction, change C1-Encoder Connect direction.
6. If the motor runs away in the opposite direction, change C1-Motor Rotation direction.
7. If the motor runs under control in the opposite direction, change C1-Encoder Connect direction and C1-Motor Rotation direction.

Verifying Pattern Command and Speed Feedback

1. Verify/set the following iView Drive parameters (View > Configuration > Drive > General tab > Speed Reference section):
 - Reference type = Tachometer
 - Scaling = 1.000
2. If you change any values, send them to the controller.
3. While running on Inspection, verify that D1-Speed Command is within about 1 fpm of the requested inspection speed on Configuration > Pattern > Modes. Adjust A1 Spd Command Mult if the speed is not correct (higher for increased speed).
4. Display the Virtual Oscilloscope (View > Diagnostics > Virtual Oscilloscope).
5. Set Test point 1 = Pattern (Command) and Test point 2 = Speed Feedback.
6. Run the car on Inspection and verify the polarity (Test point 1 and 2 traces are both moving in the same direction). If they not, change the Speed Reference, Rotational direction parameter (Forward / Reverse) on the Configuration > Drive > General tab.
7. Run the car and verify that the Pattern (Command) and Speed Feedback (Test point 1 and 2 traces) are the same amplitude. On the iView virtual oscilloscope (or a DVM connected between STP1 and STP2), compare the Pattern Command and Speed Feedback readouts. They must match within 0.050 VDC while the car is running at steady state speed. If not, adjust the TACH ADJ trimpot (upper right corner of iBox). The iPower Box door can be opened slightly to improve access to the TACH ADJ trimpot. *Turn the pot slowly.* This is a 15 turn trimpot, but the adjustment from maximum to minimum on the virtual oscilloscope is less than 1/2 turn.



*If the trimpot adjustment is insufficient, adjust Scaling parameter up or down in 0.1 increments (Configuration > Drive > General tab > Speed Reference section). Remember to *Send* the value to the controller, and then re-adjust the trimpot.*

Construction Mode

Calibrating Actual Car Speed (Quattro DC Drive)

If iLand and iLink are already installed, use the landing system speed (*Speed/Actual* on the Operational Status tab) as the speed reference for speed calibration. If not, use a hand-held tachometer to obtain the value.

If you are using a hand-held tachometer, hold it against the hoist or governor rope on the machine. The car must run at the commanded inspection speed in both directions. If the measured inspection speed does not match the commanded value, verify the following:

1. Verify the Inspection - High Speed parameter (View > Configuration > Pattern > Modes tab).
2. Verify that *Pattern scaling* is set to 100% (Configuration > Pattern > Common tab).
3. Verify drive parameters set earlier. [Please refer to “Initial Drive Settings \(Quattro DC Drive\)” on page 2-47.](#)
4. Adjust A1-Contract Mtr Spd (higher RPM for increased speed) in small increments to obtain the correct Inspection speed.

Verify Pattern Command and Drive Speed Feedback

1. From the View > Diagnostics menu, select Virtual Oscilloscope, and set Test point 1 = *Pattern (Command)* and Test point 2 = *Speed Feedback*.
2. Run the car on Inspection and verify that the Speed Feedback trace is following the Pattern (Command) trace. (If Standard Profile/High Speed, Inspection Profile/High Speed, and actual car speed are correct, this will be the case. If not, verify and correct these settings.)

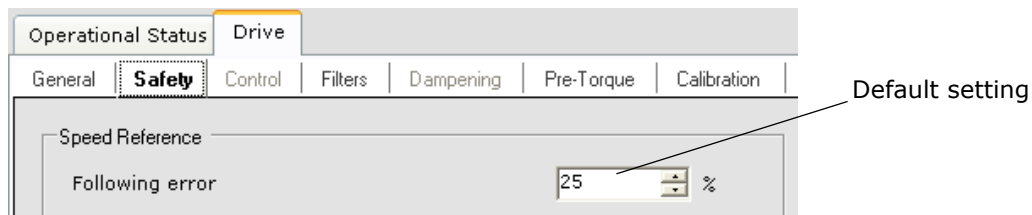
Following Error Margin

The Following error is used for fault detection purposes only. The Following error parameter (Configuration > Drive > Safety tab) sets the allowed margin of deviation from commanded speed, as a percentage. A Tach Error fault is generated when the difference between intended pattern speed and speed feedback exceeds the Following error margin. Calibrate speed feedback to match the intended pattern.

1. On the Configuration > Pattern > Modes tab, verify that Standard Profile/High Speed and Inspection Profile/High Speed parameters are set correctly for this job.
2. Verify that actual car speed on Inspection is equal to the Inspection High speed setting. Please refer to “Calibrating Actual Car Speed (Quattro DC Drive)” on page 2-58.

Set the Following Error

- Set the Following error parameter (Configuration > Drive > Safety tab). It is recommended to perform the Tach Error Tripping Threshold Adjustment procedure at this time. Please refer to “Tach Error Tripping Threshold Adjustment” on page 2-60.



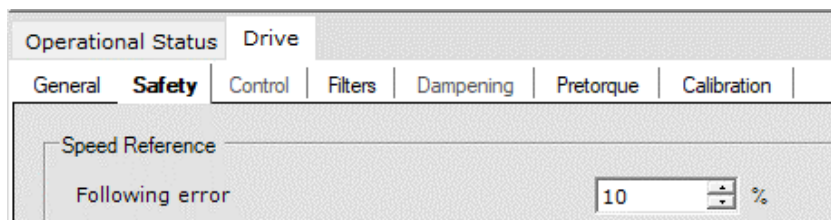
Caution

The default setting for the Following error parameter is 25%. For a car that has been properly adjusted, after performing the Tach Error Tripping Threshold Adjustment, a Following Error setting of 10% is fairly typical. You may choose to leave the Following error parameter at the default setting or higher, but keep in mind that Following error is a percentage of speed. On a 500fpm job a 25% Following Error allows a 125fpm contract speed deviation before a fault is generated.

Construction Mode

Tach Error Tripping Threshold Adjustment

1. On the iView Virtual Oscilloscope, set Test point 1 = *Speed Feedback* and Test point 2 = *Tach Error Upper Limit*.
2. On Inspection, run the car several times between floors in both directions. Monitor the traces and verify that the Speed Feedback and Tach Error Upper Limit traces track but remain comfortably separated.
3. Set Test point 2 = *Tach Error Lower Limit*.
4. On Inspection, run the car several times between floors in both directions. Monitor the traces and verify that the Speed Feedback and Tach Error Lower Limit traces track but remain comfortably separated.
5. Estimate the smallest percentage of Following error that would allow the Feedback and Limit traces to remain separated.
6. Increase the calculated value by 1/2 and set Following error to this value. For example, if the calculated percentage is 6%, add that to 1/2 of 6 (3) and set Following error to 9%. Remember to send the change to iControl.
7. Repeat steps 1 through 4, verifying that Feedback and Limit traces remain separated. If they do not, recalculate and reset Following error.



Note

A Following Error setting of 10% is fairly typical. Keep in mind that the Following error margin is a percentage of commanded speed. On a 500fpm job a 10% Following error allows a 50fpm deviation from contract speed before a fault is generated.

Additional Adjustments and Checks

1. On the Configuration > Pattern > Common tab, set *Pattern scaling* to 100%.
2. On the Configuration > Pattern > Modes tab, set *Inspection/High Speed* to the desired value (maximum Inspection speed is 150 fpm). Set the *Inspection/Low Speed* to 25 fpm.



Note

If the Terminal Switches (UNT5/DNT5) have been installed, and you wish to use the reduced inspection speed option, you may enable it by checking *Reduced inspection speed* on the Configuration > Pattern > Modes tab. If not, you may enable Reduced Inspection speed after the Terminal Switches are installed. (Enabling it now, without switches, would cause the car to run at 25 fpm.)

3. Stop the car so that the car top can be accessed from the top hall door.



Note

Car Top Inspection operation automatically overrides Car Panel Inspection operation.

4. Run the car from the Car Top Inspection station, checking the up and down buttons and the stop switch.
5. While running the car, check clearances and door locks. When all doors are locked, remove all jumpers from door lock terminals.
6. Verify directional limit switch and final limit switch operation and position according to page MRW1 or MRW2 of the job prints. Ideally, when the car is on Inspection operation, the distance between the two switches should be greater than the distance required to stop the car after the direction command is removed.
7. Verify that the brake has sufficient tension to hold the car under all conditions likely to be encountered during the installation phase.
8. You may now proceed to Section 3, Inspection Mode.

Construction Mode



Inspection Mode

In This Section

This section provides the information you need to complete field wiring and prepare the elevator to operate in Inspection Mode:

- **Landing System Installation** (see [page 3-2](#)).
- **iLink Interconnect Installation** (see [page 3-2](#)).
- **Hoistway Limit Switches** (see [page 3-4](#)).
- **Load Weigher Installation** (see [page 3-5](#)).
- **Brake Monitoring** (see [page 3-5](#)).
- **Earthquake Sensor** (see [page 3-6](#)).
- **Serial Hall Call** (see [page 3-6](#)).
- **Serial COP** (see [page 3-6](#)).
- **Cartop Voltage Verification** (see [page 3-7](#)).
- **Running on Machine Room Inspection** (see [page 3-9](#)).
- **Preparing for Final Adjustments** (see [page 3-11](#)).



Caution

Instructions in this section assume you have completed all Construction Mode instructions in the previous section and that the elevator car is running safely and reliably in Construction Mode. Note that, in the course of installing the iLink cartop box, YOU MUST UNDO the temporary cartop CTS bypass used to run the car on Construction Mode with no iLink cartop box installed).

Inspection Mode

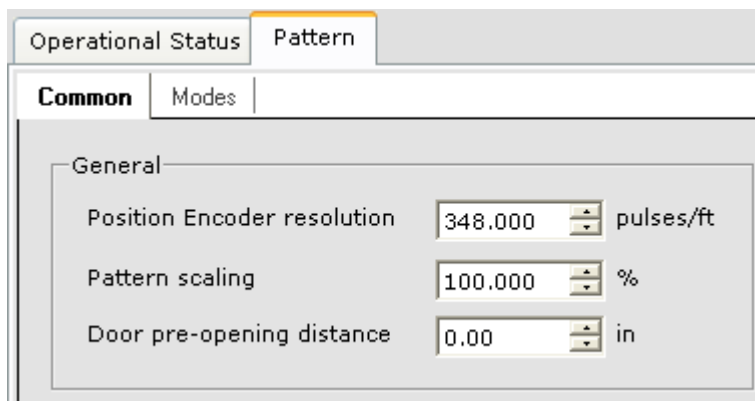
Landing System

Please see the instruction shipped with the landing system equipment. See the job prints for wiring instructions. Depending on job requirements, one of the following landing systems will be used:

- iLand: Wheel encoder system. Instruction 42-IS-0173.
- LS-EDGE: Steel tape encoder system. Instruction 42-IS-0214.

Setting the Position Encoder Resolution parameter

For the iLand Compact landing system, the *Position Encoder resolution* parameter must be set to 348 pulses per foot (iView Controller > View > Configuration > Pattern > Common tab).



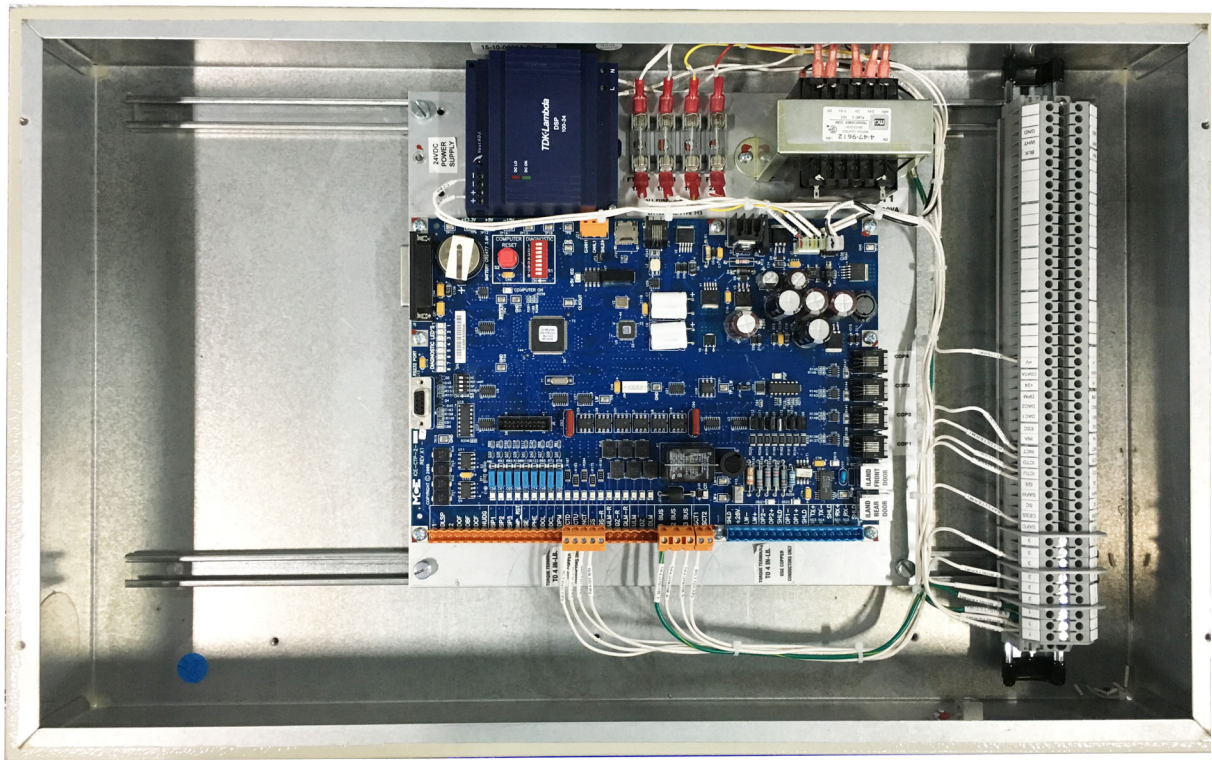
Calibrating the Floor Offsets

See “Calibrating the floor offsets” in Section 4. If this is a new installation, wait until the car has been fully adjusted so that it stops consistently and accurately at the floors.

Installing iLink

iLink is the cartop interconnect box used with iControl systems. The illustration below shows a view of iLink circuitry with the cover removed. Make connections to the interconnect box as shown in your job prints.

Figure 3.1 iLink Circuitry and Wiring

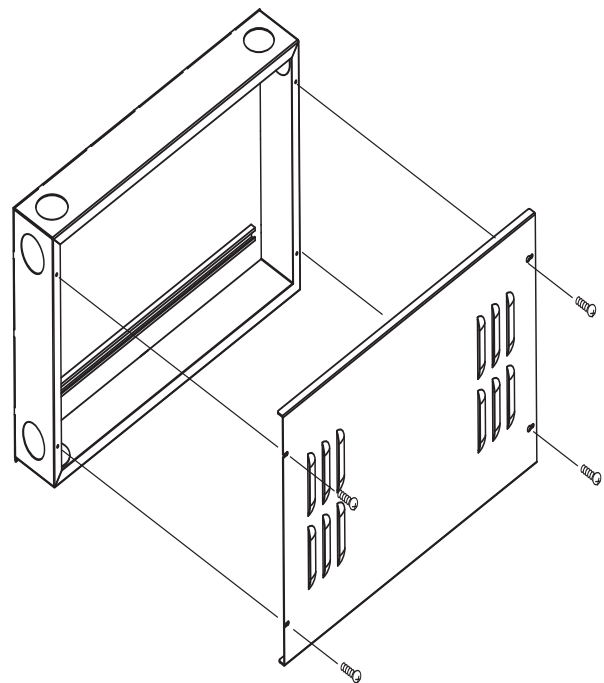


3

iLink Enclosure Installation

The iLink enclosure is typically mounted on the left side (as you face the car) of the cartop, opposite the iLand system. The enclosure has several partially-punched knockouts to accommodate two-inch conduit connections. Mount the iLink enclosure on or between the crosshead beams.

Vertical mounting, as shown, is preferred. Mounting the iLink horizontally is acceptable only if it is well protected from metal filings or other debris that might accumulate and damage electrical components. The dimensions of the iLink enclosure depend upon how many input and/or output boards are required for a particular job.



Inspection Mode

Installing the Hoistway Limit Switches

In general (for cam-operated switches):

- Be sure that the cam operating the limit switches keeps the slowdown limit switches open until the normal direction limit switch is broken.
- Be sure that both the normal and final limit switches are held open for the entire run-by travel of the elevator.
- For faster elevators, the surface of the cam that operates the limit switches must be sufficiently gradual so that the impact of the switch rollers striking the cam is relatively silent.

Note

After Terminal Switches (UNT5/DNT5) are installed, verify Inspection Low Speed (iView/Pattern/Inspection) is set to 25 fpm and is enabled. UNT and DNT 5 switches are always used in iControl installations.

Installing the Load Weigher

Install and adjust the provided load weigher as directed in the instructions accompanying the load weigher. Information regarding load weigher selection and threshold settings is provided in Section 4. [Please refer to “Load Weigher Adjustment for Dispatching” on page 4-38.](#)

Installing Brake Monitoring

Brake monitoring via an independent contact is required by code only for disc brakes. A spare iBox input (SP2D), or a programmable input (Brake Switch) on an ICE-MIAC board, may be used for the brake contact. The brake monitoring contact may be provided as part of the brake assembly. If not, a micro-switch (rated for at least 1/4 Amp, 125VDC) must be provided by the installer and mounted such that when the brake picks, the switch activates (see note below). Refer to job prints for electrical connection information.

The brake monitoring contact provides a path between the iBox 110VDC (#3) bus and the SP2D or Brake Switch input. If the brake fails to pick (or drop) at the proper time, this signal will cause the controller to generate a Brake Pick Fault ([See “Brake One Pick Fault, BRAKE ONE PICK FAULT” on page 6 - 18.](#)) or Brake Drop Fault ([See “Brake One Drop Fault, BRAKE ONE DROP FAULT” on page 6 - 17.](#)). The fault message is shown on the iBox LCD display, on the iView Operational Status tab and in the iView Event Log.

Note

On the iView > Controller > Configuration > Brake > Control tab, switch parameters are provided to specify the polarity of the SP2D/Brake Switch input (active high or low). In addition, parameters direct the system to monitor for a brake pick and/or brake drop fault. If neither pick or drop monitoring are checked, the controller will ignore the SP2D/Brake Switch input.

Switch

☐ Brake is picked when SP2D or Brake Switch terminal is high
☒ Brake is picked when SP2D or Brake Switch terminal is low
☒ Monitor for brake pick fault
☐ Monitor for brake drop fault



Danger

When installing the switch, take all necessary precautions not to interfere with normal brake design or operation.

Inspection Mode

Installing the Earthquake Sensor

An earthquake sensor may be part of your installation. If so, connect the counterweight derailment detector and seismic sensor as shown in your job prints. The EQ board provides a seismic sensor input (ESS), a spare sensor input (EQSP 1), and a counterweight derailment detector (CW1/CW2). The ESS input is normally at 120VAC (no earthquake detected). A low (0.0V) at the ESS input will cause the elevator to go into Earthquake Mode.

The counterweight derailment detector operates using a 24VDC “ring and string” circuit which will be grounded if excessive counterweight motion occurs. iControl also monitors the continuity of the “string” and will trigger a fault if the string breaks. The illustration below shows how the circuit operates.

Temporary Bypass

If the earthquake devices will be installed later, you may temporarily bypass the ESS input using a jumper from the ESS input to a #2 Bus (120V AC) connection. Bypass the counterweight derailment detector by placing a jumper between CW1 and CW2.

Earthquake Reset

Earthquake Operation latches when activated by the seismic sensor or the derailment detector. Press the reset button on the EQ board in iControl to reset EQ.

Installing the Serial Hall Call System

For simplex cars the hall call driver is located in the car controller cabinet. For cars operating as part of a Group, the hall call driver is located in the Group cabinet. [Please refer to “Serial Hall Call” on page 5-17.](#)

1. Refer to job print drawings -Serial Hall Call Details (-SH).
2. Set jumpers and install hall call nodes as shown in the drawings.
3. Serial hall call inputs and outputs are programmed on the iView System > Configuration Tabs > System I/O > System tab.
4. Troubleshoot serial hall call fixtures using the iView Configuration > Serial I/O > Bus tab.

Installing the Serial COP System

With the Serial Car Operating Panel system, car call buttons connect directly to a serializing board located in the car station enclosure. Multiple Serial COP boards daisy-chain together to accommodate installations with a lot of call buttons. Wiring from the Serial COP board(s) to the iLink cartop box is just a short length of shielded cable with a telephone-style RJ-11 connector at each end. The iLink cartop box supports up to four serial control panel connections. Communication between iLink and the controller is also serial.

Instructions for installing the Serial COP system can be found in Section 5. [Please refer to “Serial COP” on page 5-36.](#)

1. Refer to job print drawings - Cartop Details (-CTx).
2. Serial COP inputs and outputs are programmed on the iView Configuration > I/O Board > Configuration tab.

Position Indicators

Connect position indicators as shown in the prints.

Verifying Cartop Voltages

1. Set the iBox Inspection switch to the INSP position.
2. Set the Controller Stop switch to the Stop position.
3. Turn on power at the main disconnect.
4. Watch the front panel displays of the iBox, the controller will take about 60 seconds to initialize.
5. Check the Computer, Safety A, Safety B, and Cartop status LEDs. The LEDs should be lighted solid green.
6. Refer to the initial pages of the -CT drawings where power connections are primarily shown. On the cartop, verify all voltages shown are present and within acceptable levels with respect to ground.
 - +5V, +/-15V, +/-26V, +3.3V test points are on the right edge of the ICE-CTP board
 - The GND test point is in the middle of the ICE-CTP board
 - Verify 2 and 3 bus power with respect to the 1 (common) bus
7. Verify the eight diagnostic LEDs on the iLink CTP board. (On power up or reset, these LEDs will light sequentially, first in one direction, then the other, after which they will briefly clear. See the illustration below for normal operating indications.)

Figure 3.2 iLink CTP Board Diagnostic LEDs

LED 1: iBox to cartop input.
Blinks approx. every 40mS.
Remains OFF if input lost.
LED 2: Unintended motion indication. Normally OFF.
LED 3: Unintended motion indication. Normally OFF.
LED 4: Cartop to iBox output.
Blinks approx. every 40mS.
Remains OFF if output lost.
LED 5: Blinks every 40mS.
LED 6: ON for Inspection mode. OFF otherwise.
LED 7: Not used.
LED 8: Not used.



CTP Board Diagnostic LEDs.
Located near D-connection to MIAC and MOR boards.

8. Install the cover on the iLink cartop interconnect box.
9. Verify that the iBox CARTOP LED is ON indicating that the iLink CTP board is communicating with the iBox. If not, verify that the CARTOP LINK wiring is connected as specified on the job prints. Additional troubleshooting information is available in Section 6. [Please refer to "iControl Messages List - Numerical" on page 6-4.](#)

Inspection Mode

Verifying Door Operation

This section helps you verify that the door lock signal input is working properly.

1. Verify that the door related options required for this job are checked on the iView Safety screen.
 - Top Access Landing
 - Top Access Rear
 - Bottom Access Landing
 - Bottom Access Rear
 - No Main String
 - No Main String Rear
 - Front Door Close Contact
 - Rear Door Close Contact
 - Rear Doors
 - Freight Door Option 1
 - Door Position Monitor
2. Simulate the opening of the front car gate by removing the wire from the GS terminal on the iBox.
 - The iBox status LED “Doors Locked” will turn Off.
3. Reconnect the GS terminal.
4. Run the elevator up or down at inspection speed. Remove the DLAT (Door Lock Access Top) input.
 - The elevator should immediately stop.
 - The Door Locked status LED will turn Off.
5. Reconnect the DLAT input. Repeat Step 4 for the DLAB input.
6. Reconnect the DLAB input. Repeat Step 4 for the DLMS input.
7. Reconnect the DLMS input.
8. Run the elevator at inspection speed. Move the Car Door Bypass switch to BYPASS.
 - The elevator should immediately stop since the door lock cannot be bypassed while on Machine Room Inspection.
9. Move the Car Door Bypass switch back to Off.

Verifying Safety Configuration

Verify that the safety options required for this job are checked on the iView Safety screen. Any options that are checked, but not operational, will require a jumper to allow the car to operate on Inspection (inputs must be high).

Exit Construction Mode

Perform the following checks before exiting construction mode:

1. On the iBox, verify that the green CARTOP LED is lighted indicating that the controller is communicating with the cartop processor board. If not, check the CARTOP LINK wiring. The terminals must be connected as follows: (iBox TX+ and TX- terminals to CTP board RX+ and RX- terminals. iBox RX+ and RX- terminals to CTP board TX+ and TX- terminals.)
2. In iView, display the Operational Status tab. Run the car and monitor the Position - Logical and Position - Cartop values. Verify that the values increase when the car is moving in the up direction. The value(s) could be negative, in which case they must become less negative when the car moves in the up direction.
3. As the car moves, monitor the Leveling Sensor indicators on the Operational Status tab. Verify that the sequence is correct. When the car is traveling in the up direction, the sequence should be, Front/Rear Up leveling marker, followed by Front/Rear Door zone, followed by Front/Rear Down leveling marker.

To exit construction mode:

1. From the iView Write privilege menu, select Acquire.

The iBox LCD will display a message requesting write privileges for iView.

2. On the iBox, press the “Yes” (1) soft-key to assign write privileges to iView.
3. Open the Safety screen.
4. Click the Construction Mode check box (remove check mark).
5. Click the Send button.

You must then re-learn the Safety Configuration. [Please refer to “Learning the Safety Configuration” on page 2-22.](#)

Running on Machine Room Inspection

When you are ready to run the elevator on Inspection:

1. Verify the iBox Computer, Safety A, Safety B, and Cartop status LEDs are lighted solidly green.
2. Move the Inspection switch to the INSP position.
3. Move the Controller Stop switch to the RUN position.

Within 5 seconds, Safety OK and Doors Locked LEDs should be on and the Fault LED should be off.

4. Verify Car Door Bypass and Hall Door Bypass switches are set to the OFF position.
5. Verify that the car is in Machine Room Inspection on the iBox or in iView. If the car is in another inspection mode (i.e., Cartop Inspection, In-car Inspection, or Hoistway Access), turn them off. The INCT, INA, and INCP inputs on the left edge of the iBox should be high (110VDC).
6. Press and hold the Enable button, then press the Up or Down button to run the car. Run the car away from the terminal landing.
7. On the iBox or on the iView Hoistway screen, verify car speed (Actual Speed). Use the iBox or iView Actual Speed as the speed reference.

Inspection Mode

Verifying Quadrature Pulse Sequence and Encoder Resolution

Position Encoder Resolution

Verify that Position Encoder Resolution (Pattern Configuration/Common tab) is correct. When the iLand landing system is mounted on the car top with the encoder wheel against the hoistway rail, Position Encoder Resolution is 256 pulses/ft.

Quadrature Pulse Sequence

The quadrature pulse sequence must be verified before the hoistway can be learned.

1. Connect to the controller using iView.
2. Open the Hoistway screen. Display the Faults tab.
3. Move the car up the hoistway. Verify that Actual Position and Cartop Position increase.
4. Move the car down the hoistway. Verify that Actual Position and Cartop Position decrease.

If the quadrature pulses are reversed, the Position Quadrature Reversed fault will appear in the Faults display after the elevator moves about two feet. (The Actual position may decrease as the car moves up and increase as the car moves down.) If indications are not correct:

- Check the DP1+/DP1- and DP2+/DP2- connections to the iBox and iLink (refer to the job prints).
 - If the connections are correct, use a multi-meter to test that the positive- and negative-going pulses are arriving at the terminals. The streams should pulse between -15 and +15 volts.
 - If the signals are not arriving properly, check the cartop connection between the iLand landing system and the iLink interconnect box. (Note that the Front Door/Front Magnets cable must be present between the interconnect box and the landing system regardless of your door/magnet configuration because it provides power to the landing system.)
5. If iLand to iLink cabling is correct, first test the continuity of the cables, then check the traveler connection between the iLink and the iBox for correct connections and continuity.

Prepare for Final Adjustments

This section describes preparation for final adjustment.

Door Operator

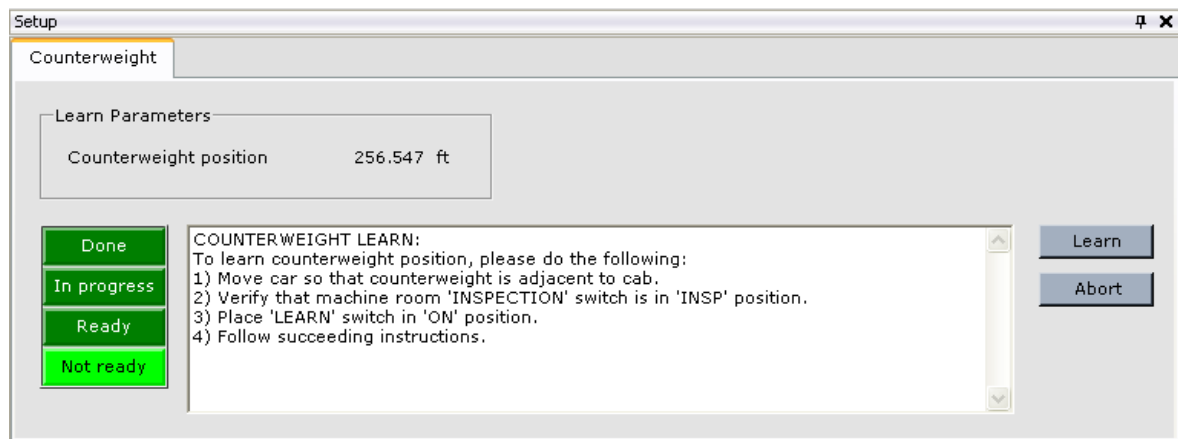
The door operator must be working properly before final adjustment.

1. Verify that the door fuses are properly installed.
2. Verify that the iBox Car Door Bypass and Hoistway Door Bypass switches are OFF.
3. Check that all door equipment clutches, rollers, etc. are properly adjusted to correct running clearances.
4. Check the controller prints to make sure any door operator diode installation instructions have been followed (especially for G.A.L. door operators).
5. Verify that all hoistway and car doors are closed and locked.
6. Run the car through the hoistway on inspection mode to make sure the hoistway is completely clear.

Counterweight Learn Procedure

This procedure allows the controller to learn the position in the hoistway at which the car and counterweight are at the same height. It must be performed if the controller will be using Earthquake operation, and it is helpful for counterweight balancing and Pretorque gain adjustment.

1. Move the car until the car and the counterweight are at the same height in the hoistway.
2. Place the iBox Inspection switch in the INSP position.
3. Place the iBox Learn switch in the ON position.
4. Display the Counterweight setup tab (View > Setup > Counterweight).



5. If *Not ready* is lighted, follow the instructions in the message window until *Ready* is lighted.
6. With *Ready* lighted, click the *Learn* button.

The controller will learn the car/counterweight position and the *Done* indicator will light. The learned Counterweight position is displayed on the Setup > Counterweight tab.

7. Set the iBox Learn switch to OFF and the iBox Inspection switch to NORM.

Inspection Mode

Counterweight Balancing

On modernizations, the weight of the car is often changed but compensating adjustments to the counterweight are sometimes overlooked. This adjustment is important for achieving desired performance and ride characteristics.

1. Place a balanced load in the car (specified percentage of full load; typically 40%).
2. On Inspection, run car to the middle of the hoistway to the position learned by performing the Counterweight Learn Procedure (see “Counterweight Learn Procedure” on page 3-11). Verify position using the *Actual* Position displayed on the Operational Status tab.
3. Turn controller power OFF.
4. Use a portable supply to inject sufficient DC voltage at controller terminals B1 and B2 to lift the brake. (Or, manually lift the brake.)
5. Watch the car to see if it drifts. If not, the car and counterweight are balanced.
 - If the car drifts up, remove weight from the counterweight or add weight to the car and repeat the balancing procedure.
 - If the car drifts down, add weight to the counterweight or remove weight from the car and repeat the balancing procedure.
 - For a drum machine, follow the manufacturer counterweighting recommendations and test the drum machine limit switches.
6. When car and counterweight are balanced, record the actual weight in the car for future reference. Balanced load = _____ lbs. Restore controller power.

Run Testing

1. Verify all landing system magnets are installed according to job prints and instructions.
2. On inspection mode, run the car to the midpoint of the hoistway.
3. Set the iBox Test switch to the ON position.
4. Place the car on Machine Room Inspection, with Cartop Inspection OFF.

At this point, the car should be on Inspection operation and running without oscillation. There may be substantial rollback when the car first starts.

5. On the iView Virtual Oscilloscope, set Test point 1 to *Pattern (Command)*.
6. Use a digital voltmeter to check the pattern voltage on iBox test point STP1 with respect to the Common terminal.
7. Verify Pattern scaling is at 100% (Configuration > Pattern > Common tab) and the Inspection - High speed parameter is at 10% of contract speed (Configuration > Pattern > Modes tab). Maximum value for Inspection - High speed is 150fpm. Verify Reduced inspection speed option is enabled and that Inspection - Low speed is set to 25 fpm.
8. Run the car on Inspection and check the voltage at iBox test point STP1. If 8.0VDC is equal to contract speed, then the reading at 10% should be 0.8VDC (+/- 5%).
9. Set Inspection - High speed to 50fpm.
10. On Inspection, run car to, or near, the bottom landing. Use test weights to load the car to 125% of full load in preparation for checking the ability of the brake to hold this weight.



Danger

If the brake does not hold, the car may slide into the pit. Use extreme caution.

11. On Machine Room Inspection, run the car up the hoistway sufficiently to allow a down direction run.
12. On Machine Room Inspection, run the car down the hoistway. While the car is moving, set the iBox Controller Stop switch to STOP to force the brake to apply while the car is moving. If necessary, adjust the brake to hold the load.
13. Remove the weights from the car.

Empty Car Tests

With the car on Machine Room Inspection and with test weights removed (empty car), the following steps allow you to adjust the response of the car to reduce empty car rollback while avoiding the oscillations that can occur if too much gain is adjusted into the system. For these tests you may use a storage oscilloscope capable of a 1.0 centimeter per second sweep rate or you may use the iView Virtual Oscilloscope.

1. On the iView [Virtual Oscilloscope](#), set Test point 1 to Speed Feedback. Adjust the Virtual Oscilloscope for greater sensitivity and shorter time period. If you are using a storage oscilloscope, monitor Test point STP1 (lower right side of the iBox) with respect to Common.

The empty car will probably drift up due to the counterweight, even when an attempt is made to move it down. Perform the following:

2. Adjust brake *Pick delay* and *Speed pick delay 1* on the iView Configuration > Brake > Timers tab to coordinate the application of the speed pattern with the picking of the brake to avoid movement of the car under the brake or rollback of the car.
3. Experiment with improving response. A little rollback at this point is not critical as later adjustments will compensate for it.
4. Verify that Pattern scaling is 100% (Configuration > Pattern > Common tab).
5. Using *Speed/Actual* on the iView Operational Status tab or a hand held tachometer, verify that the car speed, while operating on Machine Room Inspection, matches the Inspection/High Speed setting (Configuration > Pattern > Modes tab) and is 10% of the Standard/High Speed setting. [Please refer to “Calibrating Actual Car Speed \(System 12 SCR Drive\)” on page 2-38](#) if necessary.



Danger

At this point, the iBox Fault/Function Bypass switch should be in the OFF position. Fix all faults so that no fault is bypassed before proceeding. If this is not possible, exercise EXTREME CAUTION while making final adjustments.

Inspection Mode



Final Adjustment

In This Section

This section describes final adjustments to, and complete final inspection of, the elevator system. At this point, all steps in Sections 2 and 3 should have been completed.

- Learning the Floor Heights (see [page 4-2](#)).
- Verifying One-Floor Run Operation (see [page 4-3](#)).
- Reaching Contract Speed (System 12 SCR Drive) (see [page 4-6](#)).
- Reaching Contract Speed (Quattro DC Drive) (see [page 4-10](#)).
- Learning Normal & Emergency Terminal Limit Switches (see [page 4-12](#)).
- Synthetic Speed Calibration (System 12 SCR Drive) (see [page 4-14](#)).
- Feed Forward Gain Calibration (System 12 SCR Drive) (see [page 4-15](#)).
- Fine Tuning the Speed Regulator (Quattro DC Drive) (see [page 4-16](#)).
- Shaping the Speed Profile (see [page 4-16](#)).
- Controlling the Start of Car Motion (see [page 4-20](#)).
- Calibrating the Floor Offsets (see [page 4-30](#)).
- Adjusting Leveling and Final Stop (see [page 4-33](#)).
- Load Weigher Adjustment for Dispatching (see [page 4-38](#)).
- Pre-Start Sequence (see [page 4-43](#)).
- Calibration and Verification of Safety Functions (see [page 4-49](#)).
- Safety Tests (see [page 4-52](#)).
- Terminal Switch Faults (see [page 4-61](#)).

Learning the Floor Heights

Note

This procedure must be successfully completed before running the elevator on Test or Normal operation. Before proceeding, be certain you have verified the landing system quadrature pulse sequence. [Please refer to “Verifying Quadrature Pulse Sequence and Encoder Resolution” on page 3-10.](#)

Floor Height Learn Procedure

The speed at which the car learns the hoistway is determined by the Inspection /High Speed parameter (Configuration > Pattern > Modes tab). To learn floor heights, we recommend setting Inspection/High Speed between 50fpm and 125fpm.

1. Place the car on Inspection operation (iBox Inspection switch in the INSP position). Check the iBox LCD display to verify that it is on Machine Room Insp.
2. On Machine Room Inspection, run the car down until the car is stopped by the normal limit switch (DNTD). For floor height learning to begin, the ULM signal must be on, DLM must be off, DNTD must be off, and UNTD must be on.
3. Place the iBox Learn switch in the ON position.
4. In iView, display the *Floor Heights Learn* (*Floor Heights* from the *View > Layouts* menu). Click the *Learn* tab on the *Setup > Floor Heights* tab.
5. Select Manual or Auto learn type. (On Manual, you run the car through the hoistway using the iBox Enable and Up/Down buttons. On Auto, iControl will run the car through the hoistway automatically.)

6. If Not Ready is lighted, perform the instructions shown in the message window.
 - The Ready indicator lights when the car is placed in Inspection mode (with the **Learn** switch ON and the ULM sensor is ON without DLM).
7. When Ready is lighted, click *Learn*. The In Progress indicator lights when the Learn button is clicked.
 - If Manual learn type was selected, you are prompted to press and hold the iBox Enable and Up buttons. The elevator will move up the hoistway at Inspection speed.
 - You may click Abort at any time to abort the procedure. If the learn process is aborted, the last saved complete set of values is retained.
8. The procedure is complete when the up normal limit switch (UNTD) is activated (if Manual learn type, you are prompted to release the Enable and Up buttons) and **Done** is lighted.

9. Set the iBox *Learn* switch to the *OFF* position.
10. Click the screen refresh button () to update the learned floor height information.
11. On the Hoistway pane, verify that the learned floor heights appear accurate. Also check the iBox *Safety OK* status. (Occasionally, the Final Limit Switch may open at the end of a Learn run.)

Verifying One Floor Run Operation

The first step in verifying one-floor run operation is to verify proper correction, run, and stop.

Verifying Correction, Run, and Stop

1. Arrange the elevator for empty car conditions.
2. On the Configuration > Pattern > Common tab, set *Pattern scaling* to 50%. This setting allows the car to run at 50% of the commanded speed.
3. Move the car on Inspection to a location between floors, more than one foot away from a landing so that no leveling sensors are engaged.
4. Place the car in Test mode (iBox Test switch ON). Set the iBox Fault Bypass switch to ON.
5. Set the terminal limit switches to their default settings (View > Setup > Terminal Switches) to allow the car to run.
6. Take the car out of Inspection operation (iBox Inspection switch in the NORM position). The car will perform a Terminal Synchronization, using the learned position of the sensor to update the current position reported by the position encoder.

Note

If a Limits Switches Checksum Fault is generated when the car is removed from Inspection operation, it will be necessary to set the terminal switches to default values before proceeding (View > Setup > Terminal Switches tab). Perform the procedure shown in the Terminal Learn message window titled “*To default terminal switches, please do the following:*”

7. If the car corrects and stops properly, proceed to [Initiating a One Floor Run](#) later in this section.

If the Car Does Not Stop and Correct Properly

- Check the iBox status display. Verify:
 - ULM, DLM, and DZ signals are working properly
 - Safety OK = ON - safety string is made up.
 - Doors Locked = ON - all doors are locked.
 - Inspection = OFF - not on Inspection operation.
 - Fault = OFF - no faults are active.

Initiating a One Floor Run

Because we have not yet learned Normal and Emergency Terminal Limit switches, stay away from the terminals to avoid tripping faults. Remember that Fault Bypasses are on a 15-minute limit. If you need more time, set Fault Bypass to OFF, then back to ON (within two seconds).

The car should now be at a floor. Avoid running the car close to a terminal landing. To initiate a one-floor run:

1. Register a car call one floor above or below the current car position:
 - Click the Car Call Registration button .
 - Select Car Calls, then Front or Rear panel.
 - Click a floor selection button.

If Initiation is not Successful

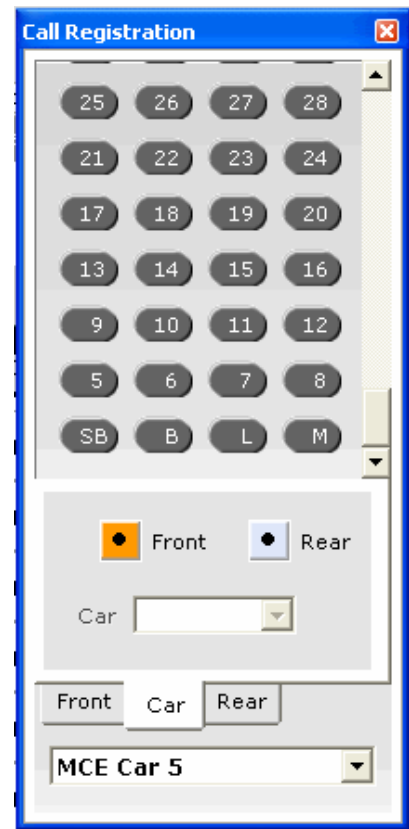
If the car does not move, check the iBox status display. Verify:

- Safety OK = ON - safety string is made up.
- Doors Locked = ON - all doors are locked.
- Inspection = OFF - the car is not on Inspection operation.
- Faults = OFF - there are no active faults.

Verifying a One Floor Run

During a one-floor run, observe the following:

- When the car starts, note that on the Hoistway display, the position indicator changes to the next floor just before reaching the desired floor.
- The car will decelerate to a point 6" (152.4 mm) before the destination floor where the Level Up or Level Down sensor will activate the associated indicator. This can be observed on the Setup > Floor Heights > Learn tab.

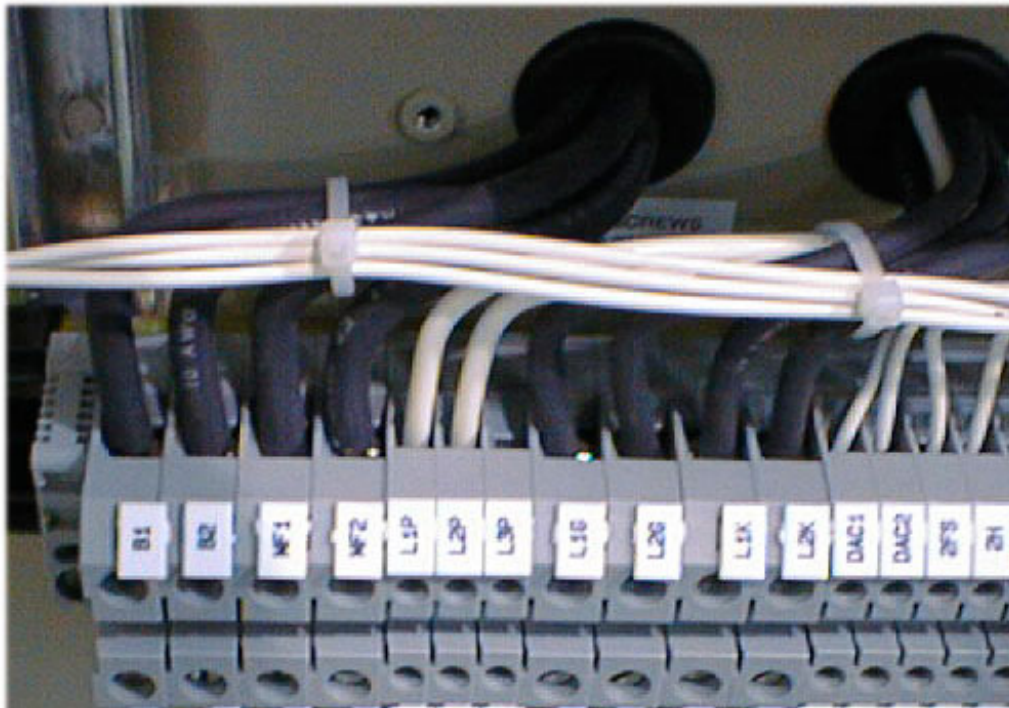


- The car will continue until it reaches a point 3" (76.2 mm) before the floor, then the Door Zone input will activate. The Door Zone Rear input will be active if the floor has rear doors.
- The elevator will continue to level into the floor and stop. The final leveling speed should be set from 2 to 8 fpm (0.01 to 0.04 m/s). Your actual speed will be a fraction of that since Pattern scaling is set to 50% at this time.

1. On the iView Virtual [Oscilloscope](#):
 - Set Test point 1 to Pattern Command
 - Set Test point 2 to Speed Feedback (8-volts equals contract speed)
2. Run the car between floors to any intermediate landings (avoid activating terminal switches).
3. Observe that the car starts, accelerates, then decelerates into the floor and stops. If the car overruns a floor, the relevel function will be activated. The Leveling Speed on the first approach to a floor and the Releveling Speed (if releveling is necessary) are two separately programmable values. These values are set on the Configuration > Pattern > Common tab.

Verify Releveling

1. When the car is at a floor, simulate overrunning by temporarily changing the floor height Offset (Configuration > Floor Heights > Floor Offsets tab) to 0.50" and pressing the Send button.
2. Observe the releveling operation. (Return Offset to the proper setting and press Send.)
3. Monitor the brake voltage on terminals B1 to B2 (located just below the iBox). Make sure that a relevel brake voltage exists to avert stalling or excessive current draw by the DC Drive during a relevel operation. Gearless machines are intended to drag the brake during a relevel, so a partial pick is appropriate. Note, however, that if the brake did not drop fully before the relevel, the reduced brake voltage may still hold the brake fully picked.



Do not spend a lot of time here working on the brake, just be sure the brake does not stall the motor on a relevel. Final brake adjustment is a later topic in this section. ([Please refer to “Brake Parameter Adjustments” on page 4-27.](#))

Reaching Contract Speed (System 12 SCR Drive)

For Quattro DC Drive *Reaching Contract Speed* see [page 4-10](#).

Note

Be sure to read this entire section before performing the following procedure. The car must be on Test operation (iBox Test switch to ON) throughout the setup procedure. This prevents the doors from operating during adjustment.

Final Adjustment Before Running at Contract Speed

The following adjustments must be made in preparation for contract speed operation.

1. Arrange the elevator for no load (empty car) conditions.
2. System 12 Drive only:
 - Refer to page -D1 of the job prints under Output Ratings. On the Configuration > Drive > General tab, set *Rated armature voltage* equal to the SCR drive maximum output voltage (header rating).
 - Set *Rated armature current* equal to the SCR drive maximum output current (per Output Ratings on page -D1 of job prints).
3. Verify that the iBox Test switch is in the ON position.
4. Verify motor parameters against the motor name plate.
5. Verify that all drive and initial parameter settings have been programmed. (Refer to Section 2 and specifically see [“Verifying Initial Parameter Settings” on page 2-19](#)). These parameters are critical for smooth operation during normal runs.

Determine the Armature Voltage Limit (System 12 SCR Drive)

Armature voltage limit is a percentage of the SCR drive maximum output voltage rating. For example, if the drive maximum output voltage rating is 300VDC and you wish to limit the voltage to 270VDC, set *Armature voltage limit* (Configuration > Drive > Safety tab) to 90% ($270/300 \times 100 = 90\%$). Factors to consider include:

- If you have a geared installation, read the armature voltage rating from the hoist motor nameplate and use this figure to calculate the Armature voltage limit setting.
- If you have a gearless installation, you may set the Armature voltage limit to be equal to the hoist motor name plate voltage rating or up to 10% higher than name plate voltage (as long as it does not exceed the maximum DC armature voltage rating of the SCR drive on page -D1 of the job prints). Use this figure to calculate the Armature voltage limit setting.
- In any case, do not set Armature voltage limit any higher than 108% of the numerical value of the 3-phase AC voltage existing on terminals X1, X2, X3 or Y1, Y2, Y3 on the contactors at the bottom of the SCR drive. For example, if the 3-phase AC voltage was 270VAC, you should not set Armature voltage limit any higher than $1.08 \times 270 = 291.6\text{VDC} = 97\%$ ($291.6/300 \times 100 = 97\%$).

Determine the Armature Current Limit (System 12 SCR Drive)

Armature current limit (Configuration > Drive > Safety tab) is a percentage of SCR drive maximum output current rating and may range up to 276%. To determine the Armature current limit setting, first find the Maximum Full Load Output Current rating on page -D1 of the job prints. It is desirable to provide 250% of the full load current rating of the hoist motor during acceleration or deceleration. (In high performance applications, up to 276% may be desirable.)

For example, if the drive maximum full load output current rating is 180 Amps DC and you wish to limit full load amperage to 140 Amps DC, with a 250% acceleration capability, you must set Armature current limit to 194% ($140/180 \times 250 = 194\%$).

- Make the calculation and set Armature current limit accordingly. (If setting is correct, you should not see the SCR drive Current Limit indicator LED turn on during **normal operation**. It may light during emergency deceleration, especially during testing.)

Note

In some cases, where the voltage limiting mechanism (as determined by Armature voltage limit) is severely exercised, the Current Limit LED on the SCR drive may light. This may indicate excessive voltage limiting as well as current limiting. Be aware that a low value for Armature current limit may result in oscillation at high speeds. Once stable operation is achieved, be sure to increase Armature current limit to at least 200%.

Determine Motor Field Adjustments (System 12 SCR Drive)

Motor field adjustments may be handled in one of two ways:

- Begin by setting the Field standing voltage (Configuration > Motor Field > Control tab) to known values and then program Field running voltage to 80% of forcing voltage. In this case, the SCR drive will weaken the motor field as necessary to keep armature voltage from exceeding the maximum allowed value. Later, when test weights are available, running voltage should be adjusted so that, when the car is running at contract speed with a full load in the up direction, actual armature voltage is equal to rated armature voltage from the motor name plate. This works well when the motor field has moderate inductance.
- In cases where the motor field is highly inductive and cannot weaken as quickly as necessary, armature voltage limiting circuits in the SCR drive will interfere with the current regulator, causing the Current Limit LED to light. **This must be avoided** because it will be felt in the car. In these instances, you must program a value for high speed motor Field running voltage (Configuration > Motor Field > Control tab) and program the value for Field weakening begin and Field weakening end parameters so that significant motor field weakening occurs before the car reaches maximum armature voltage. Field weakening begin may be increased as long as there is no armature voltage or speed overshoot. Verify armature voltage in both up and down directions. Cases where the motor field must weaken to less than 65% of the forcing voltage are almost certain to require setting Field running voltage and Field weakening parameters.

At this point, if the motor field is at least moderately warm, you should run the car on inspection and check to see that the desired Field forcing voltage (Configuration > Motor Field > Control tab) is the same as that which you measure between terminals MF1 and MF2. It is most important to get the forcing voltage right using this calibration. It is possible that the measured standing voltage may be different from the desired standing voltage value. This is OK. Adjust Field standing voltage to the actual value as measured on terminals MF1 to MF2.

Speed Pick Delay (System 12 SCR Drive)

To achieve proper starting, without rollback or snapping away from the floor, a variable delay in the application of the pattern signal is provided. Speed pick delay 1, on the Configuration > Brake > Control tab, determines the amount of delay from the time the drive processor activates the Run Enable signal to the time the pattern generator sends out the pattern signal.

1. First adjust (Brake) *Pick delay* so the brake just clears the brake drum as the car is beginning to accelerate. Do this with an empty car. The correct setting can be determined by watching the drive sheave. Some rollback may be tolerated for now, but will be corrected later. If the Drive On Fault (DRO) appears on the iBox LCD display when direction is picked, first increase Pick delay and then increase Speed pick delay 1 to coordinate the application of the pattern signal with the picking of the brake.

Timer	
Pick delay	0.000 sec
Hold delay	2.000 sec
Weakening delay	0.000 sec
Repick time	0.000 sec
Speed pick delay 1	0.000 sec
Speed pick delay 2	0.000 sec
Contactor drop delay	1.100 sec
Brake drop delay	0.000 sec
Voltage decay time	0.000 sec
Relevel drop delay	0.000 sec

Pattern Scaling (System 12 SCR Drive)

1. Using *Pattern scaling* on the Configuration > Pattern > Common tab, increase contract speed in 10% increments until the car is running at 80% of contract speed. Monitor performance on the iView Virtual [Oscilloscope](#). Set:

General	
Position Encoder resolution	256.000 pulses/ft
Pattern scaling	100.000 %
Door pre-opening distance	0.00 in

- Test point 1 to Pattern Command (8V equals contract speed at 100% scaling)
 - Test point 2 to Speed Feedback (8V equals contract speed at 100% scaling)
2. Check for severe overshoot by monitoring *Speed/Actual* on the Operational Status tab. Excessive overshoot can trip the governor. If severe overshoot does not occur, continue to increase car speed in 10% increments by increasing *Pattern scaling* incrementally up to a maximum of 100%. Verify that car speed is peaking at no more than 3% over contract speed (10 fpm @ 350 fpm, 15 fpm @ 500 fpm, etc.).
 3. If overshoot occurs, reducing *Standard/Low roll jerk* (Configuration > Pattern > Modes tab) may help, however, a Safety A (or B) Contract Overspeed Fault will occur if Standard/Low roll jerk is reduced too much.

Speed		
Commanded	0.000	fpm
Actual	0	fpm
Motor	n/a	rpm

Armature Voltage (System 12 SCR Drive)

While running the car, observe armature voltage by setting Virtual Oscilloscope Test point 1 to *Armature Voltage Synthetic Feedback*.



Note

The value show on the Virtual Oscilloscope Test point 1 and output to iBox test point STP1 is scaled. A value of 8 volts is equal to the System 12 SCR Drive header voltage value shown on page D1 of the job prints. To calculate the actual value of the reading on the Virtual Oscilloscope Test point 1 and iBox test point STP1, use the formula: Header value I 8 x Test point 1 value, e.g. if the header value is 240 volts, a reading of 6 volts on Test point 1 indicates an actual value of 180 volts ($240 \text{ I } 8 \times 6 = 180$).

As you approach contract speed, see that hoist motor armature voltage does not severely overshoot the desired value of the Armature voltage limit parameter (Configuration > Drive > Safety tab). Any lighting of the Current Limit LED on the SCR drive at low speeds indicates current limiting and may indicate voltage limiting if the Current Limit LED lights as you approach high speeds. Also be sure armature voltage is reaching the desired value as you approach contract speed. If it is too low (full load up/empty car down), the Field running voltage (Configuration > Motor Field > Control tab) is too low.

Learning Terminal Slowdown Switches

Once the car is running at or near contract speed, you must learn the terminal slowdown switches in order to **safely** run the car to the terminal landings (required before performing drive fine tuning).

Please proceed to “Learning Normal and Emergency Terminal Limit Switches” on [page 4-12.](#))



Caution

Before learning the terminal switches, you can trip on terminal position and/or velocity faults when the terminal switches (UNT1, DNT1, etc.) are activated. Avoid activating the terminal switches until they have been learned.

Reaching Contract Speed (Quattro DC Drive)

For System 12 SCR Drive *Reaching Contract Speed* see [page 4-6](#).

Note

Be sure to read this entire section before performing the following procedure. The car must be on Test operation (iBox Test switch to ON) throughout the setup procedure. This prevents the doors from operating during adjustment.

Final Adjustment Before Running at Contract Speed

The following adjustments must be made in preparation for contract speed operation.

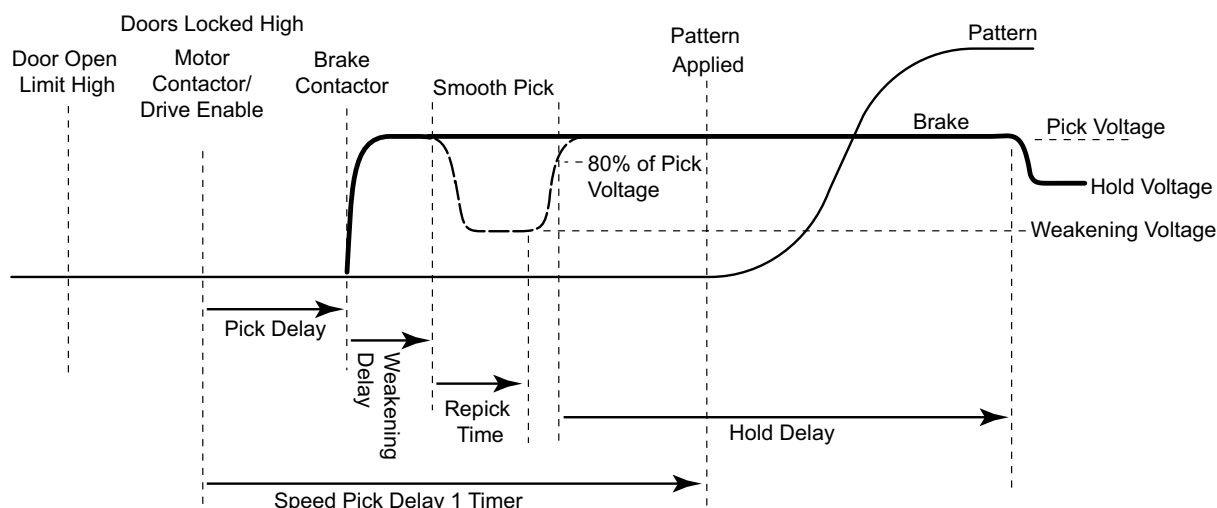
Speed Pick Delay

To achieve proper starting, without rollback or snapping away from the floor, a variable delay in the application of the pattern signal is provided. Speed pick delay 1, on the Configuration > Brake > Control tab, determines the amount of delay from the time the drive processor activates the Run Enable signal to the time the pattern generator sends out the pattern signal.

1. The brake should just clear the brake drum as the car is beginning to accelerate. The recommended initial setting for (Brake) *Pick delay* = 0.400 and for *Speed Pick Delay 1* = 0.500. The correct settings can be determined by watching the drive sheave. Some rollback may be tolerated for now, but will be corrected later.
2. If the Drive On Fault (DRO) appears on the iBox LCD display when direction is picked, first increase Pick delay and then increase Speed pick delay 1 to coordinate the application of the pattern signal with the picking of the brake.

Timer	
Pick delay	0.000 sec
Hold delay	2.000 sec
Weakening delay	0.000 sec
Repick time	0.000 sec
Speed pick delay 1	0.000 sec
Speed pick delay 2	0.000 sec
Contactor drop delay	1.100 sec
Brake drop delay	0.000 sec
Voltage decay time	0.000 sec
Relevel drop delay	0.000 sec

Timer Diagram



Pattern Scaling (Quattro DC Drive)

- Using *Pattern scaling* on the Configuration > Pattern > Common tab, increase contract speed in 10% increments until the car is running at 80% of contract speed. Monitor performance on the iView Virtual [Oscilloscope](#). Set:

General		
Position Encoder resolution	256.000	pulses/ft
Pattern scaling	100.000	%
Door pre-opening distance	0.00	in

- Test point 1 to Pattern Command (8V equals contract speed at 100% scaling)
 - Test point 2 to Speed Feedback (8V equals contract speed at 100% scaling)
- Check for severe overshoot by monitoring *Speed/Actual* on the Operational Status tab. Excessive overshoot can trip the governor. If severe overshoot does not occur, continue to increase car speed in 10% increments by increasing *Pattern scaling* incrementally up to a maximum of 100%. Verify that car speed is peaking at no more than 3% over contract speed (10 fpm @ 350 fpm, 15 fpm @ 500 fpm, etc.).
 - If overshoot occurs, reducing *Standard/Low roll jerk* (Configuration > Pattern > Modes tab) may help, however, a Safety A (or B) Contract Overspeed Fault will occur if Standard/Low roll jerk is reduced too much.
 - Verify car speed by monitoring *Speed/Actual* on the Operational Status tab, or use a hand-held tachometer. If car speed is still not correct, verify the following:
 - Pattern scaling is 100%.
 - If the car is running faster than contract speed parameter, decrease the value of the A1 - Contract Metre Spd parameter.
 - If the car is running slower than contract speed parameter increase the value of the A1 - Contract Mtr Spd parameter.

Speed		
Commanded	0.000	fpm
Actual	0	fpm
Motor	n/a	rpm

Learning Terminal Slowdown Switches

Once the car is running at or near contract speed, you must learn the terminal landings in order to **safely** run the car to the terminal landings (required before performing drive fine tuning).

Please proceed to “**Learning Normal and Emergency Terminal Limit Switches**” on [page 4-12](#).



Caution

Before learning the terminal switches, you can trip on terminal position and/or velocity faults when the terminal switches (UNT1, DNT1, etc.) are activated. Avoid activating the terminal switches until they have been learned.

Learning Normal & Emergency Terminal Limit Switches

The Normal Terminal Slowdown Limit (NTS) and Emergency Terminal Limit (ETS) switch Learn operation records car speed and position at the time each terminal switch is activated on a normal approach to either terminal landing. This Learn operation should be performed again after all parameters have been fully adjusted.

Note

The Terminal Switches Learn procedure must be repeated whenever Pattern profile parameters are modified, since the speed at which the car passes these switches will be different.

To Learn the speeds and positions associated with each NTS and ETS switch:

1. Place the iBox Test switch in the ON position.
2. Place the iBox Inspection switch in the INSP position.
3. In iView, display the Terminal Switches layout (View > Layout > Terminal Switches)

Operational Status

Terminal Switches

Margin

	Position (ft)
UNT 5	2.000
UNT 4	2.000
UNT 3	2.000
UNT 2	2.000
UETS	2.000
UNT 1	2.000
DNT 1	2.000
DETS	2.000
DNT 2	2.000
DNT 3	2.000
DNT 4	2.000
DNT 5	2.000

Over speed 1 %

Send

Diagnostics

Terminal Switches Status

Switch data

		Position (ft)				Speed (ft/min)			
		Learned	Lower limit	Upper limit	Last pass	Learned	Over speed 1	Over speed 2	Last pass
UNT 5	●	0.000	-2.000	2.000	0.000	394.00	433.00	454.00	0.00
UNT 4	●	0.000	-2.000	2.000	0.000	394.00	433.00	454.00	0.00
UNT 3	●	0.000	-2.000	2.000	0.000	394.00	433.00	454.00	0.00
UNT 2	●	0.000	-2.000	2.000	0.000	394.00	433.00	454.00	0.00
UETS	●	0.000	-2.000	2.000	0.000	234.00		951.00	0.00
UNT 1	●	0.000	-2.000	2.000	0.000	681.00	749.00	786.00	0.00
DNT 1	●	0.000	-2.000	2.000	0.000	690.00	759.00	796.00	0.00
DETS	●	0.000	-2.000	2.000	0.000	0.00		951.00	0.00
DNT 2	●	0.000	-2.000	2.000	0.000	414.00	455.00	477.00	0.00
DNT 3	●	0.000	-2.000	2.000	0.000	414.00	455.00	477.00	0.00
DNT 4	●	0.000	-2.000	2.000	0.000	414.00	455.00	477.00	0.00
DNT 5	●	0.000	-2.000	2.000	0.000	414.00	455.00	477.00	0.00

Position at speed transition points - Last run

100 %	0.000	ft	80 %	0.000	ft
95 %	0.000	ft	75 %	0.000	ft
90 %	0.000	ft	50 %	0.000	ft
85 %	0.000	ft	25 %	0.000	ft

Setup

Terminal Switches

Done

In progress

Ready

Not ready

TERMINAL LEARN:

To learn terminal switches, please do the following:

1) Move car to bottom landing (or far enough away from top terminal).

2) Verify that 'TEST' switch is in 'ON' position.

3) Place 'LEARN' switch in 'ON' position.

4) Follow succeeding instructions.

Default

Learn

Abort

4. Refer to the job prints to determine which Normal Terminal Limit switches (UNT_n and DNT_n) are required for this installation and where they should be positioned in the hoistway. Verify that the Learned position on the Diagnostics > Terminal Switches Status tab corresponds to the job prints. If not, refer to the Setup > Terminal Switches tab and perform the procedure titled "To default terminal switches, please do the following:"
5. Move the car to the bottom landing (on Inspection).
6. Place the iBox Inspection switch in the NORM position to allow the car to synchronize to a floor.
7. Place the iBox Learn switch in the ON position.
8. If the *Not Ready* indicator is lighted (Setup > Terminal Switches tab), perform any instructions shown in the message window.
9. When the *Ready* indicator is lighted, click Learn. The In Progress indicator will light.
10. You may click Abort at any time to abort the procedure. If the learn process is aborted, the last saved complete set of values is retained.
11. Place a call to the top terminal landing using the Call Registration panel.
12. When the car stops at the top landing, place a call to the bottom terminal landing.
13. When the procedure is complete, the Done indicator lights and you are prompted to return the Learn switch to the OFF position. The new NT and ETS switch speeds and positions are automatically saved to the controller.
14. The learned NT and ETS values are displayed on the Diagnostics > Terminal Switches Status tab. Verify that all of the switches required for this job have reasonable values displayed. If only UNT₁ and DNT₁ switches are used in addition to UNT₅ and DNT₅ (always present), the UNT₁ and DNT₁ values must be 95% of contract speed or less. If more NT switches are used, UNT₁ and DNT₁ may have learned speeds equal to contract speed, but all other NT switches must have learned speeds 95% of contract speed or less.

If some limit switches have learn speeds in excess of their maximum, those switches must be moved closer to the terminal landings. Alternately, if reduced performance can be tolerated, the Standard/Deceleration parameter can be reduced.

15. Make several full hatch runs. After each run, on the Diagnostics > Terminal Switches Status tab, verify that there is a comfortable margin between the last pass speeds and the Over speed 1 tripping thresholds for the terminal switches used on this job. Also verify that there is a comfortable margin between the last pass positions and the Upper and Lower limit position thresholds.



Danger

This procedure must be successfully performed before any passengers are allowed to use the elevator.

Synthetic Speed Calibration (System 12 SCR Drive)

Calibration determines the value for the Voltage safety calibration and Current safety calibration parameters (Configuration > Drive > Safety tab). These in turn determine synthetic speed.

Calibration requires the elevator to move in both directions and to reach at least 50% of contract speed in each. Actually reaching contract speed yields the best results. Additionally, movement to both terminal landings will yield the best results.

Results can be verified using the Virtual Oscilloscope by observing the synthetic speed signal (Synthetic Signal) on one test point in comparison to the speed feedback signal (Speed Feedback) on the other test point. When calibrated, shape and amplitude of the signals should be similar.

The Setup > Synthetic Speed tab displays the outputs that represent calibration results (Gains - Voltage and Current). If these parameters were saved, Voltage safety calibration and Current safety calibration parameters (Configuration > Drive > Safety tab) should be equal to these output values.

1. Move the car to the top or bottom terminal landing.
2. Place the iBox TEST and LEARN switches in the ON position.
3. In iView, display the Setup > Synthetic Speed tab (View > Setup > Synthetic Speed).
4. Follow the instructions in the message window on the Setup - Synthetic Speed tab.

Setup

Synthetic Speed

Done
In progress
Ready
Not ready

To perform synthetic speed calibration, please do the following:
 1) Move car to the top/bottom terminal landing.
 2) Place the 'TEST' switch to 'ON' position.
 3) Toggle 'LEARN' switch to 'ON' position.
 4) Follow succeeding instructions.

Calibrate
Abort

Calibration Status

	Up Message	Down Message
Inactive	●	●
Pending	●	●
Calibrating	●	●
Calibrated	●	●
Saved	●	●

Gains

Voltage **0.000** Current **0.000**

Note

A manual version of this calibration process is described in Section 2. Please refer to “Tach Failure Calibration (System 12 SCR Drive)” on page 2-45.

Feed Forward Gain Calibration (System 12 SCR Drive)

This calibration determines the baseline value for error compensation. Baseline value determines the minimum value for the Error compensation parameter (Configuration > Drive > Control tab).

The process requires the elevator to move in both directions and to reach at least 50% of contract speed in each. Reaching contract speed will yield the best result. There is no restriction on destination landings for calibration runs, but running to terminal landings is best.

Depending on the adjustments made, the characteristics of the hoist-motor, and the characteristics of the installation, optimum error compensation value is generally between 100% and 150% of the calibration value. There should be no reason for a value below the calibration value.

Calibration results can be verified using the Virtual Oscilloscope by observing the acceleration feed forward command signal (Acceleration (Command)) on one test point and the composite armature command signal (Armature Composite Control) on the other. When calibrated, the shape and amplitude of these signals should be similar. The only discrepancy between the two signals may be a DC offset if pretorque is not used.

The Setup > Feed Forward Gain tab displays an output that represents the result of the calibration process (Gain). If this parameter was saved, the Error compensation parameter (Configuration > Drive > Control tab) should equal this output value.

1. Move the car to the top or bottom terminal landing.
2. Place the iBox TEST and LEARN switches in the ON position.
3. Display the Setup > Feed Forward Gain tab (View > Setup > Feed Forward Gain).
4. Follow the instructions in the message widow on the Setup - Synthetic Speed tab.

Setup

Feed Forward Gain

Done
In progress
Ready
Not ready

To perform feedforward gain calibration, please do the following:
 1) Move car to the top/bottom terminal landing.
 2) Place the 'TEST' switch to 'ON' position.
 3) Toggle 'LEARN' switch to 'ON' position.
 4) Follow succeeding instructions.

Calibrate
Abort

Calibration Status

	Up Message	Down Message
Inactive	●	●
Pending	●	●
Calibrating	●	●
Calibrated	●	●
Saved	●	●

Gain Calibration Data

Gain 0.000

Fine Tuning the Speed Regulator (Quattro DC Drive)

In order to properly tune the speed regulator of the Quattro drive, a valid inertia value must be determined.

1. With a balanced load in the elevator, bring the elevator to the top landing.
2. In order to obtain a valid inertia value, disable motor field weakening by setting A6-Weak Fld Current to the same value as A6-Full Fld Current.
3. Run the elevator at full contract speed from the top landing to the bottom landing and then back up to the top landing. Observe D1-Est Inertia for both the down and up directions. Average the two values and enter the result for A1-Inertia. Please refer to *Inertia Calculation* in the Appendix of the Magnetek Quattro DC Elevator Drive Technical Manual.
4. With the system inertia properly adjusted, final tuning of the speed regulator can be performed.

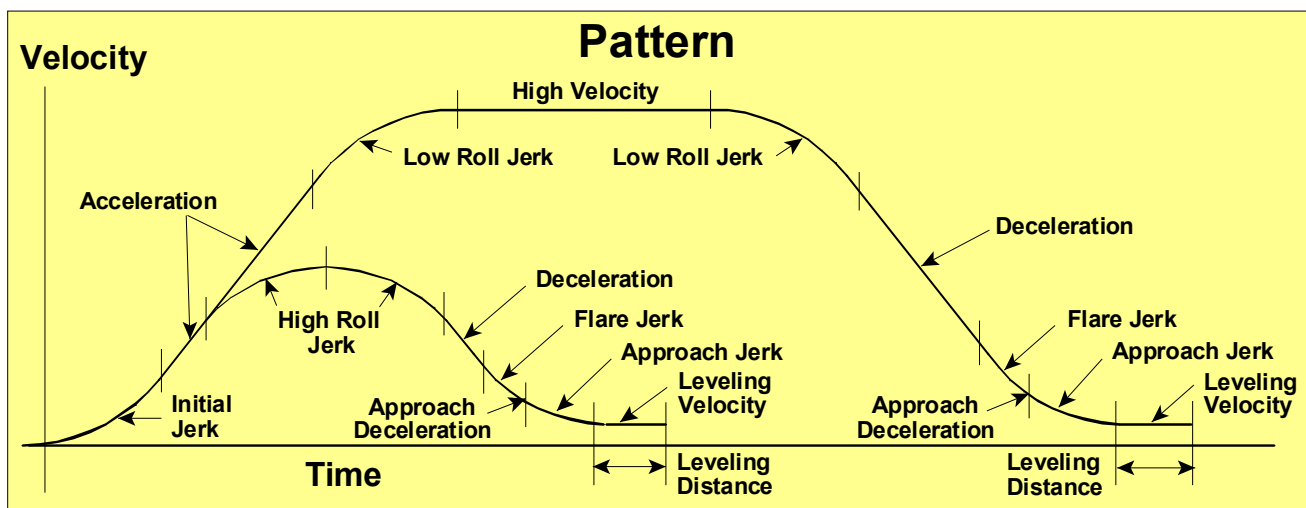
Note

The A1-Response parameter is one parameter that can be used to adjust the speed regulator (please refer to the Magnetek Quattro DC Drive Technical Manual for tuning/adjustment procedures).

Shaping the Speed Profile

The pattern graph below charts the profile of car movement between any two landings and calls out the parameters that define profile shape. The value of the pattern parameters is very important in determining the quality of the ride and the overall performance of the elevator. The most critical parameters are Deceleration, Flare jerk, Approach deceleration, Approach jerk and Leveling speed since they define final stop and therefore greatly affect floor to floor travel time.

Figure 4.1 Pattern Graph



Profile Parameters

- **Initial jerk** - defines the transition from zero speed to full acceleration. As Initial jerk increases, the profile transitions more quickly from starting to maximum acceleration. Values typically range from 4.0 to 8.0 ft/s³ (1.219 to 2.438 m/s³) with higher values resulting in a sharper start.
- **Acceleration** - determines the maximum acceleration for the profile. Determines the maximum current delivered by the SCR Drive during acceleration. The maximum value is typically 4.0 ft/s² (1.219 m/s²) and the minimum is usually not less than 2.5 ft/s² (0.762 m/s²). Values higher than 4.0 ft/s² (1.219 m/s²) are possible but do not yield significant improvements in performance.
- **High roll jerk** - is used on short runs where the car is not able to reach High speed before deceleration must begin. High roll jerk determines how quickly the profile transitions from maximum to zero acceleration and zero to maximum deceleration. As High roll jerk increases, the profile transitions more quickly. Lower values provide greater comfort but are harder to fit into the shortest one-floor-runs. We recommend that you identify the shortest full height floor and use it when testing parameter values. Typical values range from a minimum of 4.0 ft/s³ to a maximum of 8.0 ft/s³.
- **Low roll jerk** - is used on runs where the car is able to reach High speed before deceleration must begin. Low roll jerk determines how quickly the profile transitions from maximum to zero acceleration (High speed) and zero to maximum deceleration. As Low roll jerk increases, the profile transitions more quickly. Lower values provide greater comfort. Typical values range from a minimum of 4.0 ft/s³ to a maximum of 8.0 ft/s³.
- **High speed** - determines the maximum speed for this profile. For the Standard profile this is usually contract speed (ft/min).
- **Deceleration** - determines the maximum deceleration for this profile. The maximum value is typically 4.0 ft/s² and the minimum is usually not less than 2.0 ft/s² with more common values ranging from 2.75 ft/s² to 3.75 ft/s² (0.838 to 1.143 m/s²). The value of Deceleration is usually slightly less than the value of Acceleration (by 0.25 to 0.5).
- **Flare jerk** - defines the transition from maximum deceleration to near zero speed or to Approach deceleration. As Flare jerk increases, the profile transitions more quickly from maximum deceleration to Approach deceleration. Reduction of this parameter is often used to reduce the tendency to spot or stall near the end of deceleration, and/or to reduce any tendency for the deceleration rate, as experienced in the car, to bunch up (increase as the car approaches the floor). The limiting factor in reducing the value of Flare jerk is inability to fit the profile into the shortest normal one-floor-run.
- **Approach deceleration** - determines the deceleration rate for the transition from Flare jerk to Approach jerk.
- **Approach jerk** - defines the transition from approach deceleration to Leveling speed. As Approach jerk increases, the profile transitions more quickly from Approach deceleration to Leveling speed.
- **Leveling speed** - determines the speed at which the elevator will level into the floor.
- **Leveling distance** - determines the stabilized distance the elevator will travel before arriving at the destination floor.

Profiles

There are eight programmable profiles addressed on the Pattern Screen:

- **Standard** - used under normal operating conditions. Unless otherwise specified, suggested profile parameter adjustments are assumed to refer to Standard profile parameters.
- **Earthquake** - used if an earthquake is detected by the elevator system during normal operation (EQI input activated). If you have earthquake operation, you will verify proper operation during testing.
- **Emergency power** - used when the Emergency power input (EPI) is activated, indicating a loss of commercial power and that the car is running on generator power.
- **Emergency slowdown** - used when the system requires faster than normal deceleration. It is used in response to situations such as the normal terminal stopping device being activated or loss of the quadrature signal (positioning signal). Note that the Emergency rate limited stop parameter (Configuration > Drive > General tab) will limit how fast this profile can slow the car down. Increasing this parameter will allow higher deceleration rates to be used for the Emergency Slowdown Profile.
- **Correction** - used when the system is not confident of the car position in the hoistway. The car proceeds to a known position using the Correction profile parameters in order to synchronize its position information.
- **Inspection** - used when the system is placed on Inspection/Access operation. The Inspection profile is also used when the system is learning the building floor heights.
- **Alternate 1** - used when the Alternate Speed Profile One input (ASP1) is activated.
- **Alternate 2** - used when the Alternate Speed Profile Two input (ASP2) is activated.

Setting Pattern Parameters

By viewing the commanded pattern and car speed feedback on the iView Virtual Oscilloscope as the car is running, any discontinuity in the idealized speed profile can be observed.

- On the iView Virtual Oscilloscope:
 - Set Test point 1 = *Pattern (Command)*
 - Set Test point 2 = *Speed Feedback*

Note

Unless otherwise specified, suggested parameter adjustments are assumed to be referring to Standard profile parameters.

- **Initial Values for Pattern Parameters** - Pattern shape preset can be used to enter preset values for the Standard profile parameters based on the high speed (contract speed) of the elevator and the selected shape type (Slow, Moderate or Fast). This provides an excellent starting point.
- **Contract Speed Overshoot and Current Limiting** - To prevent contract speed overshoot and/or current limiting from the drive, the Acceleration and Low roll jerk parameters can be reduced. The Low roll jerk rate has a slightly greater effect on overshoot at high speed than does Acceleration. The Acceleration parameter has the most effect on current limiting. Observe actual car response on iBox test point STP2 and GND (with the Test point 2 parameter set to *Speed Feedback*) to verify that there is no overshoot.

- **Slope of Acceleration / Deceleration** - Ideally, the slope of acceleration in volts per second should be equal to or slightly greater than the slope of deceleration as viewed on an oscilloscope connected to iBox test point STP1 and COM (Virtual Oscilloscope Test point 1 set to *Speed Feedback Filtered*). In a system where tracking accuracy is very good, Acceleration can be equal to Deceleration. If tracking is less accurate, set Acceleration greater than Deceleration to get the same effective rate of deceleration as acceleration.

- **Final Approach to the Floor** - Final approach to the floor can be customized in many ways. If tracking accuracy is very good, set as follows on the iView Pattern > Common tab:

Leveling	
Leveling speed	4.00 ft/min
Releveling speed	6.00 ft/min
Leveling distance	0.25 in
Releveling distance	0.25 in

- Leveling speed = Your desired leveling speed. A typical number is from 2 to 4.
- Leveling distance = your choice. A typical setting is from 0.12 to 0.25.

If tracking is not perfect, you can begin to introduce values in Leveling speed and distance that allow you to mold the shape of the last few inches of approach.

- **Excessive Motor Noise** - If there is excessive motor noise or if acceleration or deceleration feels rough, reduce Acceleration and/or Deceleration to provide the desired results.
- **Bunching up of Deceleration Rate** - If you observe “bunching up” of deceleration (decel rate increase in the last few feet of approach), it is generally due to poor tracking:
 1. You must improve accuracy or lower the value of the Flare jerk and/or Approach jerk parameters. Remember that there are very real limits to how low you can set these parameters (1.75 ft/s³ is often as low as you can go).
 2. Verify *Lag Delay* is correct. Depending on drive tuning, lag between commanded speed and drive response can vary. As the drive is adjusted, the Lag delay parameter on the Controller > View > Configuration > Pattern > Common tab will need to change as well.
 - If lag delay is insufficient, the elevator will plow into a landing. The acceleration and jerk rate during deceleration to a landing will be greater than profile values indicate.
 - If lag delay is excessive, the elevator will drag into a landing. Acceleration and jerk rate during deceleration will be less than profile values indicate. In addition, a discontinuity in the profile will occur during the transition from acceleration to deceleration for movement between floors where a stabilized speed is not reached. Under normal operation, this would occur when contract speed is not achieved.
 - To adjust Lag delay, observe “Acceleration (Raw)” on the virtual oscilloscope. Perform one-floor-run movement and observe the transition through zero (peak acceleration transitioning to peak deceleration as the elevator reaches its peak speed that is less than contract speed). This transition should have no vertical (too much Lag delay) or horizontal (too little Lag delay) discontinuity. This transition adjustment is only valid when the elevator is unable to reach the maximum speed for a particular profile (unable to reach contract speed under normal operation). A physical oscilloscope may be required to see this transition properly. Adjust the Lag delay until the vertical discontinuity is eliminated.
 - For initial setup, set the Lag delay parameter to 0.3 seconds on the Configuration > Pattern > Common tab.

Controlling Initial Start of Car Motion

Some gearless machines may exhibit rollback at the start of car motion. Rollback control adjustments include:

- Pretorque implementation for systems with analog load weighers
- Adjusting motor control parameters specific to start of motion
- Performing a thorough brake adjustment (iField Brake Module only)

Pretorque Adjustments

For installations using an analog load weigher, load information can be used to “Pretorque” the hoist motor to accommodate load changes at a floor and prevent sagging or rollback.

Two Pretorque methods are provided: Balanced Load and Empty/Full Load. The Balanced Load method is backwards compatible with the method used in previous releases of iControl software. Balanced mode parameters are found on the left and Empty/Full Load parameters are on the right side of the iView (Controller > Drive > Pretorque) screen shown below.

Location	Selected	Position (Empty)	Position (Full)	Load (Empty)	Load (Full)	Current (Empty)	Current (Full)
2		0.000	0.000	0.000	0.000	0.000	0.000
1		0.000	0.000	0.000	0.000	0.000	0.000

Note

Performing safety and buffer tests described later in this section will probably require that you repeat the Pretorque adjustment described here.

Balanced Load Method

This method requires gain and position compensation adjustment when balanced load is placed in the car. Furthermore, verification is required when the car is empty and fully loaded at each serviceable landing.

Since the adjustments for this method occur only at the top and bottom terminal floor, unusual pre-torque requirements at other landings are not accommodated (i.e. warped rails).



Note

This method must be used when no load weigher is available and the No pretorque option or Synthetic pretorque option is used.

Empty/Full Load Method

This method collects Pretorque information during a learn process with a car that is empty and fully loaded. No Pretorque adjustments are required. This method allows the collection of pretorque information for up to 35 floors and requires Pretorque information for at least the top and bottom terminal floor. As a result, with pretorque information collected only for the top and bottom terminal floor, this method mimics the Balanced Load method.

Let us assume a building with 4 floors. A fully configured table would contain 4 entries:

- Row 4 would correlate to floor 4.
- Row 3 would correlate to floor 3.
- Row 2 would correlate to floor 2.
- Row 1 would correlate to floor 1.

A minimally configured table, on the other hand, would only contain 2 entries:

- Row 2 would correlate to floor 4.
- Row 1 would correlate to floor 1.

Needless to say, the number of table entries can vary from 2 to the number of floors (as long as the number of floors is 35 or less) in the building. The following examples offer some possibilities between a minimally and fully configured table:

- A 6 story building with a 4 entry table - floor 1, floor 3, floor 4, and floor 6.
- A 7 story building with a 4 entry table - floor 1, floor 3, floor 5, and floor 7.
- A 12 story building with a 4 entry table - floor 1, floor 5, floor 7, and floor 10.
- A 17 story building with a 5 entry table - floor 1, floor 5, floor 9, floor 13, and floor 17.

Since pretorque information is available for up to 35 landings, unusual pretorque requirements at landings are accommodated (i.e. warped rails).



Note

This method can only be used when a load weigher is available. It is also only available for System 12 drives.

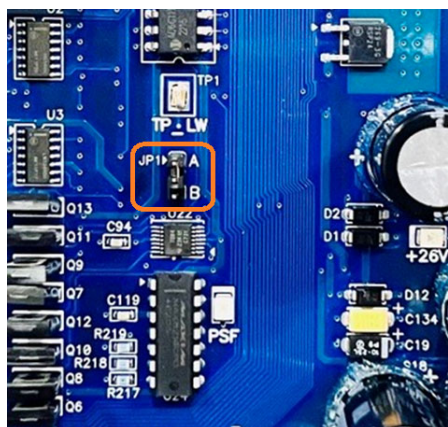
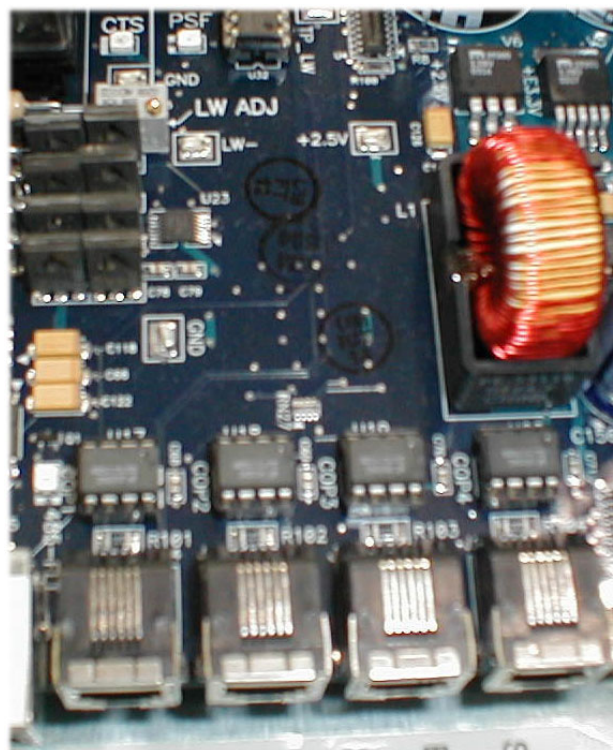
Load Weigher Sensor Adjustment

Review the installation and adjustment instructions for the load weigher and verify that all steps have been completed, including:

- Rope Tension Sensing Load Weigher - perform the procedures described in the EMCO Load Weigher instruction.
- Crosshead Deflection Load Weigher - perform the procedures described in the “Adjustments” section of the K-Weigh Instruction Manual.
- Isolated Platform Load Weigher - perform the adjustment procedures described in the MCE Load Weigher instruction.

Next, verify that the iBox is receiving the load weigher signals properly.

1. On Independent service, move the car to the landing at which the test weights are stored.
2. On the iView Virtual Oscilloscope screen, select Load Weigher (Raw) on Test point 1.
3. With the car empty, verify that the Test point 1 reading is at least 0.5 but not greater than 1.5.
4. Place a full load in the car. Verify that the Test point 1 value is now between 5.5 and 8.0. If necessary, adjust trim-pot LW ADJ on the CTP (cartop) board in the iLink enclosure to achieve the correct reading.
5. If the Load Weigher readings seem to be incorrect, ensure that the JP1 jumper is set to the default position A. Position B should only be used with Load Weighers that present a very small voltage range (less than 0-3V) and do not output the full 0-10V analog voltage output across the empty and overload.



Pretorque Adjustments - Balanced Mode Method

1. Place a balanced load in the car (the balanced load weight recorded when performing the Counterweight Balancing procedure). Please refer to “Counterweight Balancing” on page 3-12.
2. With the car in Test mode (iBox TEST switch ON) move the car to the top floor. All other inspection modes must be inactive (i.e. cartop, in-car, access, etc.)
3. On the Configuration > Drive > Pretorque tab, enable the Pretorque option and send the new selection to iControl.
4. On the Virtual Oscilloscope, select Load Weigher Balanced on Test point 1. If necessary, adjust the windows so that you can see the oscilloscope and the Pretorque parameters at the same time.
5. On the Configuration > Drive > Pretorque tab, adjust the *Pretorque balance adjustment* parameter until the digital readout for Test point 1, Load Weigher Balanced, is equal to or as close to zero (0.0) as possible.
6. If *Error compensation*, on the Configuration > Drive > Control tab, was increased to compensate for rollback, you may lower the value now.
7. Verify that *Pretorque position compensation*, on the Drive > Pretorque tab is set to 0.0. If necessary, set it to 0.0 and *Send* it to the controller.
8. Verify that *Pretorque gain*, on the Drive > Pretorque tab, is 0.0. If necessary, set it to 0.0 and *Send* it to the controller.
9. On the Configuration > Brake > Control tab, increase the value of *Speed Pick Delay 1* to 2.0 seconds so that any rollback is easily detected. Remove the weights from the car and move the car to one floor below the top landing.
10. Make a one-floor-run down. Check for rollback by either watching the motor or by monitoring the Speed Feedback signal on the Virtual Oscilloscope.
11. If rollback is detected, adjust the *Pretorque gain* parameter on the Drive > Pretorque tab, and again make a one-floor run down from one floor below the top landing. Repeat until rollback is no longer noticeable. Then verify that there is no rollback on a one-floor run going up from one floor below the top landing.
12. For a Quattro DC Drive, if increasing the Pretorque gain causes more rollback, change the *A1-Ext Torque Mult* parameter from 1.0 to -1.0 (flip the polarity).
13. Run the car to the bottom landing. Make one-floor runs up and then down, checking for rollback.
14. If rollback is detected, decrease the value (less positive or more negative) of *Pretorque position compensation*, on the Drive > Pretorque tab. Repeat until no rollback is detected on one-floor runs up or down in the lower hoistway. If pull-through is detected, increase the value (more positive or less negative). Pretorque position compensation has a range of -5.000 to +5.000.
15. With the car empty, check throughout the hoistway and verify that rollback is not detected.
16. Place full load weights in the car and check for rollback throughout the hoistway. Verify that rollback is not detected. Adjust *Pretorque gain*, on the Drive Pretorque tab, if necessary.

17. Again remove all weights from the car. Check for rollback throughout the hoistway and verify that no rollback is detected. If some rollback has been introduced by adjusting the Pretorque gain for a full load, optimize the setting for an empty car, since this is the most frequent condition.
18. Reduce *Speed Pick Delay 1*, on the Configuration > Brake > Control tab, to the minimum value which still allows the brake to lift fully before motion starts. You should not feel the car pulling out from under the brake. The brake should lift fully before motion starts, but avoid unnecessary delay in starting movement.

Note

If this car will be using the load weigher for dispatching functions, e.g. Light load anti-nuisance, etc., you may want to set the parameters and learn the load values at this time. [Please refer to "Load Weigher Adjustment for Dispatching" on page 4-38.](#)

Pretorque Adjustments - Empty/Full Load Method

1. Place the car in Test mode (iBox INSPECT switch set to NORM and TEST switch set to ON). All other inspection modes must be inactive (i.e. cartop, in-car, access, etc.).
2. On the Configuration > Drive > Pretorque tab, select **Balanced Load** as the Pretorque Method and select **No Pretorque** as the Pretorque Option. Send the new selections to the controller. The **Empty/Full Load** option should not be selected for the Pretorque Method when the pretorque table is being configured.
3. On the Configuration > Drive > Pretorque tab, select Acquire Location Data. Send the new selection to the controller.
4. On the Configuration > Drive > Pretorque tab, set the Locations parameter to the number of floors that the elevator services or the number of floors that will provide pretorque information. Send the new selection to the controller. The first row in the pretorque table must correlate with the bottom terminal floor and the last row (highest numbered row) must correlate with the top terminal floor.
5. Move the car in Test mode to a floor where weights can be removed from inside the car.
6. Remove all weights from inside the car.
7. Move the car to the bottom terminal floor.
8. Place the car in Machine Room Inspection mode (iBox INSPECTION switch set to INSP). All other inspection modes must be inactive (i.e. cartop, in-car, access, etc.).
9. Select the row in the table that correlates to the building floor where the elevator is located.
10. Move the car in the up direction (iBox UP and ENABLE switches pressed) until the motor stops rotating and holds the cab steady.
11. Release up direction.
12. Press the Fill Empty button to fill the position, load, and current values for the empty scenario. Send the information to the controller.
13. Place the car in Test mode.
14. Run the car to the next floor above that will be used to gather pretorque information.
15. Repeat steps 8 through 14 until the top floor is configured.
16. Move the car in Test mode to a floor where weights can be loaded inside the car.

17. Place a full load of weights inside the car.
18. Move the car to the bottom terminal floor.
19. Place the car in Machine Room Inspection mode.
20. Select the row in the table that correlates to the building floor where the elevator is located.
21. Move the car in the up direction until the motor stops rotating and holds the cab steady.
22. Release up direction.
23. Press the Fill Full button to fill the position, load, and current values for the full scenario. Send the information to the controller.
24. Place the car in Test mode.
25. Run the car to the next floor above that will be used to gather pretorque information.
26. Repeat steps 19 through 25 until the top floor is configured.
27. Move the car in Test mode to a floor where weights can be removed from inside the car.
28. Remove all weights from inside the car.
29. On the Configuration > Drive > Pretorque tab, deselect Acquire Location Data. Send the new selection to the controller.
30. On the Configuration > Drive > Pretorque tab, select **Empty/Full Load** as the Pretorque Method. Send the new selection to the controller.
31. The pretorque table is now fully configured and available.
32. Check for rollback throughout the hoistway and verify that no rollback is detected.
33. Reduce Speed Pick Delay 1, on the Configuration > Brake > Control tab, to the minimum value which still allows the brake to lift fully before motion starts. You should not feel the car pulling out from under the brake. The brake should lift fully before motion starts, but avoid unnecessary delay in starting movement.

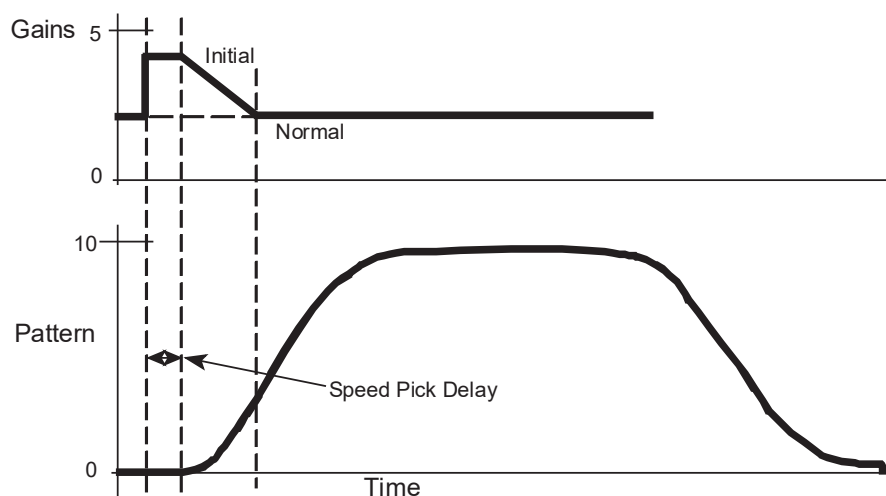
 Note

If this car will be using the load weigher for dispatching functions, e.g. Light load anti-nuisance, etc., you may want to set the parameters and learn the load values at this time. [Please refer to “Load Weigher Adjustment for Dispatching” on page 4-38.](#)

Motor Control Adjustments (System 12 SCR Drive)

If rollback is a problem and the installation does not use an analog load weigher (allowing Pre-torque rollback compensation), adjusting Drive > Control tab parameters as described below will help. The following illustration shows how normal gains are changed by Start gain (normal) adjustments.

Figure 4.2 Initial Gain Adjustment Effects



1. On the Drive > Control tab, enable Options / Start gain (normal).
2. Set PID-Start (normal) / Proportional to twice the value of PID-Standard / Proportional.
3. Set PID-Start (normal) / Integral to twice the value of PID-Standard / Integral.
4. Set PID-Start (normal) / Differential to twice the value of PID-Standard / Differential.
5. Set PID-Start (normal) / Transition Time to 1.0 seconds.
6. Make a one floor run and look for rollback or oscillation at the start of motion.

Start (normal)	
Proportional	2.000
Integral	2.000
Differential	0.000
Transition time	0.300 sec

Rollback

7. If you see rollback, but no oscillation, increase PID-Start (normal) / Proportional, Integral, and Differential by 25% each.
8. Make a one floor run and again look for rollback or oscillation. If rollback is still a problem, again increase PID-Start (normal) / Proportional, Integral, and Differential settings by 25% each.
9. Continue testing and adjusting gains as necessary until rollback is controlled but before oscillation from too much Start (normal) gain becomes a problem.

Oscillation

10. Refer to steps 7, 8, and 9, except begin by reducing Start (normal) / Proportional, Integral, and Differential by 25%.
11. If oscillation persists, try reducing only the Start (normal) / Differential gain setting.
12. You may also try keeping Proportional and Differential gain as high as possible but reduce Transition Time in 0.1 second increments until oscillation is diminished but rollback remains under control.

Drive Control Adjustments (Quattro DC Drive)

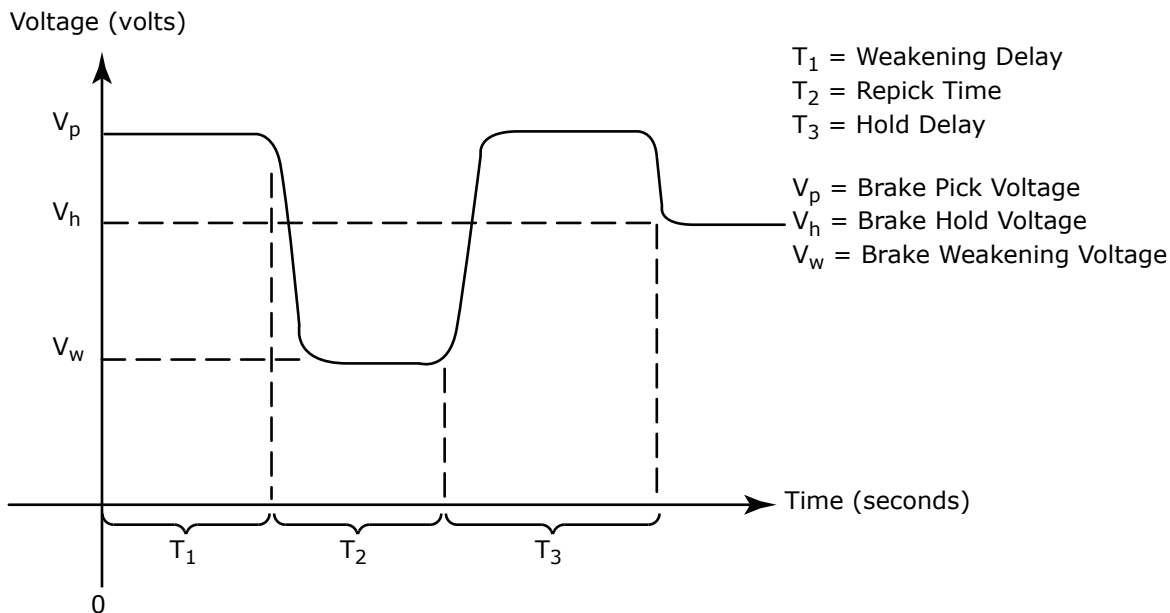
Please refer to the Magnetek Quattro DC Drive Technical Manual for tuning and adjustment procedures.

Brake Parameter Adjustments

The iField braking module allows you to make some very refined brake adjustments for smooth picking to control rollback.

- First, find the level of brake excitation that results in a very gradual but *complete* picking of the brake:
 1. Place the car on Inspection (iBox Inspection switch in the INSP position). Set Pattern scaling (Pattern > Common tab) to 10% to provide an inspection speed of about 5 to 10 fpm.

Figure 4.3 Brake timing diagram for smooth picking



2. Display the Configuration > Brake > Control tab and record the original parameters before making any changes. Verify the following settings:
 - Weakening delay = 0.00
 - Repick time = 0.00
3. Set the Pick voltage and the Hold voltage to $\frac{1}{2}$ of the original value of Pick voltage.
4. Slowly increase both Pick and Hold voltages until the brake picks completely. The idea is to increase or decrease *both* Pick voltage and Hold voltage identically until the brake just barely picks all the way. Then, add 5 or 10 volts and verify that the brake still has a very slow, smooth picking motion (taking 1 to 1.5 seconds to pick). The goal is to find a brake voltage that allows the brake to transition slowly through the pressure-releasing part of the movement.
5. Set the Weakening voltage to the same value as Pick Voltage and Hold Voltage. For geared applications, if the brake holding voltage is not specified, set Weakening voltage and Hold voltage = Pick voltage.

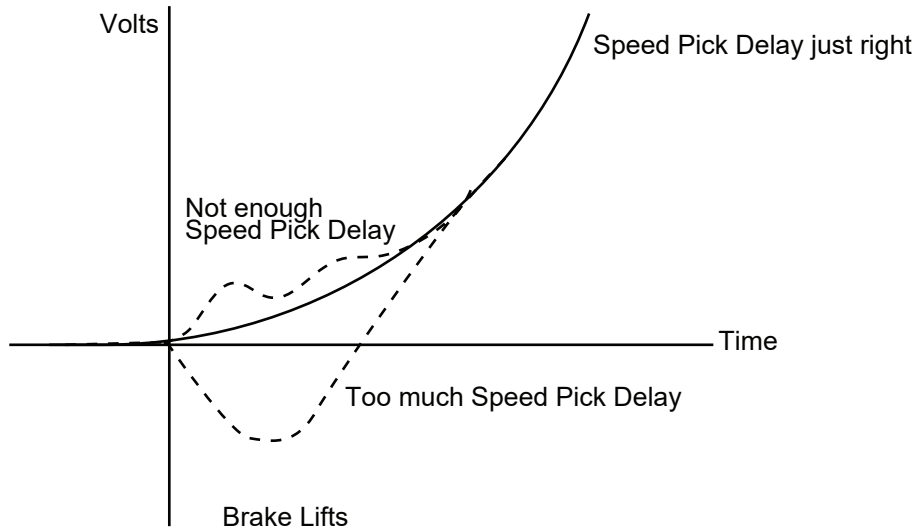
6. Apply a maximum value of brake voltage, very briefly, at the start of movement. This gets the brake quickly to the point in the lifting process where a substantial amount of tension is released. This is done as follows:
 - Set Pick voltage back to the original value to allow a high initial value of brake voltage.
 - Set Repick time to 1.00 second to allow a slow transition through the pressure-releasing part of movement, after which the brake voltage briefly returns to a high value to ensure that the brake fully picks. (See the following note.)
 - Increase the value of Weakening delay in 0.05 second increments until you see the brake move more quickly in the first part of its movement so it can reach the stage where the pressure is starting to be released. Typical values are between 0.10 to 0.45 seconds. The final result will often look as if the brake is lifting at a fairly constant rate, even though the initial voltage is high. This overcomes the natural tendency for a gearless brake to start lifting slowly and then faster the further it lifts.

Note

Full brake Pick voltage is *automatically* applied for about a second at the end of the brake Weakening delay, just after the brake has cleared the braking surface, thereby guaranteeing full lifting after a smooth transition through the zone of pressure release. After the brief return to full brake voltage, the brake voltage will *automatically* drop to the Hold voltage, but must not allow the brake to sag back onto the braking surface.

- Verify the manufacturers recommended value for brake holding voltage and set Hold voltage to that value. If this information is not available, experiment with Hold voltage to determine the voltage necessary to hold the brake up, and then add a little extra margin.
7. At this point, a storage oscilloscope is suggested to get the best results from adjustment. Connect the scope to iBox test points STP2 and GND (with the iView Virtual Oscilloscope Test point 2 parameter set to *Speed Feedback*) to view car speed response.
 8. Set the horizontal sweep to about 0.5 to 0.2 second per division and increase vertical gain until you see a microscopic view of the breakaway at the start of movement. A rough start is characterized by jaggedness at the beginning of the curve; a smooth start by a smooth transition from the horizontal line to the acceleration curve. Using this method, you can touch up parameters such as Speed pick delay 1 in the next step.
 9. On the Configuration > Pattern > Common tab, set Pattern scaling to 100%.
 10. Coordinate the start of the car with brake operation by *increasing* Speed pick delay 1 (Configuration > Brake > Control tab) until you begin to see rollback at the start of an empty car DOWN run at the top floor. Then, decrease Speed pick delay 1 until rollback just disappears.

It may be helpful to reduce the Initial jerk parameter to 5.00 or 4.00 to help provide a smooth start. Remember that *any* change in the brake parameters, Initial jerk, or any of the gain parameters relating to the speed loop will probably affect the coordination of the starts. Therefore, you must readjust Speed pick delay 1 after any such changes.

Figure 4.4 Effect of Speed pick delay on the start of car motion

Become familiar with the correlation between what is seen on the scope and what is felt in the car at the start of motion. Use the scope to adjust brake parameters to provide smooth starts. If the car has sleeve bearings, be sure to evaluate starts without letting too much time pass between runs to get accurate rollback information. Once you see the effect of the various parameter adjustments on car operation, you will see how important it is to have the brake properly adjusted.

The value of Repick time (Configuration > Brake > Control tab) can be reduced but doing so will reduce the time that the brake spends accomplishing a slow lift with Weakening voltage applied. This will eventually cause the brake to start lifting rapidly. Typically, Repick delay should not be less than 0.50 seconds.

Calibrating the Floor Offsets

iControl provides an easy and precise method of setting the parameters required to stop the car accurately at every floor. Stopping “spot on” at every floor requires three things:

1. The control system must know the exact position of the car in the hoistway and the exact position of each landing target (magnet). Without requiring any user adjustment, the extremely accurate iLand landing system allows iControl to know the car’s position in the hoistway to within 1/20 inch. And the Floor Height Learn procedure, [see “Learning the Floor Heights” on page 4-2](#), allows iControl to know the exact position of the landing target to the same accuracy.
2. The control system must know the exact position in the hoistway of each landing sill. Calibrating the floor offsets allows iControl to know this position to an accuracy limited only by the accuracy of your measurement.
3. The car must be adjusted to stop smoothly and consistently, given the limitations of controlling the machine and brake and the inevitable trade off between stopping accuracy and ride quality. These adjustments will be performed after the floor offsets are calibrated. [Please refer to “Adjusting Leveling and Final Stop” on page 4-33.](#)

Floor offset calibration procedure

This procedure requires IMP software version 002.001.001 or greater and iView software version 003.000.001 or greater.

Floor offset calibration can be performed by one or two persons. You will move the car to each floor that you want to calibrate, and the distance between the car sill and landing sill must be measured. You can use the form provided to record your measurements ([See “Floor Offset Calibration Record” on page 4-32](#)). You need not perform the calibration for all floors each time the procedure is performed.

The measured values, in decimal inches, will be entered into iView on the Setup > Floor Heights > Floor Offsets tab). You can make the measurement using a fractional inch square and then use the conversion table provided to determine the decimal value. But the better way is to use a machinist square which is marked in decimal inches.

Once the floor offsets have been entered, iControl is able to calculate the exact location of each hoistway landing sill using the known exact position of the car, known exact position of the target magnet and the measured distance from the car sill to the hoistway sill. Then, once the car is adjusted to stop smoothly and consistently, iControl can stop the car “spot on” at every landing.

To calibrate the floor offsets:

1. Display the Floor Offsets Setup tab by selecting *Floor Heights* from the *View > Layouts* menu and then clicking the *Setup > Floor Offsets* tab.

	Floor offset calibration	Detected in	Measured in	Actual in	Acquired
Inactive	●	8	0.00		●
Pending	●	7	0.00		●
At start floor	●	6	0.00		●
Detecting floor	●	5	0.00		●
Detecting offset	●	M	0.00		●
Bypassing floor	●	L	0.00		●
Offset detected	●	B	0.00		●
Offsets detected	●	SB	0.00		●

Floor Offset Landing

Landing Start landing

2. Move the car to the desired starting landing (e.g. top or bottom terminal landing). The *Ready* indicator should light. Follow the instructions provided in the text box.
3. Verify that the machine room *INSPECTION* switch is in the *NORM* position. It is recommended to place the car on *Independent service* while performing this calibration.
4. Click *Calibrate* to begin making offset measurements. The *In progress* indicator lights.
5. Run the car to each floor where you want to calibrate the floor offset and perform step #6. It is not necessary to calibrate all floors each time this procedure is performed.
6. Upon arrival at each floor, wait about 10 seconds to allow the car to settle and for iControl to acquire the car's exact position (*Acquired* light turns on). Measure and record the distance the car sill is above or below the hoistway landing sill, and record the direction (car sill above or below). If the sills are not parallel, record the average measurement.
7. Return to the starting floor and measure its offset last. The *Done* indicator lights indicating that the measurement portion of the offset calibration procedure is completed.
8. Enter the measured value (decimal inches) in the *Measured in* column (Offsets table on the Setup> Floor Heights > Floor Offsets tab). If the car sill was above the landing sill, enter a plus (+) value. If the car sill was below the landing sill, enter a minus (-) value.
9. Click *Send* to send the new offset values to the iController.

Table 4.1 Floor Offset Calibration Record

Floor	Car Above/ below landing	Fractional inch	Decimal inch	Floor	Car Above/ below landing	Fractional inch	Decimal inch
30				60			
29				59			
28				58			
27				57			
26				56			
25				55			
24				54			
23				53			
22				52			
21				51			
20				50			
19				49			
18				48			
17				47			
16				46			
15				45			
14				44			
13				43			
12				42			
11				41			
10				40			
9				39			
8				38			
7				37			
6				36			
5				35			
4				34			
3				33			
2				32			
1				31			

Table 4.2 Fractional inch to decimal inch conversion

Fractional in.	Decimal in.	Fractional in.	Decimal in.
1/32	.031	9/32	.281
1/16	.063	5/16	.313
3/32	.094	11/32	.344
1/8	.125	3/8	.375
5/32	.156	13/32	.406
3/16	.188	7/16	.438
7/32	.219	15/32	.469
1/4	.250	1/2	.500

Adjusting Leveling and Final Stop

This section describes adjusting leveling into the floor and bringing the car to a final stop.

Final Approach and Leveling

Observe elevator operation by watching the hoist motor and observing car response on iBox test point STP1 to GND (with the Virtual Oscilloscope Test point 1 parameter = *Speed Feedback*).

- If tracking accuracy is very good, increase Leveling speed and decrease Leveling distance to reduce floor-to-floor time. You can also increase the value of Approach jerk, Deceleration, and Flare jerk.
- If tracking is not perfect, begin to reduce Deceleration, Approach jerk, and Flare jerk parameters to mold the shape of the last few inches of approach. Some experimentation will be necessary in order to see the effect of changing parameter values. A digital storage oscilloscope is essential.
- The goal is for the speed pattern shape to flare out and blend the deceleration into the leveling speed. It is possible to modify the pattern to obtain a lot of stabilized leveling or to decelerate the elevator all the way into the floor to obtain the best brake-to-brake times. It is here that most of the performance and perceived ride quality is determined. Try the full load range to be sure stops are consistent.

Final Stop

There are many items to consider for a smooth and accurate stop. Each contributes to the final result:

- **Brake drop delay** - First adjust Brake drop delay on the Configuration > Brake > Control tab to provide too much delay in dropping the brake so you can clearly see the complete electrical stopping characteristics of the hoist motor. Keep these characteristics in mind as adjustments are made. It may be necessary to change Brake drop delay more than once to clearly see the results. It is most important to never drop the brake on a moving motor.
- **Normal rate limited stop** - Adjusting Normal rate limited stop (Configuration > Drive > General tab) will also determine how harshly the stop is felt (higher values yield harsher stops). Lower values may require a larger dead zone. To prevent the car from pulling through under the brake, do NOT set this parameter to 0.0.
- **Voltage decay time** - Adjusting Voltage decay time (Configuration > Brake > Voltages tab) determines how softly the brake drops (higher values yield softer drop). If Voltage decay time is set too high, there will be loss of control during the time between the drive “disconnecting” and the brake setting firmly.
- **Leveling Speed** - If this speed is too high, a quick transition to zero speed will occur. This results in a bump at the stop or possible overshoot at the floor resulting in a releveing operation. If the leveling speed is too slow, the car will stop very close to the edge of the dead zone, which will cause the system to releve frequently. Reasonable values of Leveling speed (Configuration > Pattern > Common tab) range from 3 to 6 fpm. Before setting the Dead zone distance, the selection of Leveling speed must be completed so that you are satisfied with the complete final approach to the floor. If overshoot occurs frequently, adjust Dead zone distance.

- **Dead zone** - The purpose of the dead zone is to ensure that the elevator stops at the same point whether approaching a particular floor from above or below. The dead zone is a software-defined area at a floor, typically 0.25 inches (6 mm) to 0.75 inches (18 mm) in height. Ideally, the elevator stops in the *center* of the dead zone.

Because of the mass of the elevator system, it will not stop as soon as it is commanded to stop. It will slide slightly before stopping. The Dead zone distance should be adjusted so that the elevator stops consistently at the same position relative to the floor level from both directions. Dead zone adjustment need only be adjusted for one floor. All other floors will react in the same way.

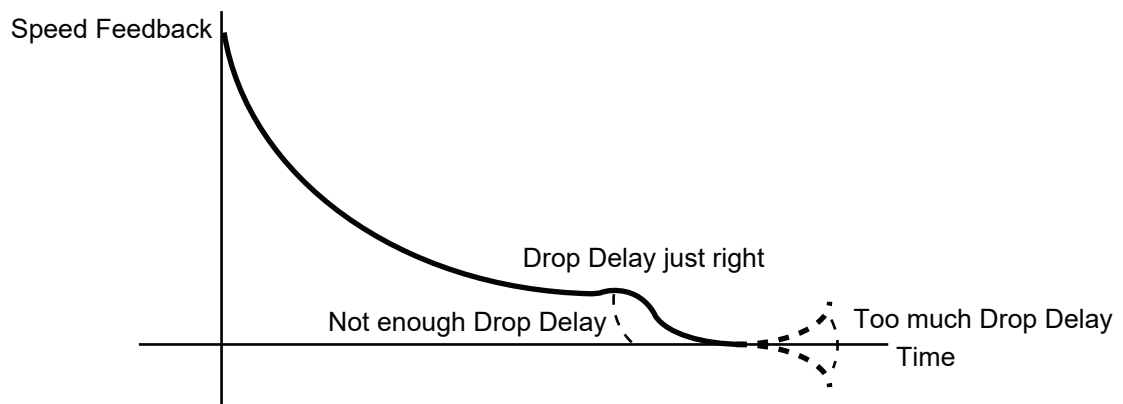
Note

Dead zone distance should be adjusted before fine tuning floor height offset.

1. Choose a floor in the middle of the hoistway that allows the car to reach Contract Speed when approaching from either direction.
2. Start with the default Dead zone distance (Configuration > Pattern > Common tab).
3. Put the car on Test Operation. Verify that the iBox Inspection switch is in the NORM position. Verify that the iBox Test switch is in the ON position.
4. Run the car to the chosen floor from the top and make sure the car achieves Contract Speed. Note the position of the car when it stops at the floor (i.e., 1/4" above the floor or 1/8" below the floor, etc.).
5. Run the car to the chosen floor from the bottom and make sure the car achieves Contract Speed. Note the position of the car when it stops at the floor.
6. If the car consistently stops at the same position, (for example, 1/8" above the floor approaching from above or below), then Dead zone distance is properly adjusted. (Floor Offset can be adjusted later so that the car stops perfectly level with the floor.)
7. If the car overshoots and relevels, the Dead zone distance is too tight. Increase Dead zone distance and repeat steps 4 and 5.
8. Otherwise, the Dead zone distance is too wide. Decrease Dead zone distance until the car stops consistently at the same position relative to the floor, repeating steps 4 and 5.

- **Brake Coordination for Smooth Stops** - Proper operation and setting of the brake is very important to achieve a smooth stop:
 1. Before starting, the brake must be operating properly. Geared machine brakes are usually very simple, however, the brake on a gearless machine requires detailed adjustment to obtain proper operation. For now, be sure to adjust brake tension to hold 125% of a rated load (or the value required by your local code authorities). To establish a holding voltage for a brake in a geared installation, refer to the manufacturers recommended value. If this information is not available, experiment with the Hold Voltage (Brake Configuration/Voltage tab) to find the voltage necessary to hold the brake and then add a little extra margin.
 2. If you have already adjusted the brake to the correct mechanical clearances and the brake is still clunking down too hard when the car stops, increase Voltage Decay Time (Configuration > Brake > Control tab (iField module, high current braking only). For low current brakes, decrease the RB resistance inside the iPower Box.
 3. Next, adjust **Drop Delay** (Configuration > Brake > Control tab) so that the brake drops the instant hoist motor motion stops. The primary means of coordinating brake drop with motion stop is adjusting Brake Drop Delay. The initial setting should be 0.00 seconds. Increase Drop Delay in increments of 0.10 second until the motor is clearly at zero speed when the brake drops. The goal is to avoid dropping the brake on a moving motor, but also to avoid holding the brake up longer than necessary.
 4. Adjust Voltage Decay Time to determine how softly the brake drops (higher values yield softer drop). If Voltage Decay Time is set too high, there will be loss of control during the time between the drive “disconnecting” and the brake setting firmly.

Figure 4.5 Effect of Brake Drop Delay on Stopping



Releveling Operation

- **Relevel dead zone distance** — The Relevel dead zone distance is similar to Dead zone distance except that the Relevel dead zone distance applies only while the car is releveling. During releveling, the brake is partially set and the speed is very slow (usually 4 to 8 feet per minute). Therefore, the car does not slide as much. As a result, Relevel dead zone distance should be tighter than Dead zone distance. Relevel dead zone adjustment need only be adjusted for one floor. All other floors will react in the same way. Brake Relevel voltage (Configuration > Brake > Voltages tab) should be adjusted properly before adjusting the Relevel dead zone distance. In general, Relevel dead zone must be less than Relevel distance.
1. Verify that the iBox Test switch is in the ON position. Verify that the iBox Inspection switch is in the NORM position.
 2. Move the car to a floor away from the terminal landing to allow releveling to the floor from both directions.
 3. Put the car on Machine Room Inspection.
 4. On Machine Room Inspection, move the car up about 3 inches above the floor. Turn off Machine Room Inspection to allow the car to relevel down to the floor. Note the position of the car when it stops at the floor (i.e., 1/4 inch above the floor or 1/8 inch below the floor, etc.).
 5. On Machine Room Inspection, move the car down about 3 inches below the floor. Turn off Machine Room Inspection to allow the car to relevel up to the floor. Note the position of the car when it stops at the floor (i.e., 1/4 inch above the floor or 1/8 inch below the floor, etc.).
 6. If the car consistently stops at the same position, (for example, 1/8 inch above the floor approaching from above or below), then Relevel dead zone distance is properly adjusted. (Floor Offset can be adjusted later so that the car stops perfectly level with the floor.)
 7. If the car overshoots the floor during releveling, the Relevel dead zone distance is too tight. Increase Relevel dead zone distance and repeat steps 4 and 5.
 8. Otherwise, the Relevel dead zone distance is too wide. Decrease Relevel dead zone distance until the car stops consistently at the same position relative to the floor, repeating steps 4 and 5.
- **Rope stretch releveling** — On high-rise applications, when the car is very low in the building with hundreds of feet of cable between the machine and the elevator, substantial movement can occur when elevator load changes, thereby causing releveling. To make the system more tolerant of this movement, the Relevel distance parameter adjusts the amount by which the elevator must be away from the floor before the releveling operation is engaged. The range of adjustment is from 0.00 to 1.00 inch, with a typical value being 0.72 inches.

Ride Quality (System 12 SCR Drive)

If you are experiencing a ride sensation that is not exactly oscillation, but might be described as a rough texture, it might be due to:

- The encoder, attached to the motor shaft, may not be mounted securely, which may cause bouncing or a slight variation in the speed feedback signal once every revolution. On a geared machine, the coupling used between the tach or encoder and the motor can also be a source of vibration. In both cases, the problem is observed by looking at the AC-coupled encoder speed signal on iBox test point STP2 (with the Virtual Oscilloscope Test point 2 set to *Speed Feedback*). You may see the vibration frequency increase and decrease with car speed. This is *absolute* proof of a mechanical problem with the speed transducer. Electrically induced oscillations will be characterized by a frequency of oscillation that is constant (does not change significantly with speed).
- If the above steps do not resolve the vibration, the motor may not have been trimmed to the machine properly. Use a dial indicator to check alignment of motor and machine.

Ride Quality (Quattro DC Drive)

If you are experiencing a ride sensation that is not exactly oscillation, but might be described as a rough texture, it might be due to:

- The speed control loop gains may not be adjusted properly. Please refer to the Magnetek Quattro DC Drive Technical Manual for adjustment procedures.
- The encoder, attached to the motor shaft, may not be mounted securely, which may cause bouncing or a slight variation in the speed feedback signal once every revolution. On a geared machine, the coupling used between the tach or encoder and the motor can also be a source of vibration. In both cases, the problem is observed by looking at the AC-coupled encoder speed signal on iBox test point STP2 (with the Virtual Oscilloscope Test point 2 set to *Speed Feedback*). You may see the vibration frequency increase and decrease with car speed. This is *absolute* proof of a mechanical problem with the speed transducer. Electrically induced oscillations will be characterized by a frequency of oscillation that is constant (does not change significantly with speed).
- If the above steps do not resolve the vibration, the motor may not have been trimmed to the machine properly. Use a dial indicator to check alignment of motor and machine.

Load Weigher Adjustment for Dispatching

Analog load weighers (rope tension, isolated platform or crosshead deflection) provide a signal (analog voltage) corresponding to the measured load. The signal is conditioned, sampled and digitized by the control system. The resulting value is used to calculate the actual load *inside* the elevator, which is used for logical operations including:

- Overloaded car detection
- Heavy load (hall call bypass)
- Light load anti-nuisance
- Empty load detection

Each threshold is user-programmable (Load Weigher Configuration screen) to determine the load level at which each operation should be initiated.

The car is weighed only when stopped at a landing with doors open. (This is the only time to anticipate a change in load.) Additionally, if the car were weighed when running, acceleration and deceleration would be interpreted as weight change.

Rope Tension Load Weigher - Load cells sense the tension of the wire ropes. The load weigher provides a calibrated analog signal that accurately tracks the loading of the car. Due to the dynamics of the elevator system, the load represented by the traveling cable and compensation cables will vary with the position of the car in the hoistway. iControl must learn the empty and full car load value at each floor. The load in the car can then be determined by reading the value at a given floor and subtracting the learned empty value for that floor.

Crosshead Deflection Load Weigher - The signal generated by the load sensor represents the perceived load *at the crosshead*, which includes the weight of the car, the load inside the car, the traveling cable, and any compensation cables that might be attached to the car. Due to the dynamics of the elevator system, the load represented by the traveling cable and compensation cables will vary with the position of the car in the hoistway. iControl must learn the empty and full car load value at each floor. The load in the car can then be determined by reading the value at a given floor and subtracting the learned empty value for that floor.

Isolated Platform Load Weigher - The isolated platform load weigher measures only the weight within the car. The value is not affected by hoistway position so empty and full values can be learned without moving the car from floor to floor.

Load Thresholds The load thresholds used in logical operations are:

- **Over load threshold (% of full load):** Used to define the load at which it is unsafe to move the elevator (iView Configuration > Load Weigher tab). If this threshold is exceeded, the car will remain at the floor with doors open. Typically some type of visual and/or audible indicator is used to alert passengers that the car is overloaded. (This operation is over-ridden during Fire Service operation.)
- **Heavy load threshold (% of full load):** Used to define the load value at which hall calls will be bypassed or reassigned (iView Configuration > Load Weigher tab).
- **Light load threshold (% of full load):** Used to define the load at which a limited number of car calls may be registered. If the programmed number of car calls is exceeded, all car calls will be canceled.

Example: Light Load Threshold=20%. If the measured load in the car is less than 20%, the controller will only allow a certain number of car calls to be registered (number of calls is set on the iView Configuration > Car Operation > Passenger tab/Anti-Nuisance controls shown below). If the allowed car value is set to three, only three calls may be registered if the load is less than 20%. If a fourth call is entered, all car calls will be canceled.

4

- **Empty load threshold (% of full load):** Used to determine when the car is empty. If the load falls below the threshold the car is considered to be empty. This can be used for CFSS (Commandeer for Special Services) calls where it is desired that the commandeered car be empty.

Note

Setting a threshold value to 00% will disable the corresponding function (anti-nuisance, hall call bypass or overload). Example: setting the Heavy Load Threshold to 00% will disable the hall call bypass function.

Load weighing logical functions such as Anti-Nuisance, Heavy Load, and Overload will be inactive until both the full and empty load values have been learned and saved.

Load Weigher Configuration

Once the load weigher is installed, you need to “tell” iControl what kind of load weigher you are using, set up some basic load threshold values, and learn the load values. You do this using iView.

Load Weigher Selection and Threshold Settings

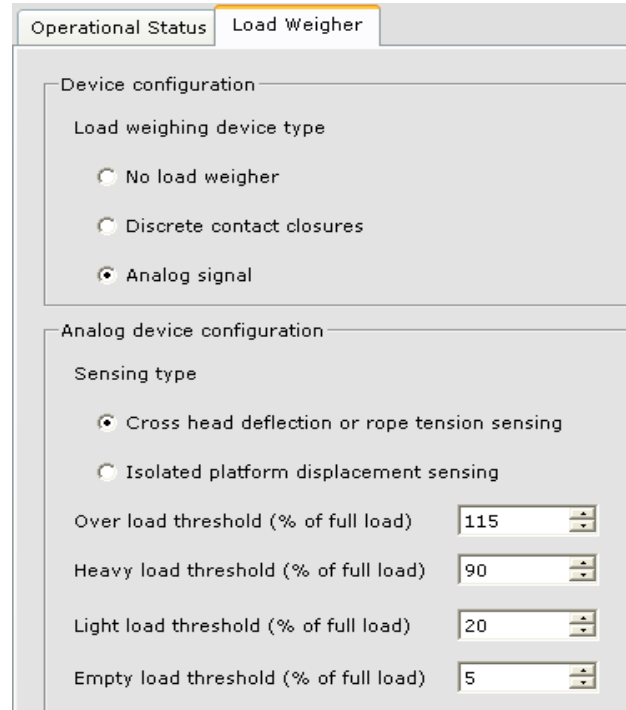
1. Connect to iControl using the iView application.
2. Go to the Configuration > Load Weigher tab.

Device configuration

3. Select the load weigher device type:
 - No load weigher: Select if no load weigher is used.
 - Discrete contact closure: Select if a discrete contact closure weigher is used
 - Analog Signal: Select if an analog signal load weigher is used (rope tension, isolated platform or cross-head deflection load weigher).

Analog device configuration

4. Sensing type: Select the analog device sensing type:
 - Cross head deflection or rope tension sensing.
 - Isolated platform displacement sensing.



Setting the load thresholds

5. Load thresholds are preset by MCE based on the job specification. However, thresholds are user-adjustable and may be changed at any time. All threshold values are expressed as a percentage of full load. To adjust these thresholds:
 - Over load threshold (% of full load): Enter the percentage of full load weight above which the controller should consider the car to be in an over load condition. Typically 110% to 115% of the elevators full load capacity. A setting of 00% = OFF. See “Load Thresholds” on page 4-38.
 - Heavy load threshold (% of full load): Enter the percentage of full load weight above which the controller should consider the car to be in a heavy load condition. Typically 80% to 90% of full load. A setting of 00% = OFF. See “Load Thresholds” on page 4-38.

- Light load threshold (% of full load): Enter the percentage of full load weight below which the controller should consider the car to be in a light load condition. Typically set below 20% of full load. A setting of 00% = OFF. See [“Load Thresholds” on page 4-38](#).
 - Empty load threshold (% of full load): Enter the percentage of full load weight below which the controller should consider the car to be empty. See [“Load Thresholds” on page 4-38](#).
6. When ready, press the SEND button to send the changed values to the controller.

Learning Load Values

Learning the empty and fully loaded car values is a semi-automated process requiring that the appropriate load be present in the car before beginning each stage. It is best to have two people available, one in the machine room at the elevator controller or iView PC and one at a floor to handle test weights and ensure there are no passengers in the elevator.

The test weights must be equal to full load value. The learn process must be performed twice, once for empty car load and once for full car load. In order to learn load weigher values, the elevator must be in normal Passenger operation. The car will not be moved from the starting floor if the load weigher is an “isolated platform displacement sensing” type. However, if the load weigher is the “rope tensions sensing” or “cross-head deflection sensing” type, the car must travel the hoistway, stopping to learn the load values at each floor.

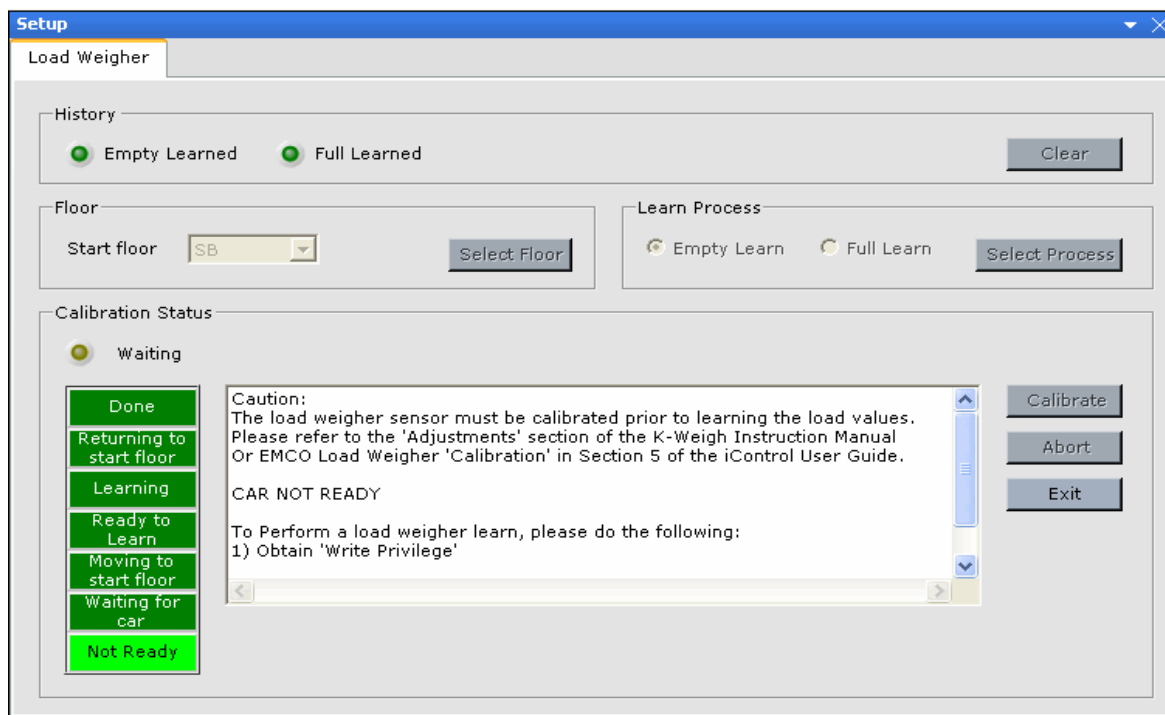


Caution

The load weigher sensor must be calibrated prior learning the load values. Please refer to [“Load Weigher Sensor Adjustment” on page 4-22](#). If you are preparing to do safety testing, including governor and buffer tests, you might want to do them first and then adjust the load weigher sensor and learn the load values, because re-calibrating the load weigher is recommended following buffer tests.

Load Weigher Learn Procedure

1. Display the Load Weigher layout (View > Layouts > Load Weigher).
2. Enter the Start floor (floor at which the test weights are located) on the Setup > Load weigher tab.
3. Acquire "Write privilege" (Write privilege > Acquire) and place the iBox Learn switch in the ON position.
4. With the car operating in normal Passenger operation, follow the step-by-step instructions that appear on the Setup > Load weigher tab.



Abort Calibration If necessary, click Abort to immediately stop the learning process. (For example, you started a Full Load learn and realized the test weights were not in the elevator.) The car will return to the start floor where you may restart the learn procedure.

Clear Learned Values Lighted Empty and Full Learned indicators mean that the processes have been successfully run and values stored. Clicking the Clear button will immediately erase the stored values. You must then repeat the learning process to learn and store new values.

Pre-Start Sequence

If the car is properly adjusted and running well, but the floor to floor times are not as quick as you would like, the Pre-Start Sequence parameters (Configuration > Drive > General tab) can be used to allow the brake and/or motor to be energized while the doors are closing, thereby allowing the elevator to leave the floor as soon after the doors are locked as possible.

The Pre-Start Sequence options include:

“Allow machine to be energized”

- After doors are locked
- After door position monitor is activated
- While doors are closing:
 - with motor only
 - with motor and partially picked brake
 - with motor and fully picked brake

Pre-Start Sequence

Warning! Do not use Pre-Start Sequence options until drive control parameters are adjusted for no rollback and good control at zero speed!

Allow machine to be energized

☐ After doors are locked
☐ After door position monitor is activated
☒ While doors are closing

while doors are closing: with motor and fully picked brake

Pre-Start Sequence Delay: sec

NOTE: Regardless of the selection above, the elevator is not allowed to move away from a landing until the doors are locked.

Regardless of the option chosen, the elevator is not allowed to move before the doors are locked and the Speed pick delay 1 timer has elapsed.

The parameters that affect the Pre-Start Sequence options are found on the Configuration > Brake > Control tab

Operational Status | Brake | **Control** | Configuration

Voltage

Pick voltage	25.000 Vdc
Partial pick voltage	25.000 Vdc
Hold voltage	25.000 Vdc
Relevel voltage	25.000 Vdc
Weakening voltage	25.000 Vdc

Timer

Pick delay	0.000 sec
Hold delay	2.000 sec
Weakening delay	0.000 sec
Repick time	0.000 sec
Speed pick delay 1	0.000 sec
Speed pick delay 2	0.000 sec
Contactors drop delay	1.100 sec
Brake drop delay	0.000 sec
Voltage decay time	0.000 sec
Relevel drop delay	0.000 sec

The following pages include descriptions of each Pre-Start Sequence option and diagrams showing the parameters that affect each option and the resulting sequence of operation.



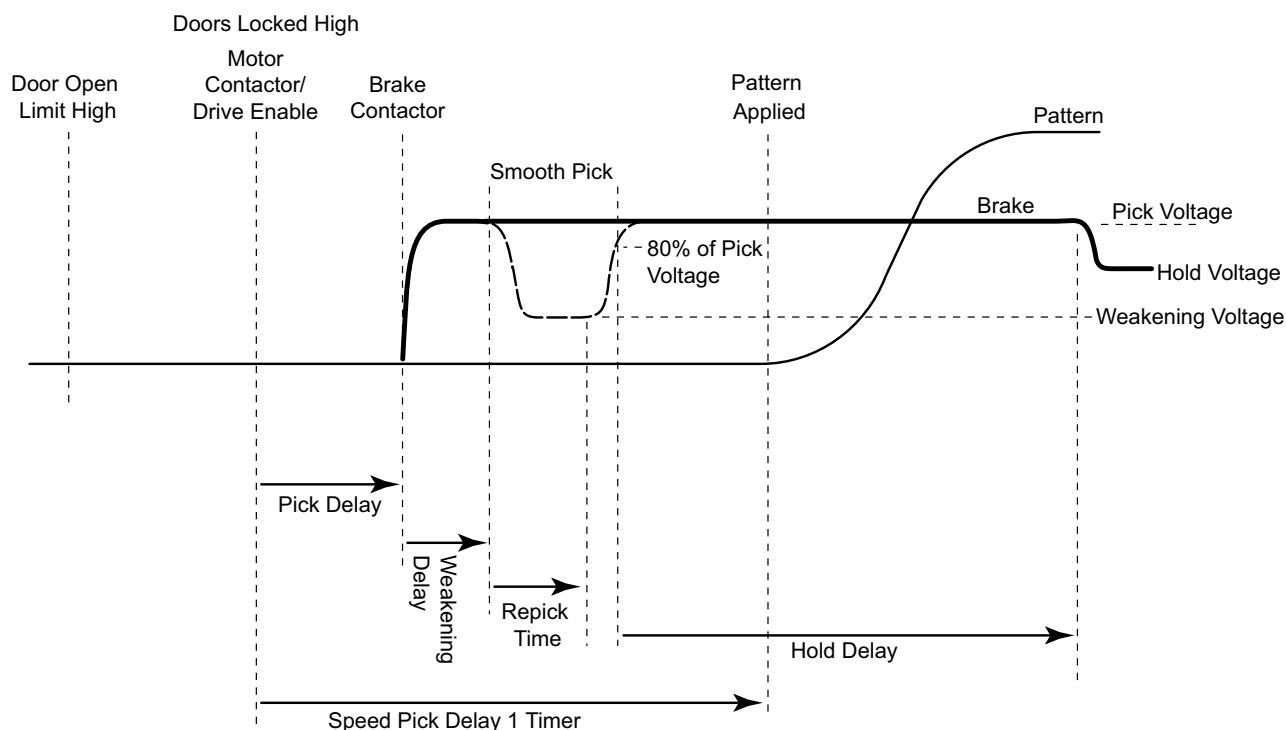
Caution

Do not use Pre-Start Sequence options until drive control parameters have been adjusted for no rollback and good control at zero speed.

Allow machine to be energized: After doors are locked

This is the default Pre-Start Sequence option. It specifies that the doors must be locked before energizing the motor and brake. The diagram below shows the parameters that affect this option and the resulting sequence of operation.

No Prestart Sequence with or without Smooth Pick



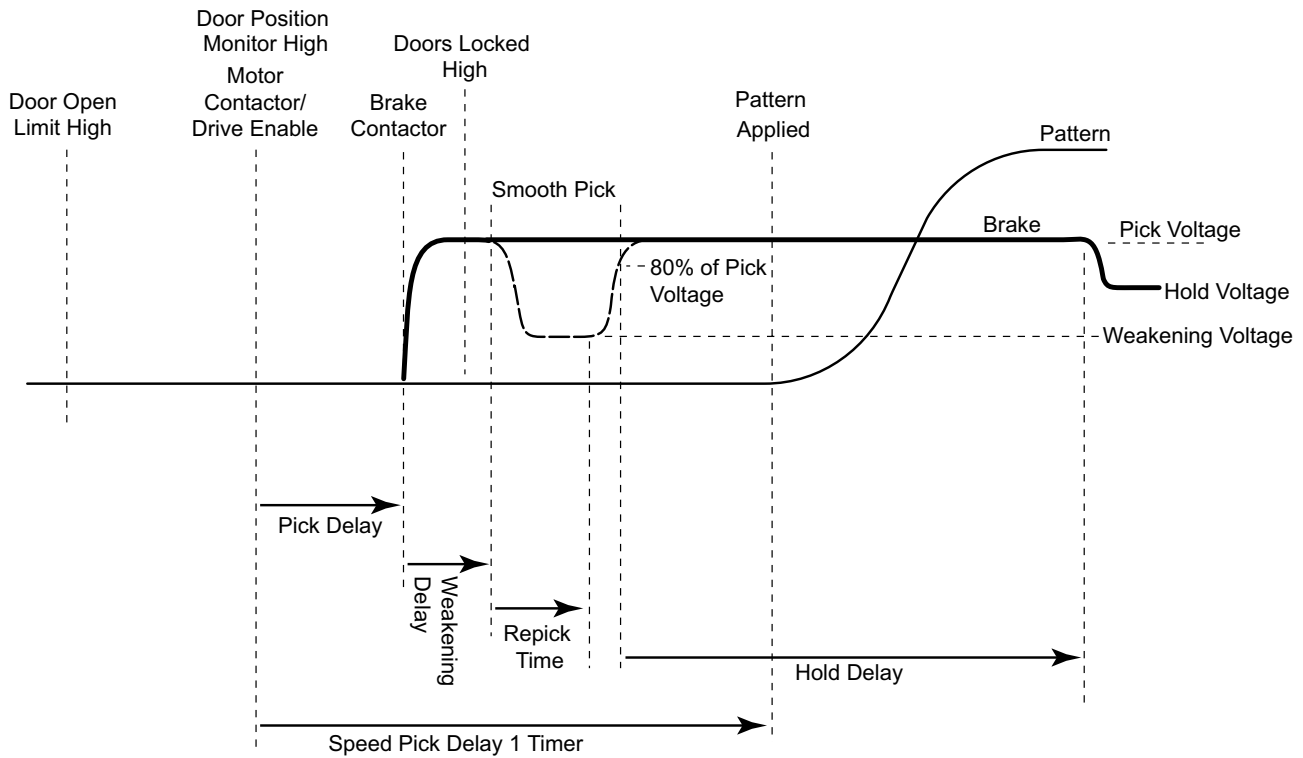
For a detailed description of the brake parameters associated with “smooth picking” and instructions for adjusting them, [see “Brake Parameter Adjustments” on page 4-27.](#)

Allow machine to be energized: When door position monitor is activated

This Pre-Start Sequence option is much the same as the “After doors are locked” option except that Door Position Monitor status is used to determine when the machine may be energized rather than the Doors Locked sensors. The following diagram shows the parameters that affect this option and the resulting sequence of operation.

4

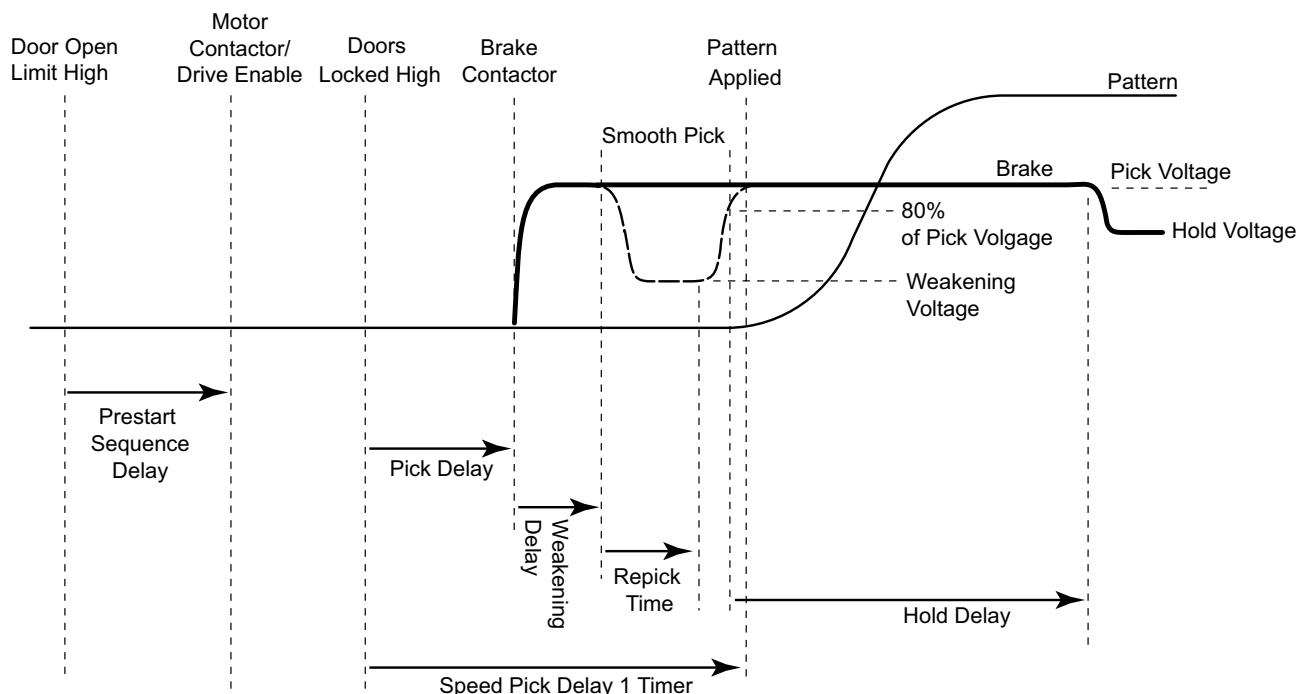
Allow machine to be energized after door position monitor is activated



Allow machine to be energized: While doors are closing with motor only

This Pre-Start Sequence option allows the motor to be energized while the doors are closing so that when the doors are locked, the brake picking sequence can be started immediately. The diagram below shows the parameters that affect this option and the resulting sequence of operation.

Prestart Sequence with Motor and No (Brake) Pick



For a DC control, Pick Delay can be set to zero so long as the Pre-Start Sequence Delay is adjusted so that the motor is energized and able to hold the car at zero speed when the doors become locked.

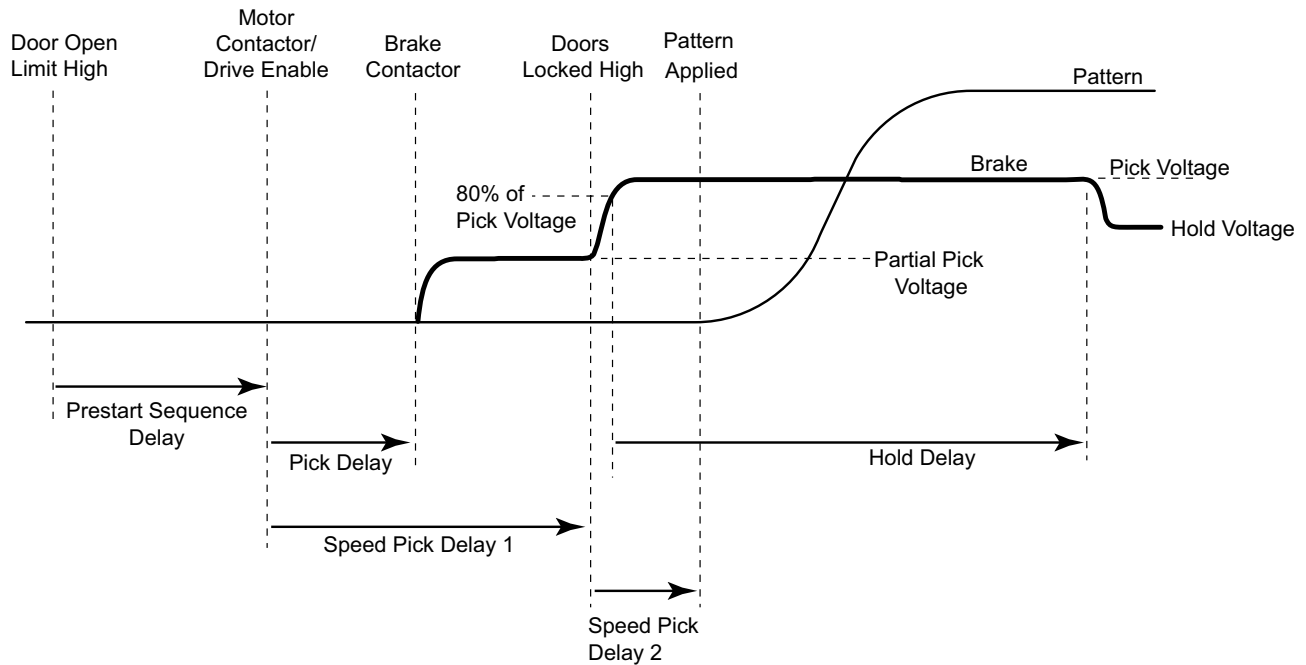
For an AC control, some Pick delay may be required because it takes time for the drive to magnetize the motor once the contactor is picked and the drive enabled. A “Drive Ready On Fault” is generated if Pick delay is too short.

Allow machine to be energized: While doors are closing with motor & partially picked brake

This Pre-Start Sequence option allows the motor to be fully energized and the brake to be partially energized while the doors are closing, so that when the doors become locked, the car can begin moving as soon as the brake is fully picked. The diagram below shows the parameters that affect this option and the resulting sequence of operation.

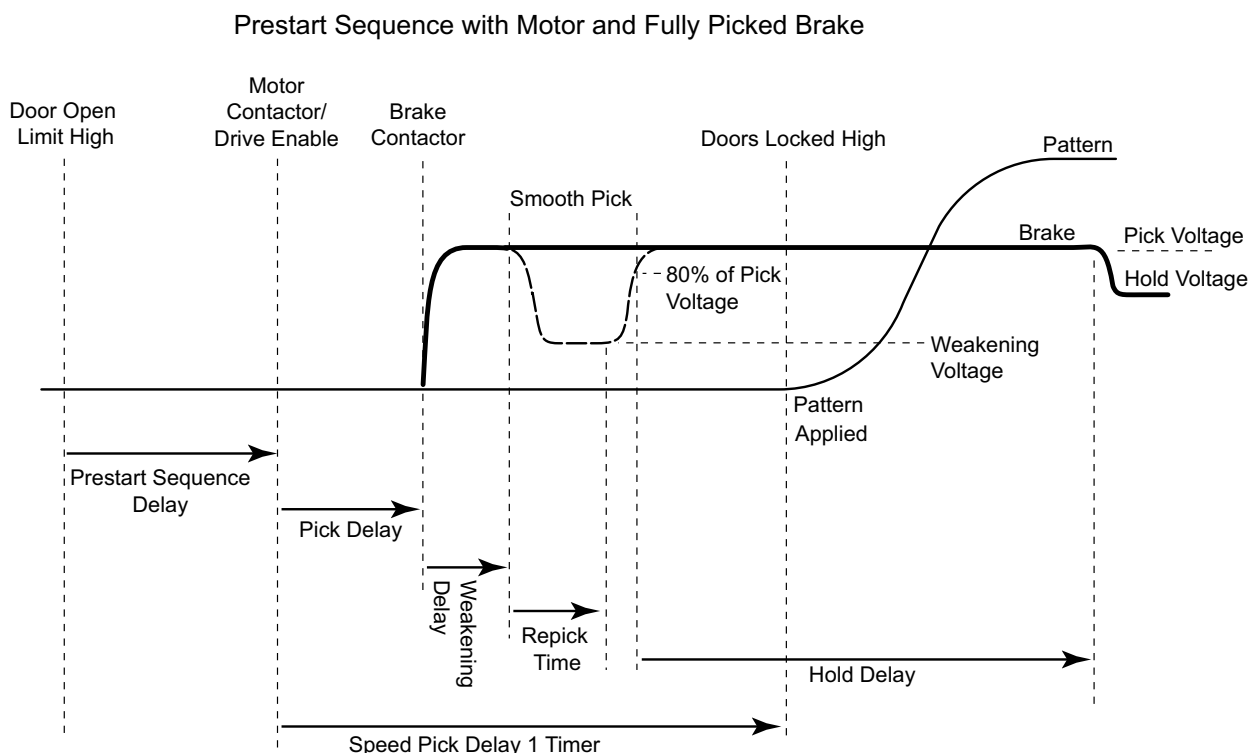
4

Prestart Sequence with Motor and Partially Picked Brake



Allow machine to be energized: While doors are closing with motor & fully picked brake

This Pre-Start Sequence option allows the motor and brake to be fully energized while the doors are closing, so that the car can begin moving when the doors become locked and the Speed pick delay 1 timer expires. The diagram below shows the parameters that affect this option and the resulting sequence of operation.



Calibration and Verification of Safety Functions

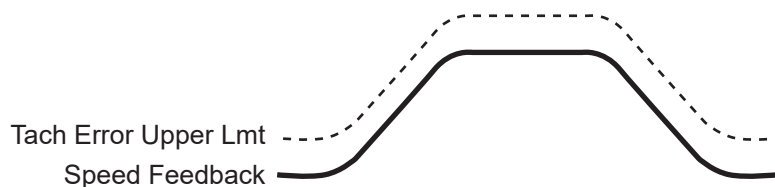
Before performing the following adjustments and tests please do the following:

1. Verify that the car performs the releveing operation properly. [Please refer to “Verify Releveling” on page 4-5](#) and [see “Releveling Operation ” on page 4-36](#).
2. Perform the Normal and Emergency Terminal Limit Switches learn procedure. This is necessary if any pattern parameters have been changed since the last time the learn procedure was performed. [Please refer to “Learning Normal & Emergency Terminal Limit Switches” on page 4-12](#).

Tach Error Tripping Threshold Adjustment

This test compares the pattern signal with the velocity feedback signal and sets the point at which the Tach Error fault trips as a result of excessive error between the Actual and intended car speed.

1. Verify that the TACH ADJ. trimpot has been properly adjusted:
 - For System 12 SCR Drive, [see “Calibrating Actual Car Speed \(System 12 SCR Drive\)” on page 2-38](#).
 - For Quattro DC Drive, [see “Verifying Pattern Command and Speed Feedback” on page 2-57](#).
2. Arrange the car for full load condition.
3. Verify that the iBox Test switch is in the ON position.
4. On the Virtual Oscilloscope, set Test point 1 to *Speed Feedback* and Test point 2 to *Tach Error Upper Limit*. (Tach Error Upper Limit determines the upper threshold below which velocity feedback is allowed to deviate from the pattern.)
5. Start with *Following error* set to 1.0% (Configuration > Drive > Safety tab).
6. Set the iBox Fault/Function Bypass switch to the ON position. (Note that fault bypass is automatically disabled after a fifteen minute timer expires.)
7. On the Diagnostics > Fault Bypass tab, click *Tach error* (bypasses Tach Error fault).
8. Run the car up and down the hoistway. If the Speed Feedback trace on the Virtual Oscilloscope crosses the Tach Error Upper Limit trace, a Tach Error fault will normally be generated (we have it bypassed).
9. If the two traces on the oscilloscope cross, increase *Following error* in 5% increments, running the car with each change, until the two traces no longer cross.
10. When the two traces no longer cross, add 5% to the Following error setting as a margin.
11. Set Test point 2 to *Tach Error Lower Limit*. This is the lower threshold below which velocity feedback is allowed to deviate from the pattern.
12. Repeat steps 7 through 9 for Tach Error Lower Limit.



Verify Tach Error Does Not Trip on Emergency Stop

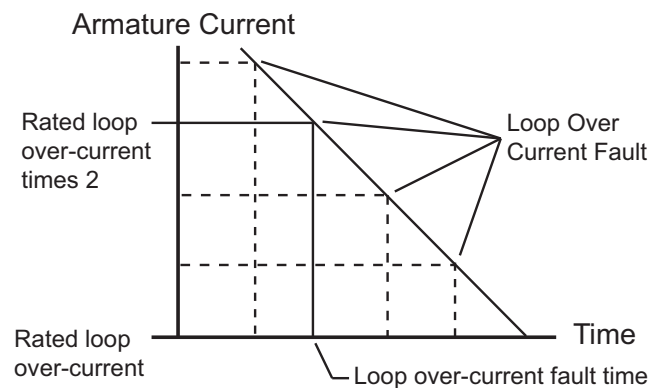
1. Set the iBox Fault/Function Bypass switch to the OFF position.
2. Make sure the Tach Error fault is no longer bypassed (Diagnostics > Fault Bypass tab).
3. With a full load in the car, run the car up and down the hoistway to verify that the Tach Error fault is not generated.
4. Enter a car call several floors below the car (so it can reach contract speed).
5. While the car is running at contract speed (Operational Status / Speed - Actual), disconnect the GS terminal from the iBox.
6. The car should trip a Door Lock Fault and make an Emergency Stop.
7. Observe that a Tach Error fault is not generated.

Armature Overcurrent Overload Protection Adjustment (System 12 SCR Drive)

Armature overcurrent overload protection is intended to protect the motor and acts in a manner similar to a thermal overload. However, instead of using the actual heat generated by excessive armature current, the SCR Loop Over Current fault is generated based on a calculation using measured armature current and time. The Rated loop over-current parameter on the Configuration > Drive > Safety tab is used to set the threshold current used in the calculation. The Loop over-current fault time parameter sets the time used in the calculation. The calculation used to generate the SCR Loop Over Current fault is:

$$\left(\begin{array}{c} \text{measured} \\ \text{armature} \\ \text{current} \\ \text{(averaged)} \end{array} - \begin{array}{c} \text{Rated loop} \\ \text{over-current} \\ \text{parameter} \end{array} \right) \times \begin{array}{c} \text{elapsed} \\ \text{time} \end{array} > \begin{array}{c} \text{Rated loop} \\ \text{over-current} \\ \text{parameter} \end{array} \times \begin{array}{c} \text{Loop} \\ \text{over-current} \\ \text{fault time} \\ \text{parameter} \end{array} = \begin{array}{c} \text{SCR Loop} \\ \text{Over Current} \\ \text{Fault} \end{array}$$

Another way of stating this is that the SCR Loop Over Current Fault is generated when the measured current has been twice the threshold current for more than the allowed fault time. The armature current is not constant, so the calculation uses the averaged armature current in excess of the threshold current times elapsed time. As with a thermal overload, the greater the amount by which the measured current exceeds the threshold current, the shorter the time required to cause the SCR Loop Over Current Fault, as shown in the diagram.



Adjustment Procedure Use the following procedure to adjust the parameters on the Configuration > Drive > Safety tab used to generate the SCR Loop Over Current Fault.

Rated loop over-current

1. With a full load in the car, run the car up. On the Operational Status tab, observe *Armature current* while the car is traveling at steady speed (not accelerating or decelerating).

4

Note

Full load up is preferable, but if not possible, run empty car down.

2. Set Rated loop over-current (Drive > Safety tab) 5 to 10 amps greater than the observed steady speed Armature current.

Loop over-current fault time

1. On the Virtual Oscilloscope, set Test point 1 = Over Current Power and Test point 2 = Over Current Power Threshold.
2. Set Loop over-current fault time (Drive > Safety tab) = 30 seconds.
3. With a full load in the car, run the car up (see Note above). It is best to make runs that just reach Contract speed momentarily before decelerating and stopping. Observe the oscilloscope. The objective is to adjust the *Loop over-current fault time* parameter until the maximum Over Current Power is 50% to 75% of the Over Current Power Threshold.
4. Adjust the Loop over-current fault time parameter and repeat step 3. Decreasing the Loop over-current fault time decreases the Over Current Power Threshold and vice versa.
5. As a final test, make a full hatch run up and down.

Safety Tests

iControl provides highly automated safety testing. Before running any tests, the car must be properly balanced and adjusted. From the iView Safety Tests screen (View > Safety Tests), the following tests may be run:

- Car/Counterweight Safety Test, [page 4-54](#)
- Electrical Governor Test, [page 4-54](#)
- Car/Counterweight Buffer Test, [page 4-55](#)
- Inspection Overspeed Test, [page 4-56](#)
- Contract Overspeed Test, [page 4-56](#)
- Leveling Overspeed Test, [page 4-57](#)
- Emergency Brake Test - Unintended Motion, [page 4-57](#)
- Ascending Car Overspeed Test, [page 4-58](#)
- Normal Terminal Switch Overspeed Tests - Level 1, [page 4-59](#)
- Normal Terminal Switch Overspeed Tests - Level 2, [page 4-60](#)
- Emergency Terminal Switch Overspeed Test, [page 4-60](#)
- Normal & Emergency Terminal Switch Position Tests, [page 4-60](#)

Test Configuration

Test Name

No Safety Test

Speed

0

ft/min

Select

System status

Inspection

Test

Fault bypass

Fault Bypass Status

Safety COS	UNT1 Level 1	DNT1 Level 1	UNT1 Level 2	DNT1 Level 2	UETS Level 2
Safety LOS	UNT2 Level 1	DNT2 Level 1	UNT2 Level 2	DNT2 Level 2	DETS Level 2
Safety IOS	UNT3 Level 1	DNT3 Level 1	UNT3 Level 2	DNT3 Level 2	Direction limit
Drive IOS	UNT4 Level 1	DNT4 Level 1	UNT4 Level 2	DNT4 Level 2	Tach failure
Speed Threshold	UNT5 Level 1	DNT5 Level 1	UNT5 Level 2	DNT5 Level 2	Gov Spd Reduction

Test

Test Armed

Ready to Arm

Selected

Disabled

SAFETY SYSTEM TESTS - GENERAL INSTRUCTIONS

READ THIS PAGE BEFORE BEGINNING ANY TESTS

To perform a test-

1. Determine the car speed for the test

SPEED DATA LOCATIONS

- See the Governor Data Plate for it's electrical and mechanical tripping speeds

- See the Safety Screen for Contract and Inspection overspeeds

- See the Terminal Switches Screen for NT and ET switch overspeeds

NOTES

Arm Test

Abort

Runtime Status

Position	0.000	ft
Position indicator	60	
Speed	0.421	ft/min
Speed reference	500.000	ft/min
Maximum speed	0.485	ft/min

Running a Test

1. Place the iBox in Test mode.
2. Select the desired test on the Safety Tests screen.
3. Set the speed which the car must attain to trigger the condition being tested. (All tests except Emergency Brake Test/Unintended Motion require a speed input.)
4. Click the Select button. (Sends data to the controller and sets test conditions, including operating mode and active fault bypasses. Updates instructional display for specific test.)
5. Visually check on-screen operating mode and fault bypass status displays.
6. Perform instructions displayed in test screen text box.
7. Click the Arm Test button.
8. Place a car call as required to run the car up or down the hoistway (Call Registration panel).
9. Check Operational Status tab and Event Log (Diagnostics > Event Log) for fault verification.
10. Use the iBox Stop switch to stop the test and bring the elevator to an emergency stop if necessary.



Note

When running a test, you are allowed only one “motion cycle” of the car. If the test is not satisfactory, you will have to re-select that test to begin again. Remember that fault bypasses set for the test will time-out after 15 minutes. If you are delayed in completing a test, you may have to cycle the Fault Bypass switch to reset the fault bypasses.

Results Faults triggered by the tests are reported on the Operational Status tab and the Event Log. Non-latching (self-clearing) faults will only appear on the Operational Status tab for a few moments. Check the Event Log if the triggered faults have already disappeared from the Operational Status tab.

The following test descriptions provide information specific to each test.



Danger

Be prepared to stop a runaway car if necessary, using the iBox Stop switch. During testing, normal system safeties are disabled. Exercise extreme caution. Be prepared to take control and stop the elevator if necessary. Only QUALIFIED PERSONNEL, with adequate experience and knowledge of elevator equipment should attempt elevator adjustment and testing.

Car/Counterweight Safety Test

This is a two-part test. Car safety testing verifies operation of the car safeties. The objective of the test is to set the safeties, causing the hoist motor to break traction. The over-speed must be sufficient in magnitude to cause the governor to trip mechanically and to set the car safeties. The electrical governor switch must not prevent the cars continued acceleration to the mechanical trip speed. Place a full load in the car.

1. Position the car some distance away from the bottom landing (about 10-feet per 100-feet-per-minute of contract speed).
2. On the iView > View > Configuration > Pattern > Modes tab/Standard profile, verify that *Deceleration* and *Approach deceleration* are set no higher than 2ft/s² to avoid tripping the drive.
3. On the Quattro DC Drive (if applicable), set A1-Overspeed Mult = 125% and set U4-Overspeed Test = Enable.
4. Place a jumper between the #3 bus and the GOV terminal on the iBox to bypass tripping the governor overspeed.
5. On the iView > View > Safety Test tab, set *Speed*, in fpm, to 125% of contract speed.
6. On the iView > View > Safety Test tab, select the *Car/Counterweight Safety Test*. Complete on-screen instructions.
7. Remove jumpers placed for the test in steps above.
8. Place a car call distant enough to allow the car to reach the necessary speed.
Caution: If necessary, you may end the test and bring the car to an emergency stop using the iBox Stop switch.
9. After the test has been completed and the car has stopped, check the hoistway ropes to make sure they are still in their proper grooves before attempting to move the car.
10. Use the appropriate method required to reset the safeties. For flexible quick-clamp safeties, move the car on Inspection (UP and ENABLE buttons) to release the safety and restore the safety string.
11. To bypass the safety plank switch, temporarily place a jumper between SAFH and SAFC on the iBox. Remove once the safeties are reset.

Counterweight Safety Test - The counterweight safety test verifies operation of the counterweight safeties. For this test, position the empty car near the bottom landing and arrange to over-speed in the **up** direction. The test is comparable to the car safety test but performed in the opposite direction. If the counterweight has a governor, remember to jumper the overspeed switch out. Remember to remove jumpers when tests are complete.

Electrical Governor Test

This test verifies that the calibration of the electrical governor switch is appropriate (typically about 110% of contract speed) and that the car will execute an emergency stop once the electrical governor switch is activated. When the car trips the electrical governor switch in the down direction, it will execute an emergency stop.

1. Bring the car to the middle of the hoistway.
2. Check your mechanical governor nameplate for its tripping speed. Check the Contract Overspeed setting on the iView > Setup > Safety tab. On the iView > Safety Tests tab, set *Speed*, in fpm, sufficient to trigger the Contract Overspeed but not high enough to trip the mechanical governor.

3. On the Quattro DC Drive (if applicable), set A1-Overspeed Mult (percent) = the same percentage of overspeed as the test *Speed* and set U4-Overspeed Test = Enable.
4. Select the Electrical Governor test (Safety Test tab). Complete on-screen instructions.
5. Place a car call distant enough to allow the car to reach the necessary speed.

Car/Counterweight Buffer Test

This is a two-part test. The car buffer test verifies that the car striking the buffer will cause the hoist motor to break traction (or the driving system to stall) and that the car buffer will automatically return to its fully-extended state after having been fully compressed. The car is arranged to run into the terminal landing without initiating any form of slowdown. Neither the final limit switch nor the buffer switch should prevent full compression of the buffer.

Car Buffer Test

1. Be certain that the pit is prepared, buffers ready, full limit switches temporarily relocated as needed to allow for full compression of the buffers, etc.
2. Place a full load in the car.
3. Position the car in the hoistway high enough to reach contract speed before reaching the bottom landing.
4. Place a jumper between terminal 15B and the SAFH terminal on the iBox to bypass the hoistway portion of the safety string (except for the final limit switches).
5. Select the Car/Counterweight Buffer test (View > Safety Tests). Follow instructions.
6. Set test *Speed* to Contract speed.



Caution

If reduced stroke buffers are in use, set the test “Speed” less than or equal to the rated buffer speed.

7. Use the Inspection switches to run the car. If necessary, you may end the test and bring the car to an emergency stop using the iBox Stop switch. The car must strike the buffer, compress it fully, and either cause the hoist motor to break traction or the driving system to stall.
8. Check the hoistway ropes to make sure they are still in their proper grooves before attempting to move the car.
9. Move the connection point of the previously installed jumper from terminal 15B to the 3 bus in order to also bypass the final limit switches, then lift the car off the buffer at inspection speed (normally accomplished after the inspector enters the pit to observe). The buffer must return to full extension.

Counterweight Buffer Test

The counterweight buffer test verifies that the counterweight striking the buffer will cause the hoist motor to break traction and that the counterweight buffer will automatically return to its fully-extended state after having been fully compressed. The empty car is positioned near the bottom landing and arranged to reach contract speed in the up direction. The test is comparable to the car buffer test but performed in the opposite direction. If the counterweight has a governor, remember to jumper it out. Remember to remove jumpers when tests are complete.

Traction Loss Test

To test for compliance with the traction loss detection means (required by the 2010 and later editions of A17.1/B44) with the jumper still installed between the 3 bus and terminal SAFH (see step 9 above), repeat the test at a speed sufficient to drive the car or counterweight into and fully compress the buffer (which may be less than or equal to the rated buffer speed, e.g. 150 fpm). Once the buffer is fully compressed and ropes break traction on the drive sheave, continue to press **ENABLE + UP** or **DOWN** and verify that within 20 seconds a “**Loss of Position or Speed Indicator**” fault is generated and power is removed from the motor and brake. Verify that the fault is maintained over a power cycle and is reset only by pressing **FAULT RESET** on the iBox.

Alternatively, where the driving system stalls rather than the ropes slipping traction when the car or counterweight bottoms out on its buffer, loss of traction may instead be simulated as follows:

With the car on automatic operation away from the terminal landings, temporarily secure the hatch encoder wheel so that it does not contact the rail. Enter a car call and observe that although the car will move to answer the call, it will stop within 10 seconds and will not restart. To restore normal operation, release the hatch encoder wheel and press the **Fault Reset** button on the iBox.

Reminder: Be sure to remove all jumpers when the tests are completed and the car is moved out of the pit.

Inspection Overspeed Test

This test verifies that moving the elevator on Inspection Operation at a speed greater than 150 fpm will result in an emergency stop.

1. Place the car on machine room inspection.
2. Verify that Inspection Overspeed (Controller > View > Setup > Safety > Configuration tab) is set to 150 fpm.
3. Position the car in the middle of the hoistway.
4. On the View > Safety Tests screen, set test *Speed* to 200 fpm.
5. Select the Inspection Overspeed test. Follow on-screen instructions.
6. Use the inspection switches to move the car when ready.

When the car exceeds 150 fpm, the overspeed condition must stop it.

Contract Overspeed Test

This test verifies that moving the elevator at a speed greater than the programmed contract overspeed will result in an emergency stop.

1. Position the car in the middle of the hoistway.
2. On the iView > Safety Tests tab, set *Speed* to exceed the programmed contract overspeed value, but not high enough to cause the electrical or mechanical governor to activate. (You may have to physically bypass the electrical Governor switch.)
3. On the Quattro DC Drive (if applicable), set A1-Overspeed Mult (percent) = the same percentage of overspeed as the test *Speed* and set U4-Overspeed Test = Enable.
4. Select the Contract Overspeed test. Follow on-screen instructions.

When the car exceeds the programmed contract overspeed value, the car must perform an emergency stop.

Leveling Overspeed Test

This test verifies that the leveling zone does not exceed the maximum allowable distance and that the leveling speed does not exceed 150 ft/min (0.75 m/s). (NOTE: Be sure to make note of the original parameter values so they can be restored after the test):

1. On the Configuration > Drive > General tab, set *Emergency rate limited stop* = 25 ft/s².
2. On the Setup > Safety > Configuration tab, set *Leveling overspeed* = 7 fpm and click *Send*. Then perform the *Learn* operation.
3. On the Configuration > Pattern > Common tab, set *Leveling distance* = 4 in, set *Leveling speed* = 9 fpm, and click *Send*.
4. Place a call to any landing. Verify that when the car enters the leveling zone, the system detects a Safety A (or B) Inspection Leveling Overspeed Fault and performs an emergency stop. Following the emergency stop the car should level into the floor, if necessary. (NOTE: If the car is unable to relevel into the floor and the fault is generated 5 times, the fault will become persistent and the iBox Fault Reset button must be pressed to reset the fault. It may be necessary to restore the parameters that were changed in steps 1 through 3 in order for the car to relevel to the floor.)
5. Restore the parameters that were changed in steps 1 through 3 to their original values.

4

Emergency Brake Test - Unintended Motion



Danger

The Emergency Brake test allows the car to leave the floor with doors open. Station personnel or use a positive means to make certain there is NO ONE in the car.

This test verifies that moving the car away from a landing with both the car and hoistway doors open (termed “Unintended Motion”) will cause the Emergency Brake (e.g., Rope Gripper) to be deployed and that such deployment will stop the elevator. No test Speed input is required for this test.

1. Select the Emergency Brake Test - Unintended Motion.
2. Follow on-screen instructions.

Ascending Car Overspeed Test - Rope Brake

This test is to be used for installations using a rope brake for the emergency brake. It verifies that the emergency brake (rope brake) will stop an empty car that is over-speeding in the up direction.

1. Move the empty car to the bottom of the hoistway.
2. Check the mechanical governor nameplate for its tripping speed. Check the Contract Overspeed setting (Controller > View > Setup > Safety > Configuration tab).
3. On the iView Safety Tests tab, select the Electrical Governor Test (View > Safety Tests > Test Name parameter).
4. Enter a *Speed* sufficient to trigger the Contract Overspeed but not high enough to trip the mechanical governor.
5. Magnetek Quattro DC only: Calculate the percentage of Contract speed represented by the test *Speed* and set up the drive for an overspeed test as in step 4 of the Car/Counterweight Safety Test.
6. Follow on-screen instructions “ELECTRICAL GOVERNOR TEST SETUP” and “To perform an Electrical Governor test.”
7. Once the test is “Armed”, place a car call distant enough to allow the car to reach the necessary speed.
8. When the electrical governor is activated the rope brake will be deployed. Power is removed from the driving machine and brake.
9. Place the car on Inspection and press the iBox “Fault Reset” button to reset the fault.

Normal Terminal Switch Overspeed Tests

Per switch, this test verifies that either an emergency slowdown or emergency stop will be initiated if an elevator encounters an NTS switch and is moving at a speed greater than the programmed overspeed value for that switch. The car is arranged to run toward the target NTS switch without initiating any form of slowdown. When the car activates the NTS switch, it will execute either an emergency slowdown or an emergency stop, depending upon the overspeed margin detected. The car will then finish the run to a landing at leveling or correction speed.

1. It is imperative that deceleration and jerk rates for the Emergency slowdown profile be set to greater values than Standard profile deceleration and jerk rates so that initiation of an emergency slowdown will stop the elevator quickly and safely. Check the Standard and Emergency slowdown profiles to see that this is the case. For a typical, 500 fpm car, Standard jerk and deceleration settings might be 4.0 and 3.0 respectively; for the Emergency slowdown profile, jerk and deceleration might be 15.0 and 6.0 respectively. Adjust the Emergency slowdown profile parameters as necessary to ensure a rapid, aggressive stop sufficient to avoid running the car into the buffer.
2. Go to the Configuration > Pattern > Modes tab/Emergency slowdown profile and verify that *Deceleration* is set correctly. It is generally set to 5.0, and must be greater than the Standard profile - Deceleration parameter.
3. Go to the Configuration > Drive > General tab and verify that *Emergency rate limited stop* is set correctly. It is generally set to 7.0, and must be greater than the Emergency slowdown profile - Deceleration parameter.
4. Position the empty car far enough away from the target NTS switch to allow a speed to be reached that exceeds the learned overspeed value for that switch for the Overspeed Level 1 or Level 2 (whichever is being tested).
5. Go to the Diagnostics > Terminal Switches Status tab. Note the Overspeed 1 and 2 speeds learned for the terminal switch to be tested.
6. On the Safety Test window, select Normal Terminal Switch 'n' Overspeed Test - Level 'n' for the switch and level to be tested.
7. Set the test *Speed* to the Overspeed 1 (Level 1) or Overspeed 2 (Level 2) speed, plus 10 fpm, for the switch/test. **Caution!** If the speed is set below the overspeed threshold, no slowdown will be initiated and the elevator/counterweight will strike the buffer.
8. Follow on-screen instructions and perform the test. The car should perform either an emergency slowdown or emergency stop. For additional information see [“Terminal Switch Overspeed and Position Faults”](#) on page 4-61.
9. On the Operational Status tab, verify that the appropriate fault is shown in the Faults window.
10. Continue testing remaining normal terminal switches by repeating steps 4 through 9.

Emergency Terminal Switch Overspeed Tests

Per switch, this test verifies that an emergency stop will be initiated if:

- an elevator moving at a speed greater than 95% of programmed contract speed encounters the ETS switch in the direction of travel (DETS moving down; UETS moving up)
- an elevator using reduced stroke buffers is moving at a speed greater than the Overspeed 2 speed (95% of rated buffer speed) at the ETSL switch in the direction of travel.

Move the empty car far enough away from the terminal to achieve test speed by the time it reaches the ETS/ETSL switch. While testing, the car will run toward the terminal without initiating any form of slowdown. When the car activates the ETS/ETSL switch, it will execute an emergency stop. Where possible, the car will then finish the run to a landing at leveling or correction speed.

1. Go to the Configuration > Drive > General tab and verify that *Emergency rate limited stop* is set correctly. It is generally set to 7.0, and must be greater than the Emergency slowdown profile - Deceleration parameter.
2. Position the empty car far enough away from the target ETS/ETSL switch to allow a speed to be reached that exceeds the Over Speed 2 value for that switch.
3. Go to the Diagnostics > Terminal Switches Status tab. Note the Overspeed 2 value for the emergency terminal switch to be tested.
4. Select Emergency Terminal Switch Overspeed Test on the Safety screen.
5. Set the test *Speed* to the overspeed speed for the switch plus 10 fpm.



Danger

If the speed is set below the overspeed threshold, no slowdown will be initiated and the elevator/counterweight will strike the buffer.

6. Follow on-screen instructions and perform the test. For additional information see [“Terminal Switch Overspeed and Position Faults”](#) on page 4-61.
7. On the Operational Status tab, verify that the appropriate fault is shown in the Faults window.
8. Continue testing remaining emergency terminal switch by repeating steps 1 through 7.

Normal and Emergency Terminal Switch Position Tests

1. On the Configuration > Terminal Switches tab, for the switch you wish to test, set the position margin to a negative value (place a minus sign in front of the value).
2. If you are testing an up terminal switch, run the car past the switch in the up direction at contract speed (if possible). If you are testing a down terminal switch, run the car past the switch in the down direction at contract speed (if possible). The car should stop using the Emergency slowdown profile parameters.
3. On the Operational Status tab, verify that the appropriate fault is shown in the Faults window.
4. On the Configuration > Terminal Switches tab, set the position margin for the tested switch back to the original positive value
5. Continue testing the remaining switches using steps 1 through 4.

Terminal Switch Overspeed and Position Faults

The Overspeed Level 1, Level 2 and Position margins are calculated based on the speed and position values learned during the terminal learn procedure (see [“Learning Normal & Emergency Terminal Limit Switches”](#) on page 4-12)

Overspeed level 1 - During passenger (NORM) operation, if car speed exceeds the Overspeed Level 1 threshold at the time a Normal Terminal switch is activated, an Up (or Down) Normal Terminal Switch (1-5) Level 1 Speed Fault is detected and an immediate slowdown is initiated using Emergency slowdown profile parameters. For each Normal Terminal switch, the Overspeed Level 1 threshold is calculated by increasing the learned speed by a percentage of the learned speed, e.g. learned speed plus 10% of learned speed. The percentage used in the calculation is determined by the Overspeed 1 margin parameter. You may adjust the Overspeed Level 1 threshold by changing the Overspeed 1 margin parameter (Configuration > Terminal Switches tab). The default setting is 8%. Normally, you should not have to adjust this setting.

Note: Sometimes short runs to a terminal, especially one-floor runs, will exceed tightly set overspeed margins. After you learn terminal switches, it is a good practice to try a few short runs to each terminal and check the Last pass speeds against the Learned speeds for each switch (Diagnostics > Terminal Switches Status tab). If necessary, you can then adjust the Overspeed 1 margin to accommodate (possibly) higher short run switch speeds. (Overspeed level 1 faults cause an emergency slowdown into the terminal landing but the fault is automatically cleared so it is possible to miss the fact that this is occurring.)

Overspeed level 2 - During passenger (NORM) operation, if car speed exceeds the Overspeed Level 2 threshold at the time a Normal Terminal switch is activated, an Up (or Down) Normal Terminal Switch (1-5) Level 2 Speed Fault is detected and an emergency stop is initiated (motor and brake contactors immediately dropped). The Overspeed Level 2 threshold is calculated as 105% of the Overspeed Level 1 threshold.

Position - During passenger (NORM) operation, if car position varies from the learned position by more than the Position Margin at the time a Normal Terminal or Emergency Terminal switch is activated, an Up (or Down) Normal Terminal Switch (1-5) Position Fault or an Up (or Down) Emergency Terminal Switch Position Fault is detected and an immediate slowdown is initiated using the Emergency slowdown profile parameters. The Position Margin for each Normal Terminal or Emergency Terminal switch is displayed and may be adjusted on the Configuration > Terminal Switches tab. The default value is 2.0 feet.

ETSL for Reduced Stroke Buffers

Custom SPA software is used to hard code the ETS tripping speed to 95% of rated buffer speed. The ETS switches are repurposed for ETSL. To verify the tripping speed, select View > Diagnostics > Terminal Switches. The ETSL tripping speed is the “Over speed 2” listed for DETS and UETS. Test this using the Emergency Terminal Switch Overspeed Tests on page 4-60.

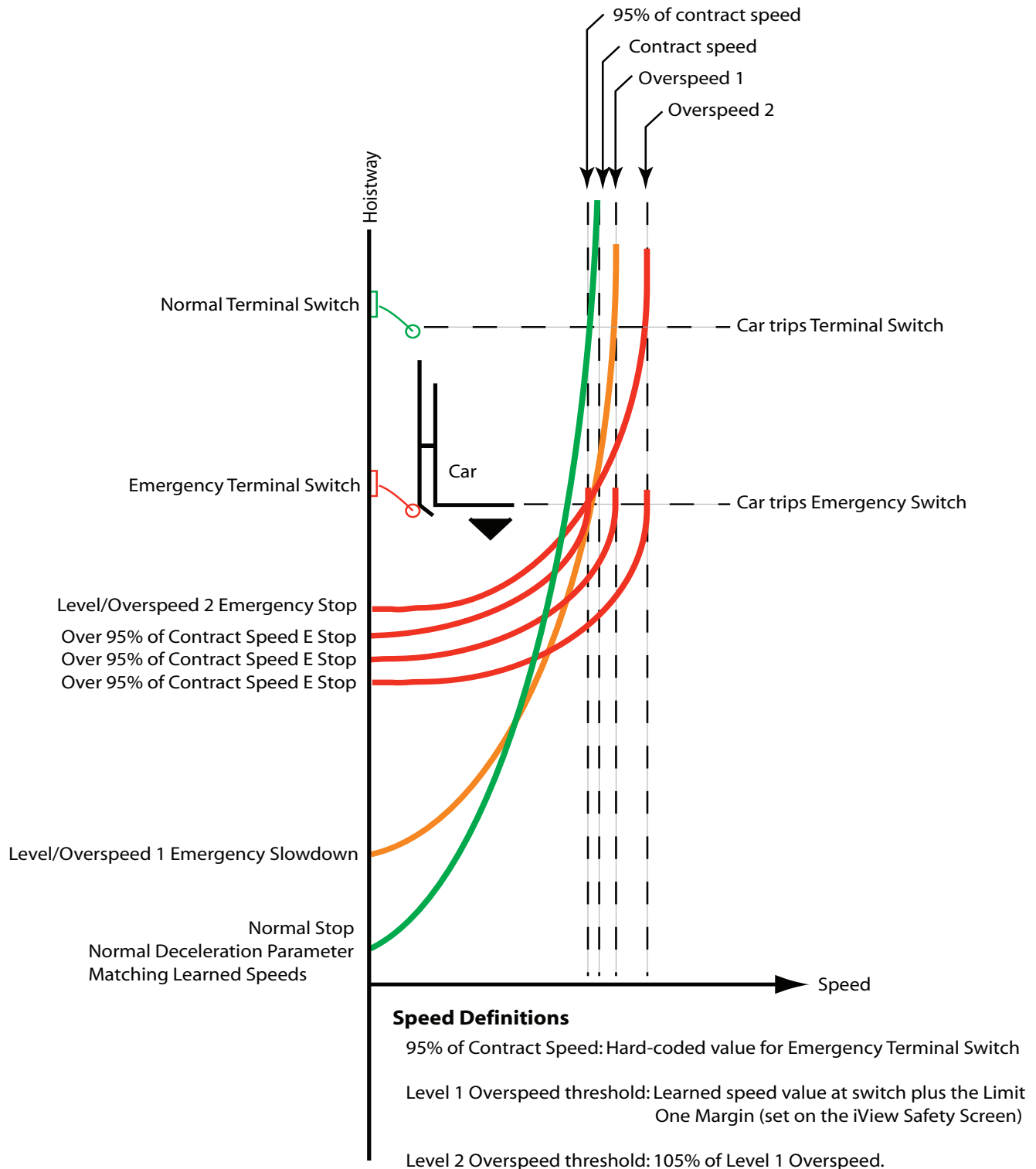


Caution

Emergency Terminal (switches) Overspeed is hard-coded at 95% of Contract Speed (or Rated Buffer Speed for reduced stroke buffers). Be certain that the car is traveling well below this speed when an Emergency Terminal switch is opened to avoid an emergency stop. In some instances, it may be necessary to re-position an Emergency Terminal switch to achieve this. This value is **NOT** affected by the Overspeed 1 margin setting.

The following illustration shows the car reaction to overspeed conditions at Normal and Emergency Terminal switches in the down direction.

Figure 4.6 Normal and Emergency Terminal Overspeed Reaction



Before Release to Passenger Operation

**Danger**

Before the elevator can be turned over to normal passenger use, it is important that no safety function or circuit remains bypassed. Items to check include, but are not limited to:

- All safety switches set to the OFF position
- No jumper between SB and 3 (iBox)
- No jumper between SAFH and 3 (iBox)
- Learn and Fault/Function switches set to OFF (iBox)
- No jumper between Gov and 3 (iBox)
- Pattern Scaling set to 100% (Pattern screen/Common tab)

Note

If this is a local car (part of a group), the “Car identifier” parameter, on the Configuration > General > General tab, must be set so that the Group controller can identify the car to which it is communicating. Initially the Car identifier is defaulted to 1. The Car Identifier range is from 1 to 15. The Car identifier for each car in a Group must be unique (no duplicates).



System Options

About System Options

This section contains supporting information for optional iControl system components:

- **iCentral - Central Dispatcher:** Description, installation and setup instructions for the Central Dispatcher (see [page 5-2](#)).
- **Comm-Connect Cabinet - Local Dispatcher:** Description of the cabinet used for the Local Dispatcher system interconnections (see [page 5-15](#)).
- **Serial Hall Call:** Description, installation and troubleshooting instructions for the Serial Hall Call system (see [page 5-17](#)).
- **Flexible I/O:** Description of the SC-ION Serial Input/Output board (see [page 5-22](#)).
- **Serial COP (Car Operating Panel):** Description and installation instructions for the Serial COP system and boards (see [page 5-36](#)).
- **Load Weighers,** page 5-39

System Options

iCentral - Central Dispatcher

iCentral coordinates dispatching, parking, special operating modes, emergency power response, security, and interaction with existing (legacy) controls. The Windows PC in iCentral has two Network Interface Cards (NIC); one for iCue elevator dispatching software, the other for iView configuration software — both software applications are installed on this one PC. You configure and interact with iCue through the iView graphical user interface.

If you also have an iView PC separate from the iCentral PC, you must request and be granted write privilege before you can make configuration changes. From the iView installation in the single iView/iCue PC, write privilege is granted automatically.

Cabinet Installation

Installation of the iCentral cabinet is similar to the installation of an iController cabinet. [Please refer to “Machine Room Preparation” on page 2-4.](#)

Check for shorts to ground before powering up the system. **Power must be OFF at the main disconnect(s).** A short to ground is defined as having a resistance of less than 20 ohms between the #1 (Common) bus and the terminal being tested. Shorts to ground must be corrected before proceeding.



Danger

Be certain that power is OFF at the main disconnect(s) before proceeding.

1. Using a standard screwdriver, temporarily disengage all twist-socketed fuses by turning them counterclockwise until they pop up.
2. Measure the resistance between the #2 (120VAC) bus terminals and the #1 bus.
3. If no shorts to ground are discovered, re-engage the fuses.

The AC wiring instructions in this section describe connecting power wiring between the iControl elevator cabinets and the iCue cabinet. The majority of technical information is contained in the MCE job prints package and referenced here as necessary. AC voltage verification and wiring instructions include:

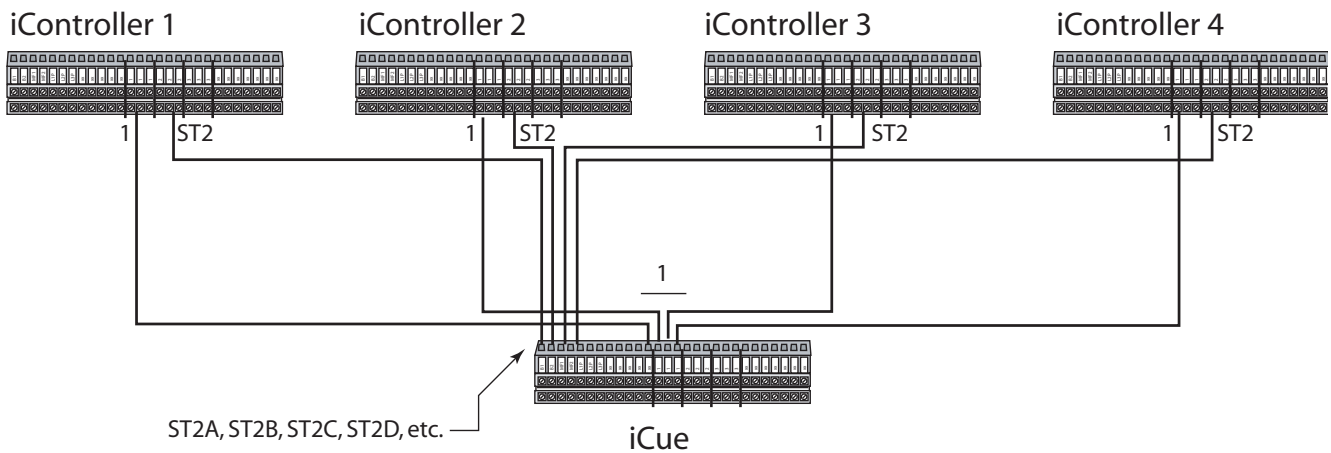
- Verifying main line power
 - Wiring iCue
 - Initial power up and test for bus voltage presence
1. Consult the job prints. Verify that AC supply is as specified.
 2. Refer to the Group Supervisor Field Wiring Print in the job prints and to the following illustration. iCentral power is provided by the car controllers as shown in drawing -2. The main AC power supply wiring size must be determined by the electrical contractor.
 - 2a. Check the phase-offset of the individual car ST2-bus lines before connecting them to the Group cabinet. Use a voltmeter set to AC volts to measure between adjacent car 2-bus terminals in the Group cabinet. The meter must read less than 10VAC. If the reading is higher, reverse the power leads going to the car T1 transformer at L1 and L2 and measure again.

**Caution**

All 2 bus power from cars to the iCue cabinet must be in phase. **Connecting out-of-phase power WILL cause damage.**

- 2b. A separate conduit or trough must be provided for the System (group-to-car) Ethernet network. Wiring details in the job prints must be followed exactly.
- 2c. If applicable, also wire according to the Group Interconnects to Individual Car Cabinets print. Be sure to ground all cabinets according to instructions.
- 2d. Refer to the Group Supervisor Field Wiring Print for iCentral field wiring instructions.

Figure 5.1 Elevator Controller to iCue Cabinet Wiring



Initial Power Up and Bus Verification

After AC power is connected, you are ready to temporarily power up and check that power buses inside the cabinet are providing their proper outputs.

**Caution**

This procedure assumes that no field wiring has yet been connected. If field wiring has been connected, it must be disconnected before beginning this procedure. Before applying power, physically check all components in the cabinet. Components loosened during shipment may cause damage.

1. Power up the elevator controllers.
2. Power up the group controller.
3. If a controller fails to power up, refer to the job prints and check supply connections and fuses.
4. Measure from each iCue ST2 bus terminal to a Common (#1) terminal. Verify 120VAC.
5. If any bus voltage is missing, check the associated fuse. The fuses are labeled with the bus numbers and are located at the top of the cabinet.
6. Power the controllers down (in preparation to continue wiring equipment).

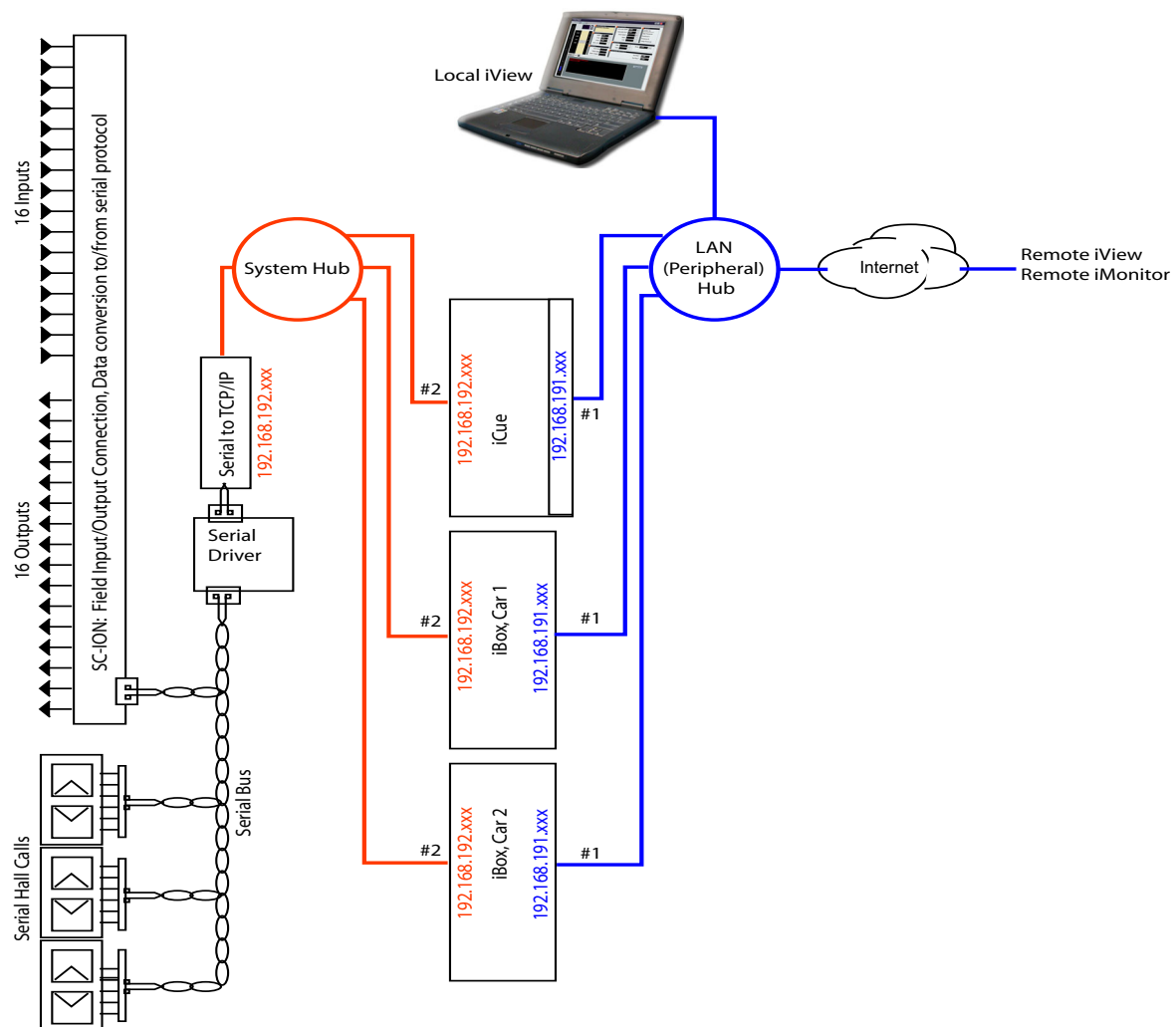
System Options

iControl Ethernet Overview

iControl uses two distinct Ethernet networks:

- The System switch connects the iCentral SYSTEM NIC to other **MCE** equipment like the elevator controllers, Serial Hall Call systems, and input/output expansion boards (SC-ION boards). iCue controls dispatching through this network.
- The LAN switch connects the iCentral LAN NIC used by iView to configure both iCentral and iControls. Through the LAN hub/switch, the elevator group may also be connected to an external network or building LAN.

Figure 5.2 iCentral Ethernet Connections



Setting iCentral PC LAN NIC (iView) IP Address

Note

When you open your iCue PC Network Connections, you will see two local area connections. The LAN Ethernet controls the iCue LAN connection (iView); the **System Ethernet** controls the iCue System connection to iBoxes, Serial Hall Calls, and I/O boards and **SHOULD NOT BE CHANGED WITHOUT CONSULTING MCE**.

If you received your iCentral PC from MCE, the NIC addresses for LAN and SYSTEM connections are already set as shown in the job prints. You DO NOT need to set them.

If you are replacing the LAN NIC card in the iCentral PC with an NIC provided by MCE, follow the instruction included with the NIC.

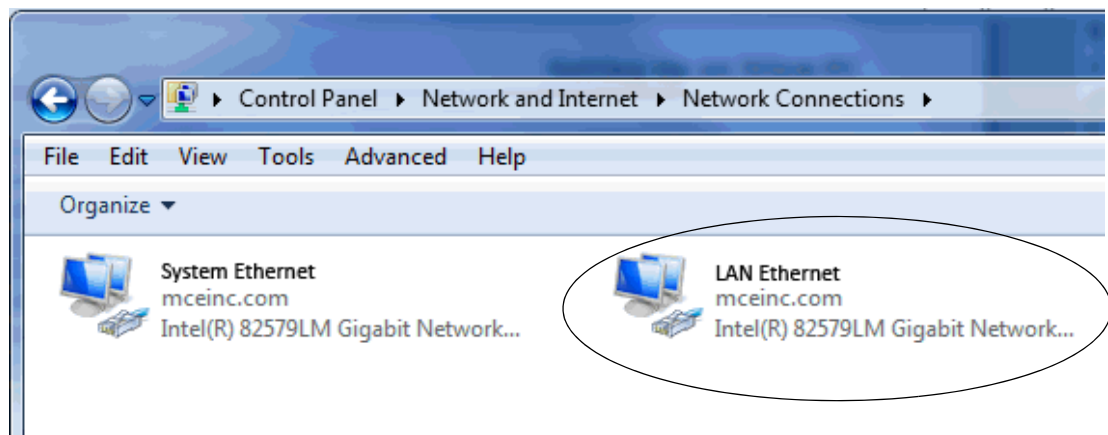
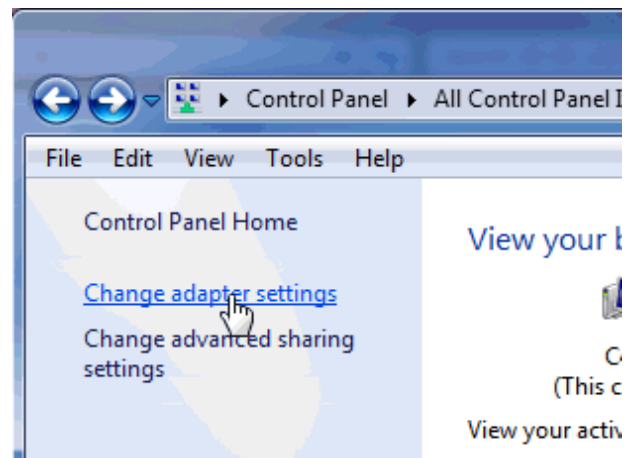
If you are replacing the LAN NIC card in the iCentral PC with an NIC not provided by MCE, use the instructions below. These instructions assume you have not changed the factory-default settings for the LAN ports. When setting IP Addresses on a PC, do not enter leading zeros (i.e., .020 is entered as .20).

The following example is for the Windows 10 operating system.

1. Start the PC.
2. From the *Start* menu, double click *Control Panel*. When the control panel opens, select *View by: Small Icons* (upper right corner).

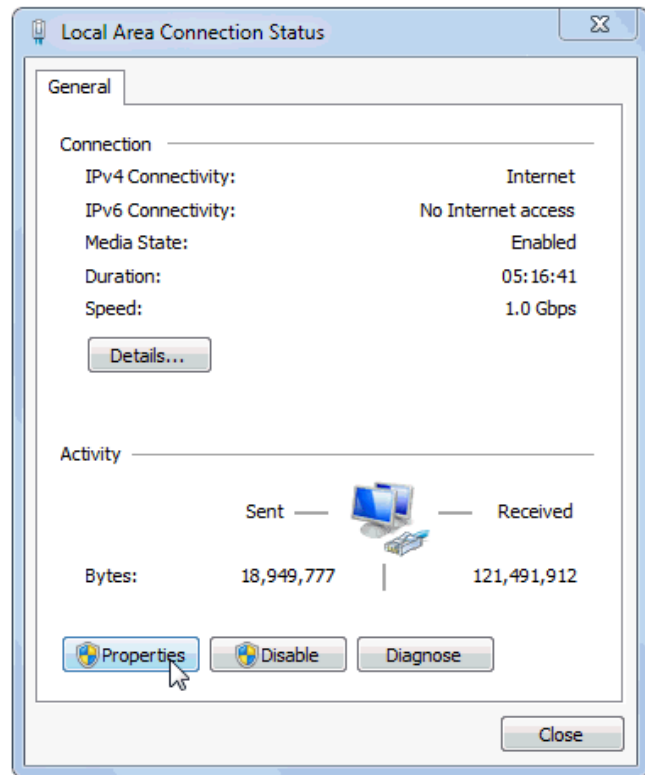
View by: [Small icons](#) ▼

3. Double click *Network and Sharing Center* to open the Network and Sharing Center dialog. Click *Change Adapter Settings* to open the Network Connections dialog.
4. You will see two connections; one for the System Ethernet and one for the LAN Ethernet.
5. Double-click the *LAN Ethernet Connection* icon to open the Local Area Connection Status dialog.

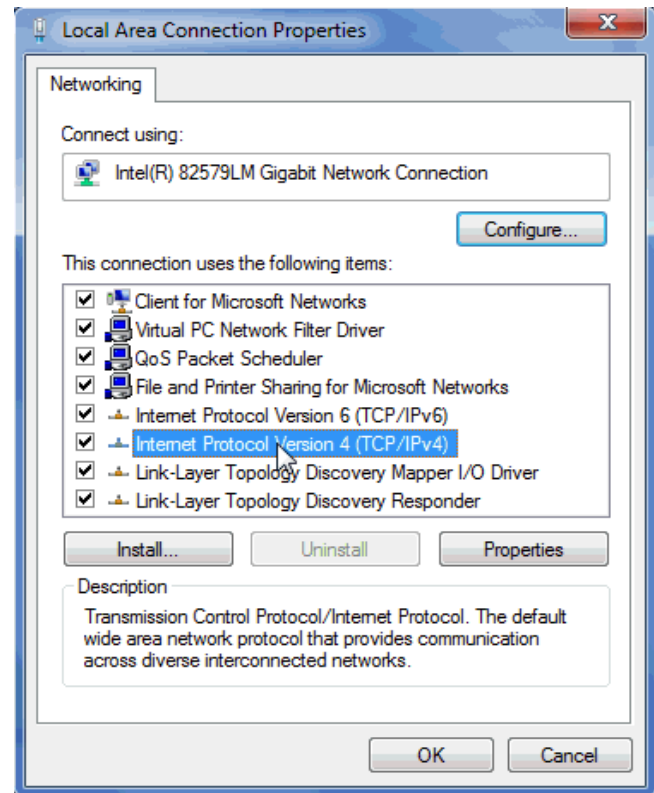


System Options

6. Click *Properties* to open the Local Area Connection Properties dialog.

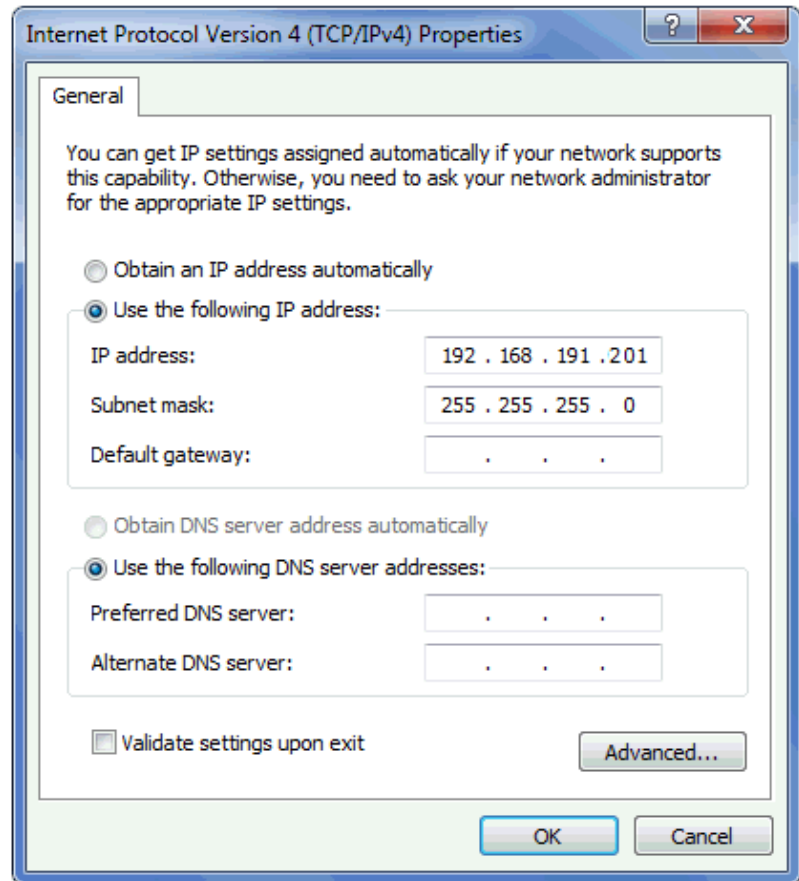


7. In the Local Area Connection Properties dialog, select *Internet Protocol Version 4 (TCP/IPv4)*.



8. Click *Properties* to open the Internet Protocol (TCP/IP) Properties dialog

9. Set the IP Address to 192.168.191.201.
10. Set the Subnet Mask to 255.255.255.0.
11. Leave the Default gateway blank.
12. Click OK and follow any instructions to save the changes you made.



System Options

Setting iCentral PC System NIC IP Address

Note

When you open your iCue PC Network Connections, you will see two local area connections. The LAN Ethernet controls the iCue LAN connection (iView); the **System Ethernet** controls the iCue System connection to iBoxes, Serial Hall Calls, and I/O boards and **SHOULD NOT BE CHANGED WITHOUT CONSULTING MCE**.

If you received your iCentral PC from MCE, the NIC addresses for LAN and SYSTEM connections are already set as shown in the job prints. You DO NOT need to set them.

If you are replacing the SYSTEM NIC card in the iCentral PC with an NIC provided by MCE, follow the instruction included with the NIC.

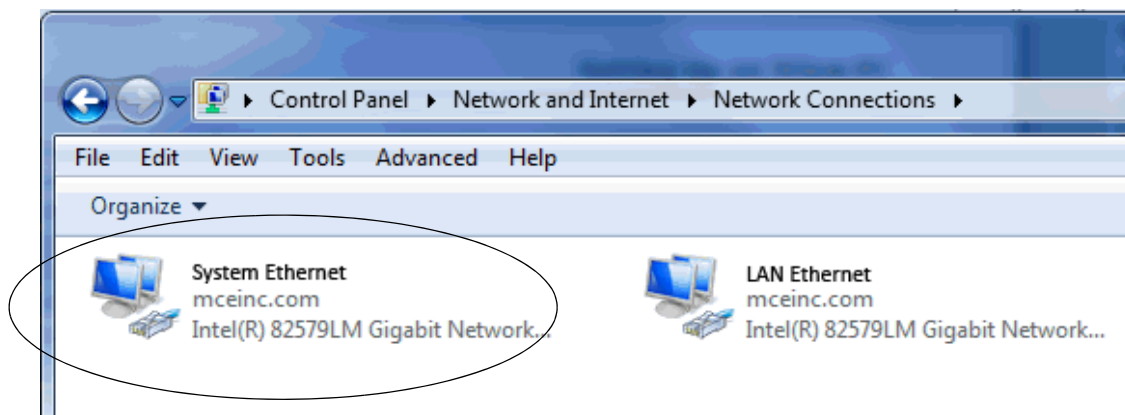
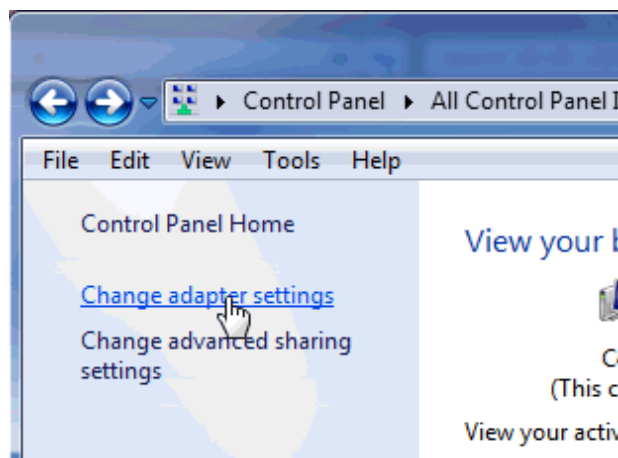
If you are replacing the SYSTEM NIC card in the iCentral PC with an NIC not provided by MCE, use the instructions below. These instructions assume you have not changed the factory-default settings for the network ports. When setting IP Addresses on a PC, do not enter leading zeros (i.e., .020 is entered as .20).

The following example is for the Windows 10 operating system.

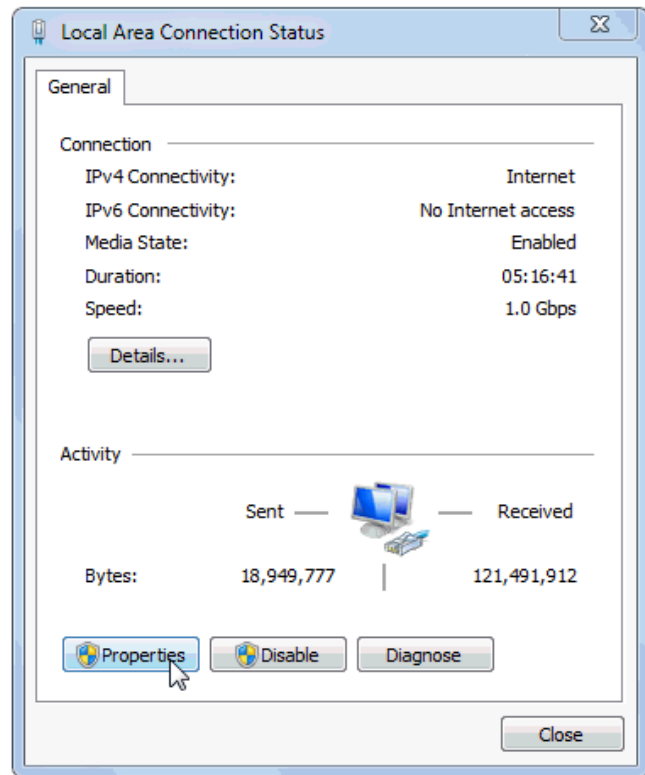
1. Start the PC.
2. From the *Start* menu, click *Control Panel*. When the control panel opens, select *View by: Small Icons* (upper right corner).

View by: **Small icons** ▼

3. Double click *Network and Sharing Center* to open the Network and Sharing Center dialog. Click *Change Adapter Settings* to open the Network Connections dialog.
4. You will see two connections; one for the System Ethernet and one for the LAN Ethernet.
5. Double-click the *SYSTEM Ethernet Connection* icon to open the Local Area Connection Status dialog.

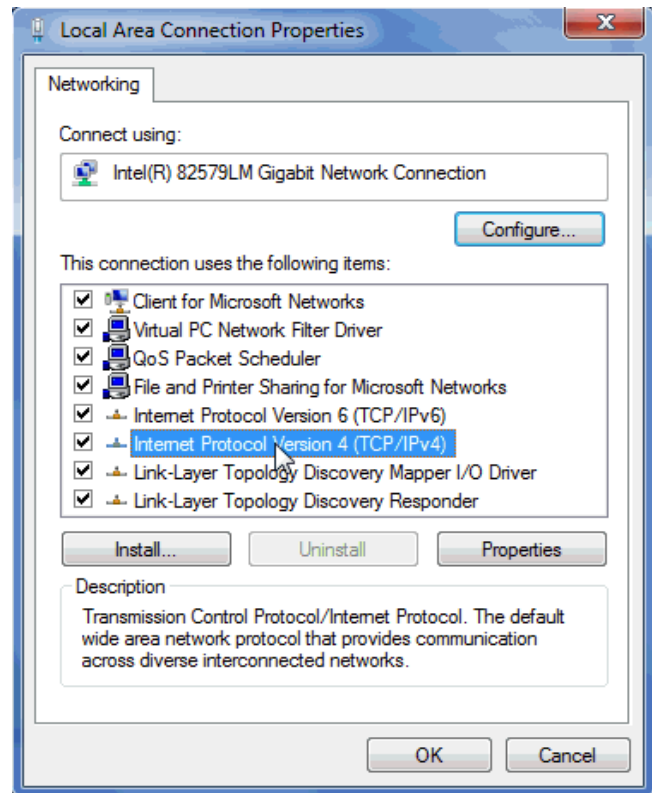


6. Click *Properties* to open the Local Area Connection Properties dialog.



5

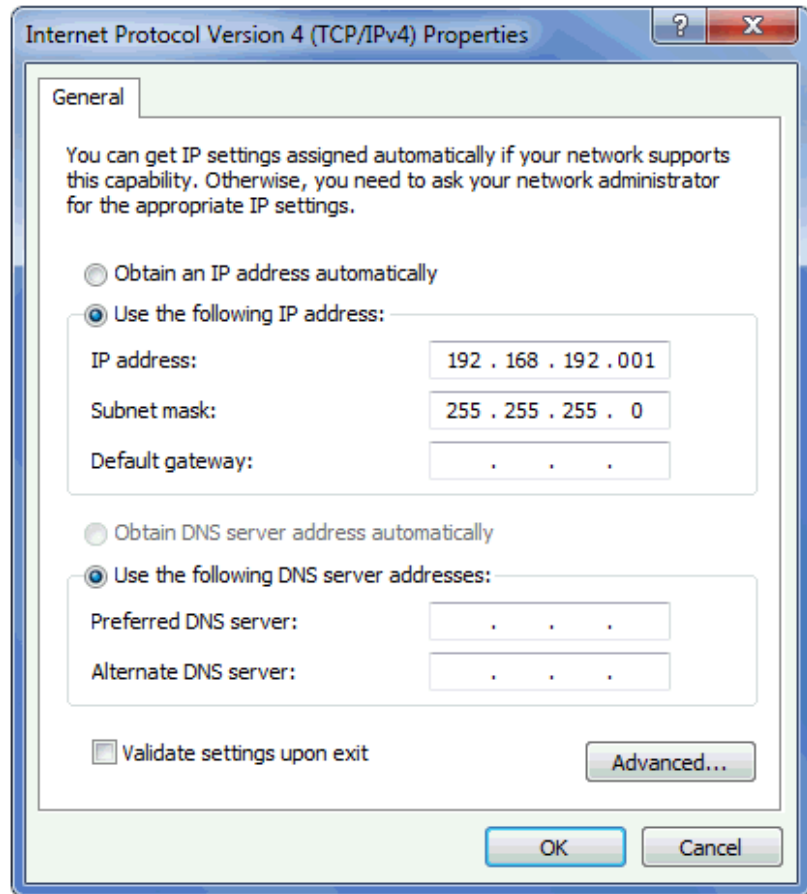
7. In the Local Area Connection Properties dialog, select *Internet Protocol Version 4 (TCP/IPv4)*.



8. Click *Properties* to open the Internet Protocol (TCP/IP) Properties dialog

System Options

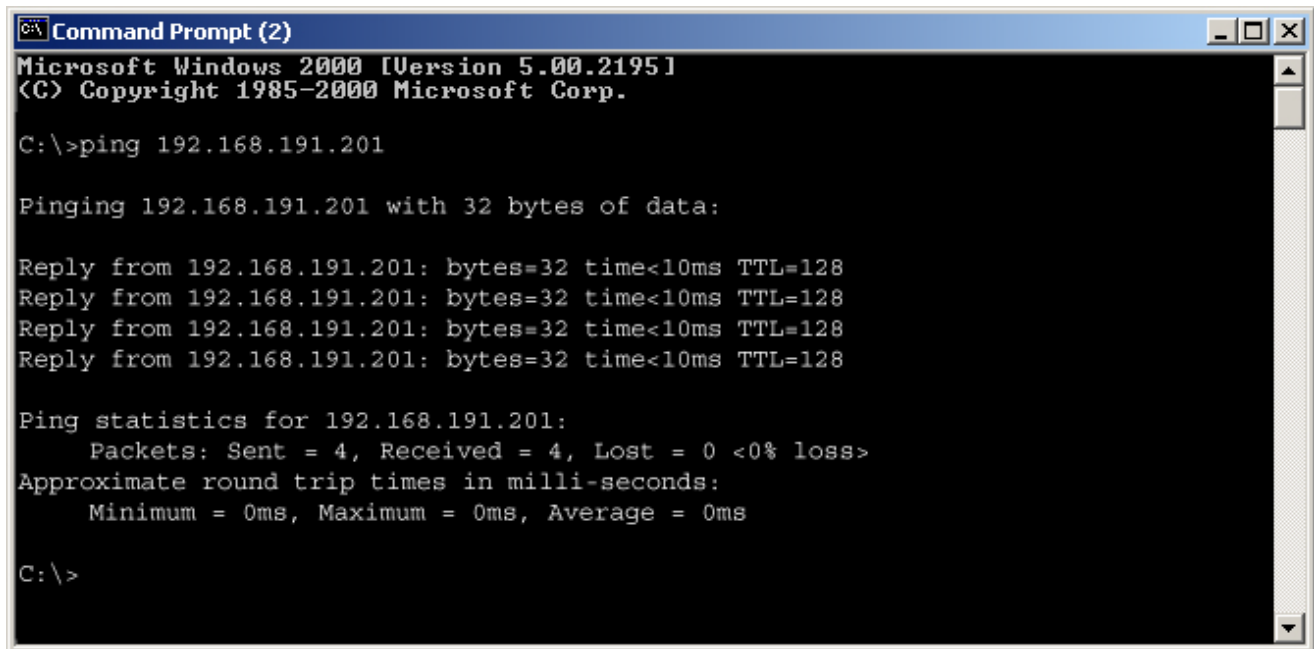
9. Set the IP Address to 192.168.192.001.
10. Set the Subnet Mask to 255.255.255.0.
11. Leave the Default gateway blank.
12. Click OK and follow any instructions to save the changes you made.



Pinging

If you suspect that one or more of the devices is still not communicating, you can “ping” them from the iView PC. Pinging just lets you send a message manually that just asks for a reply if the other device can “hear” you.

5



```
Command Prompt (2)
Microsoft Windows [Version 5.00.2195]
(C) Copyright 1985-2000 Microsoft Corp.

C:\>ping 192.168.191.201

Pinging 192.168.191.201 with 32 bytes of data:

Reply from 192.168.191.201: bytes=32 time<10ms TTL=128
Reply from 192.168.191.201: bytes=32 time<10ms TTL=128
Reply from 192.168.191.201: bytes=32 time<10ms TTL=128
Reply from 192.168.191.201: bytes=32 time<10ms TTL=128

Ping statistics for 192.168.191.201:
    Packets: Sent = 4, Received = 4, Lost = 0 <0% loss>
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms

C:\>
```

To ping:

1. Select Start/All Programs/Windows System/Command Prompt from the Windows Start menu (window pane icon at the bottom left).
2. Type in ping and the IP address of the device you want to check. For example:

```
ping 192.168.191.201
```

3. If the device is visible and responding, you will see four messages saying “Reply from...”
4. If not, the IP address for the PC or for the device may not be correctly set.

System Options

iCue User Interface

The iCue GUI provides an overview of group operation and status.

iCue (01.02.26)

Group info

Group ID: 1

Mode of operation: Balanced

LAN network info

IP address: 10.10.52.19

Subnet mask: 255.255.0.0

Gateway: 10.10.254.254

System network info

IP address: 192.168.192.201

Subnet mask: 255.255.255.0

Gateway: 192.168.192.254

Car connection status

1	2	3	4	5	6

Bus status

	Bus 1	Bus 2	Bus 3	Bus 4
Connected				
Bus voltage				
Driver VDC				
Node control				
Bus enabled				
High current				

Emergency power

Generator 1

Generator 2

Write privilege timeout

Timeout: 15 min

0

- Group Info
 - Group ID: The Group ID (1) cannot be changed. All other IDs are reserved for future use. If you need advanced System addressing information please contact MCE.

- **Mode of Operation:** The current group operating mode is displayed here:
 - **Automatic:** The group assigns operating modes automatically depending upon building traffic conditions.
 - **Balanced:** The group is operating in balanced mode, favoring neither up, down, nor lobby traffic.
 - **Lobby Peak:** The group is operating in lobby peak mode, favoring traffic from the building lobby or lobbies.
 - **Demand Up Peak:** The group is optimizing car assignment to favor up direction traffic.
 - **Demand Down Peak:** The group is optimizing car assignment to favor down direction traffic.
- **Network Info (LAN and System):** The LAN is the Ethernet network used by iView, iMonitor, and iReport to communicate with groups and cars. The System is the Ethernet network used by the group and individual car controls to communicate with one another.
 - **IP Address:** The TCP/IP address of the group on this network
 - **Subnet Mask:** The subnet mask limits the number of valid addresses in the group. For iControl, this should always be 255.255.255.0
 - **Gateway LAN:** 192.168.191.254
 - **Gateway System:** 000.000.000.000 (0.0.0.0)
- **Connection Status:** Displays the active car connections.
- **Bus Status:** For each serial I/O bus (1, 2, 3, 4), displays operational status:
 - **Connected:** Lights green if the bus is connected.
 - **Bus Voltage:** Lights green if the bus voltage levels are adequate.
 - **Driver VDC:** Lights green if the DC voltage provided by the driver is adequate.
 - **Node Control:** The driver polls the nodes (addresses) of connected devices (hall calls, other I/Os). This LED lights green when all nodes are responding correctly.
 - **Bus Enabled:** Lights green when there is activity on the bus.
 - **High Current:** Lights red if current demand is excessive. Occasional flashing is normal. Near continuous flashing or steady on state means that the serial driver is unable to provide enough current to meet demand. Continued high demand can damage the bus driver. Contact MCE Technical Support.
- **Emergency Power:**
 - **Generator 1:** Commercial power has been interrupted. Generator 1 is functioning.
 - **Generator 2:** Commercial power has been interrupted. Generator 2 is functioning.
- **Write privilege timeout:** Allows you to set the amount of time for which write privilege is granted. The default is 15 minutes. A value of zero = no time out.

Write Permission

When someone working in iView wants to change an iCue setting, they have to request permission by selecting Acquire from the Write Privileges menu. When they do, a pop-up dialog will appear on the iCue screen in which you can approve or deny the request. This prevents remote iView connections from making changes without the permission of machine room personnel. Permission is granted automatically if you are working from the iView/iCue PC in the iCentral dispatcher.

System Options

iCue Watchdog

When iCue is running, there is a utility called iCue Watchdog running in the background. The watchdog monitors iCue and makes certain that it continues to run as it should.

The watchdog is a Windows Service, which means that it will not show up on the task bar or icon tray. It runs under the name iCueWatchdogService.exe. Some attributes of the watchdog include:

- The watchdog's purpose is to make sure iCue is running. If iCue is closed through the task manager, crashes, or locks up, the watchdog will restart it.
- The watchdog will also monitor the iCue GUI. It will restart the GUI if it crashes for some reason. This should have no effect on iCue or system dispatching.
- The watchdog should always be running whether iCue is running or not. It gets started in a batch file that is put into the startup directory.
- If you close the iCue GUI (by right-clicking it in the icon bar and selecting exit) the watchdog assumes that is done intentionally and will not restart icue.
- Starting the iCue GUI after it has been closed will trigger the watchdog to start monitoring the applications again.
- The watchdog has a config file for setting the directory paths of iCue and iCue GUI and timers (in msec) that it uses to monitor the applications.



Caution

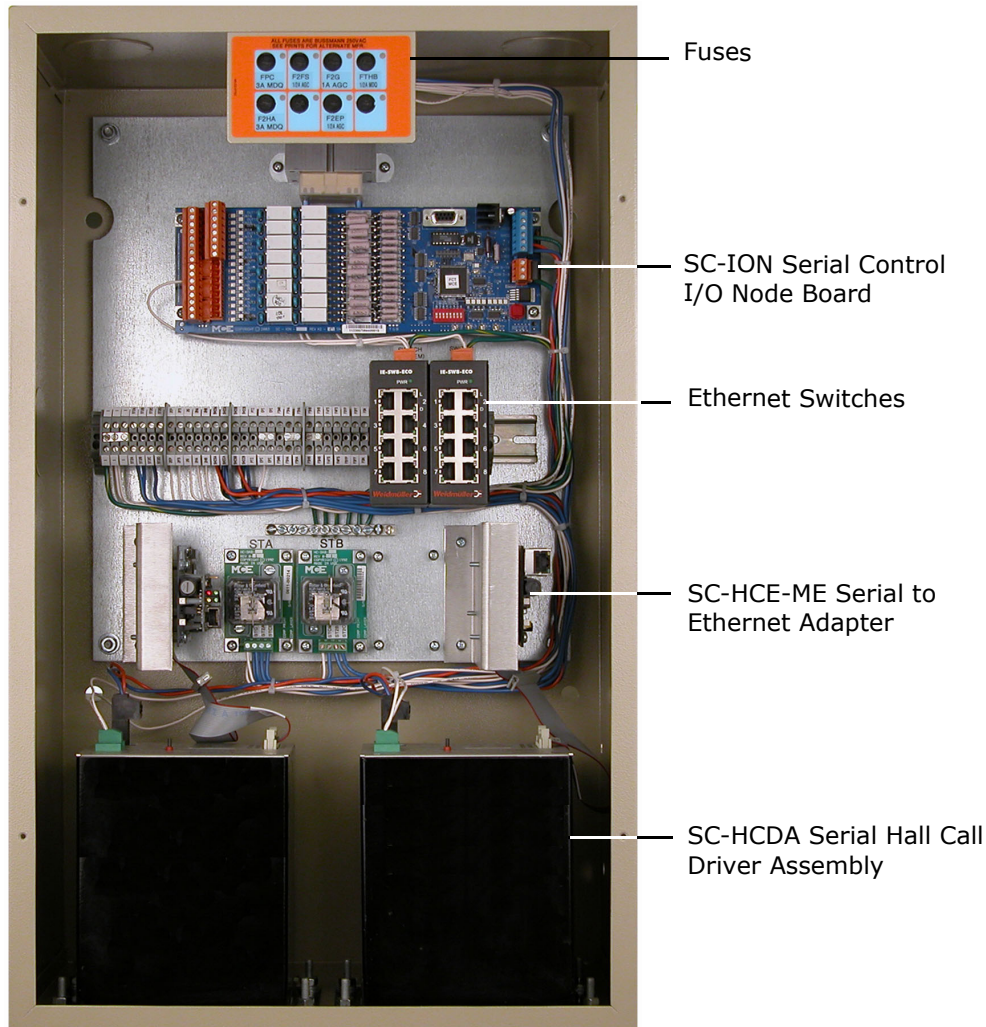
Watchdog information is provided to help you understand how iCue works. **Never** attempt to modify Watchdog configuration. Incorrect settings can corrupt the functionality of the iCue group control software.

Comm-connect Cabinet - Local/Dispatcher

The Comm-connect cabinet is used to house the system communication components when the Local/Dispatcher option is used. This cabinet houses the Serial Hall Call Driver(s), Ethernet Switches, SC-ION Serial Control I/O Node board and AC power connections.

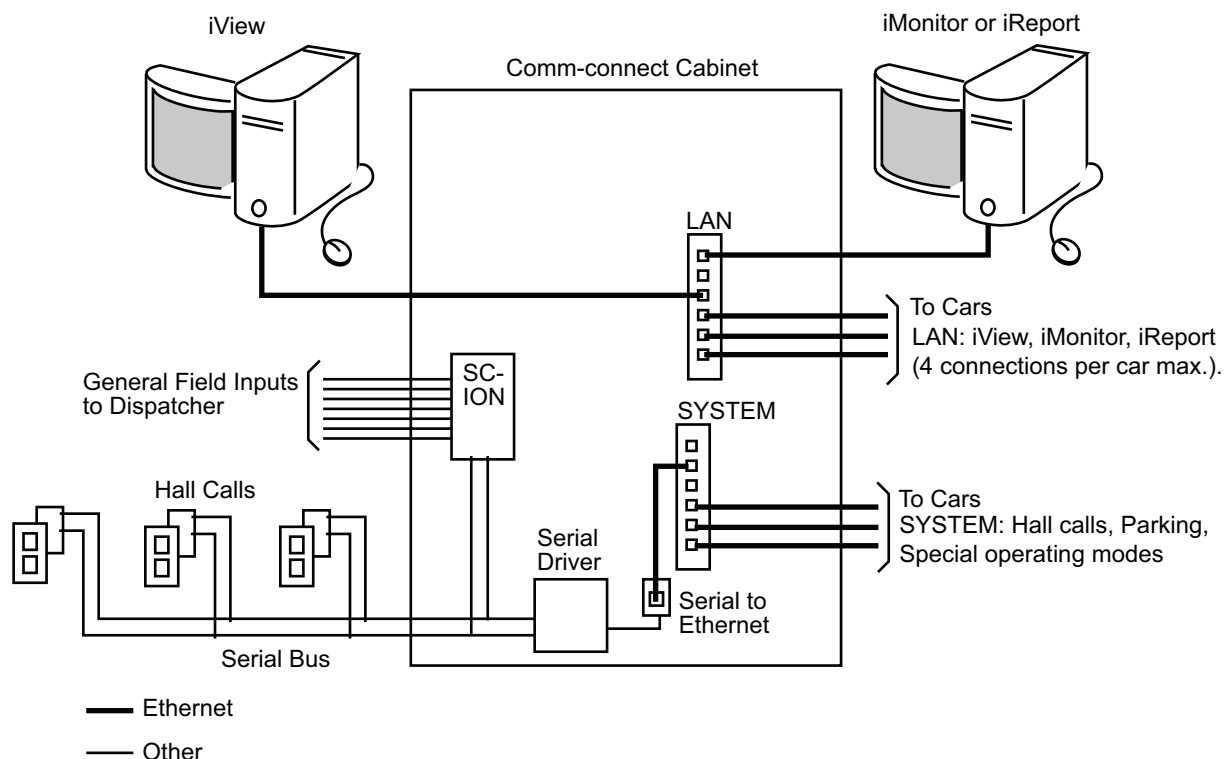
Figure 5.3 Typical Comm-connect Cabinet

5



System Options

Figure 5.4 Comm-Connect Interconnection



For systems that use the Local/Dispatcher option, the Comm-Connect Cabinet is where the serial and Ethernet communication equipment is housed and where the connections are made.

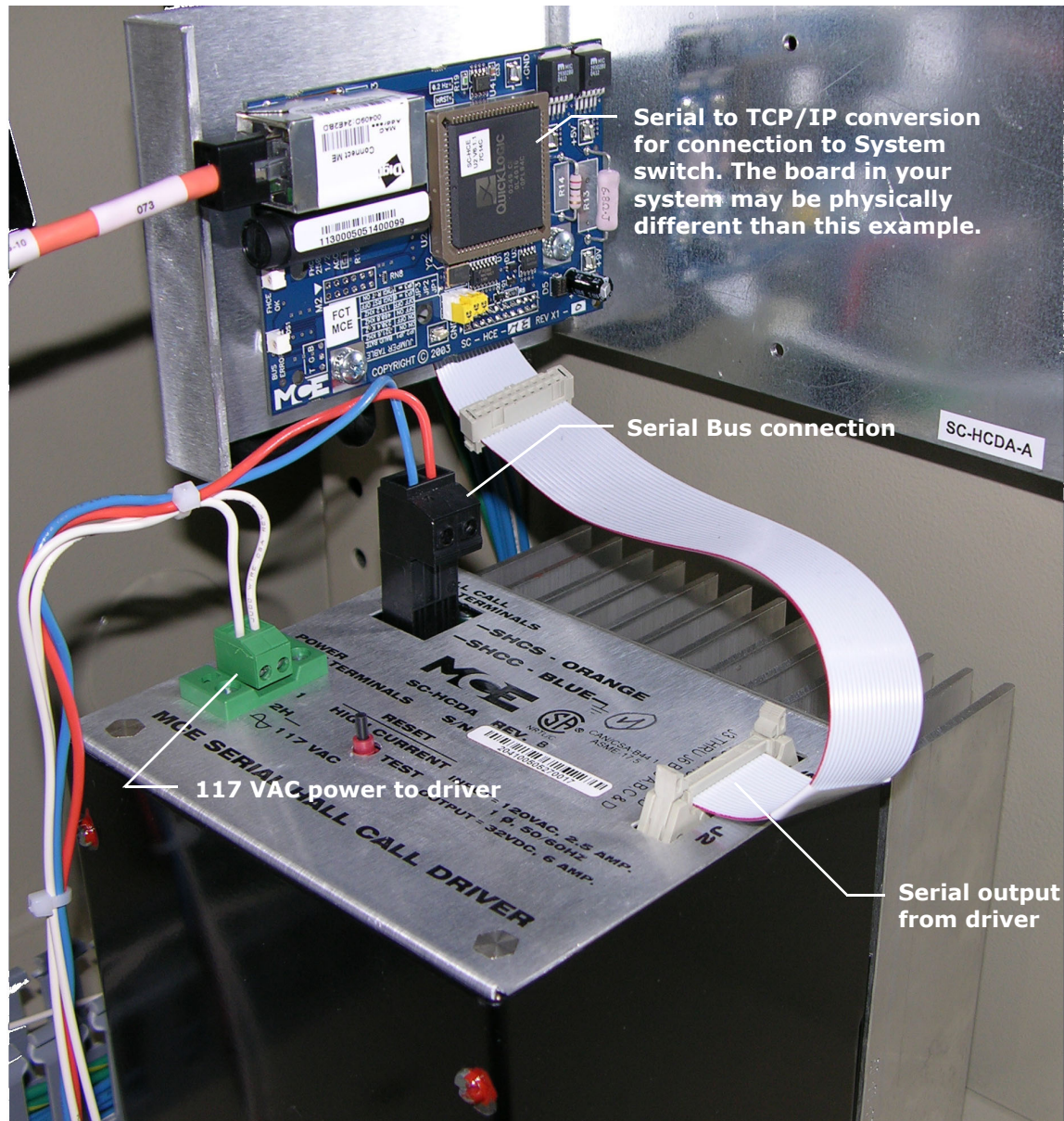
- **Ethernet Switches:** The Ethernet switches are the main connection / distribution point for the Local Area Network (LAN) and System Ethernet networks.
- **SC-HC-ME Serial to Ethernet Adapter:** This component converts the serial signals from the SC-HCDA Serial Hall Call Driver Assembly to the Ethernet protocol for transmission on the System Ethernet network.
- **SC-HCDA Serial Hall Call Driver Assembly:** This assembly provides power and communication to the Serial Hall Call Node boards located in each hall fixture box. Power and communication is transmitted on the two wire Serial Bus. Two SC-HCDA assemblies may be housed in the Comm-connect cabinet. For more information about the Serial Hall Call option see [“Serial Hall Call” on page 5-17](#).
- **SC-ION Serial Control I/O Board:** This board is used for serial communication of signals other than hall call signal (see [“Checking Serial to IP Connections” on page 5-22](#)).

Serial Hall Call

Serial I/O allows hall call buttons/indicators to be connected to iControl using a single 2-wire bus per riser. The serial bus uses a +/- 15-volt square wave, sampled for both amplitude and duty cycle, for communication between devices. The positive-going signal actually reaches +40-volts and is regulated to +24-volts to drive hall call lamps or other loads.

A “bus driver” is required for each riser (up to 4 risers) to provide the capacity to carry the load of multiple, simultaneously lighted lamps. A single controller can have up to four drivers/serial buses with each bus addressing as many as 980 devices. The photograph below shows a serial hall call bus driver installed in an iCentral Controller cabinet.

Figure 5.5 Serial Hall Call Bus Driver



System Options

Figure 5.6 Typical iCentral Serial Hall Call Connections

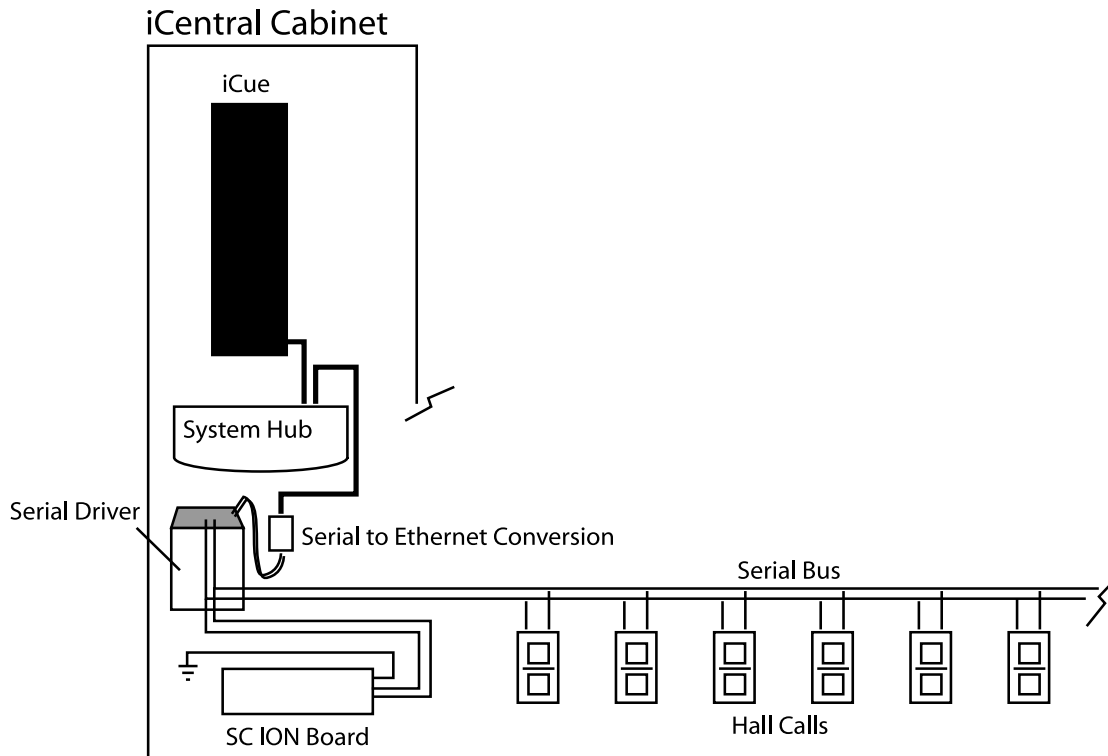
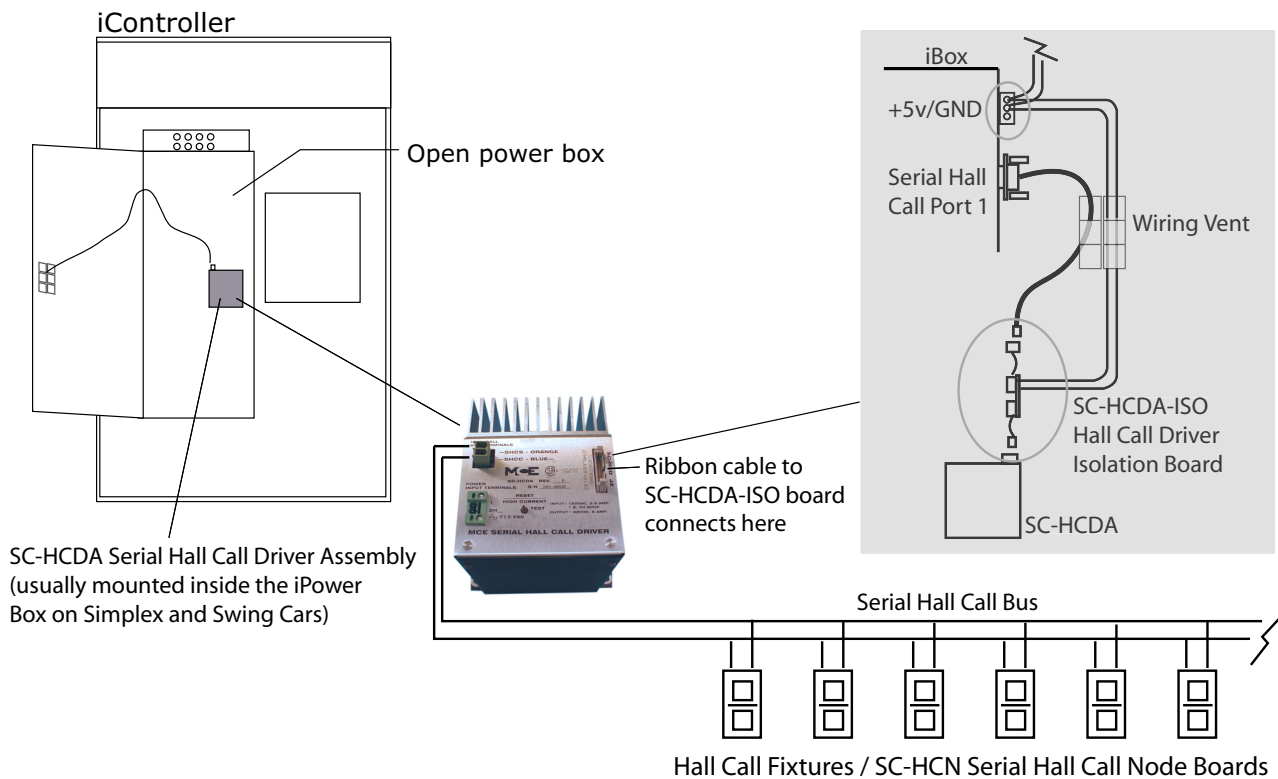


Figure 5.7 Typical Serial Hall Call Connections for a Simplex or Swing Car



Hall Call Installation

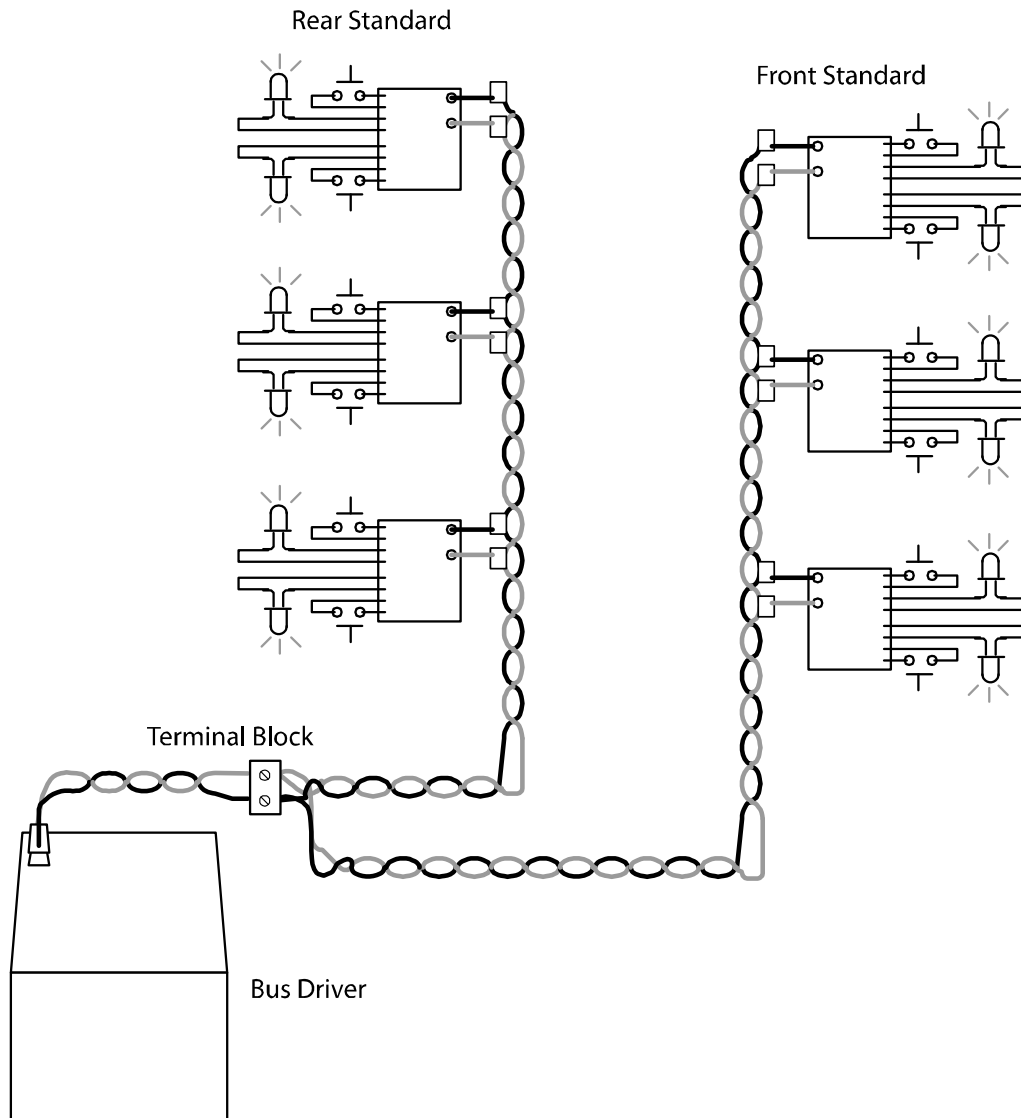
Installing a serial hall call system includes:

- Pulling the serial bus wiring
- [Setting the node board addresses](#)
- Installing the hall call enclosures (refer to the job prints)

Pulling Serial Bus Wiring

The serial bus is the physical, twisted pair of 14 AWG or 16AWG wires along which all the hall calls are connected. Install the serial bus wiring in accordance with applicable codes. The best practice is to initiate each separate vertical bus wire run from the controller location. If necessary, multiple serial bus runs can be “paralleled” at a driver to make them a single serial bus. Refer to the drawing “Serial Hall Call Suggested Wiring Methods” in the job prints for specific instructions for each job. The illustration below shows a single serial bus connected to serve two vertical runs of hall call boxes.

Figure 5.8 Single Bus, Two Vertical Runs of Hall Call Boxes



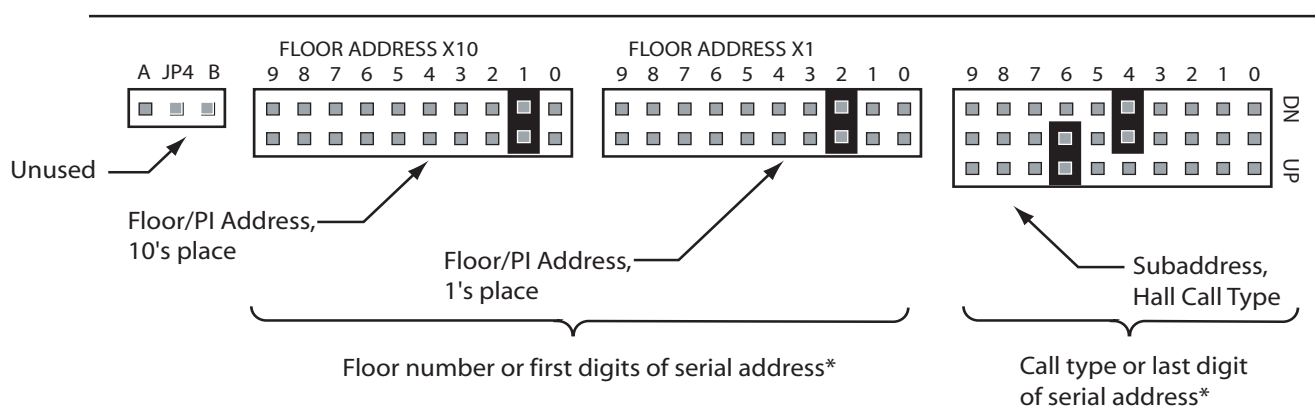
System Options

Setting Node Board Addresses

Each hall call enclosure contains a “node” board. The node board provides two outputs to power hall call lamps or LEDs, two inputs for the hall call buttons, and jumpers to set floor ID and hall call “type.”

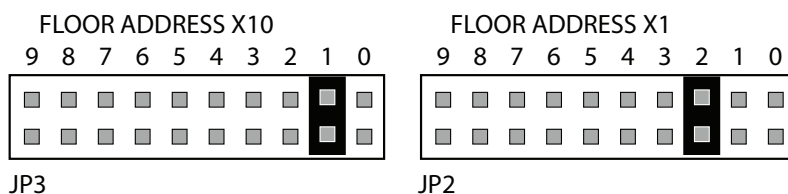
In a typical installation, a node (HCNT) board is mounted in each hall call receptacle. The blue and orange wires of the serial bus connect to one end of the board, the hall call buttons and lamps or LEDs connect to the other end (as shown in the job prints depending upon lamp or LED connection). During installation, it is easiest to set jumpers on each node board so that it is uniquely identified for floor ID and call type before you mount the board in the enclosure.

Node board jumper examples are illustrated below.



* This example sets the Down (DN) input/output to address 124 and the UP address to 126. The first two digits represent the floor number, in this example, 12.

- Floor Number/Address Jumpers
 - Jumpers 2 and 3 set the Floor number (or the first two digits of the serial address) for the node board.



- Jumper 3 sets the first digit for the floor (or serial address).
- Jumper 2 sets the second digit for the floor (or serial address).
- The example shown above would set the Floor number to 12.
- Because building floors are not consistently numbered and because a riser may not serve all floors in a building, MCE creates a table of values for these jumpers according to the building survey for the job. Refer to your job prints for precise information about setting these jumpers for your installation.

- Call Type Jumper
 - Jumper JP1 sets the call type for the two switch/lamp combinations serviced by the node board (or the individual jumpers can be thought of as setting the last digits of the boards two unique serial addresses). You set one jumper for each of the boards two I/Os. The most common setting for JP1 jumpers, Down Front and Up Front hall calls, is shown in the following illustration. The table after the illustration lists all call types.

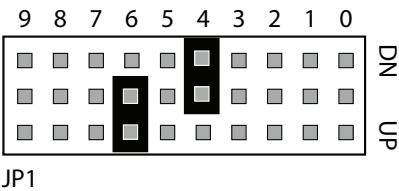


Table 5.1 Floor Sub-Addresses (Call Type) Jumper Settings

Sub-Address	Default Definition	Sub-Address	Default Definition
0	Front Auxiliary Down Call	5	Standard Rear Down Call
1	Rear Auxiliary Down Call	6	Standard Front Up Call (shown)
2	Front Auxiliary Up Call	7	Standard Rear Up Call
3	Rear Auxiliary Up Call	8	Commandeer Front Call
4	Standard Front Down Call (shown)	9	Commandeer Rear Call



Only the Sub-address jumper, JP1, can have more than one jumper inserted. (It can have a maximum of two — one to complete the DN address, the other to complete the UP address.) All other node board jumpers can have ONLY ONE jumper inserted. If more than one jumper is inserted in JP2 or JP3, the system will not work.

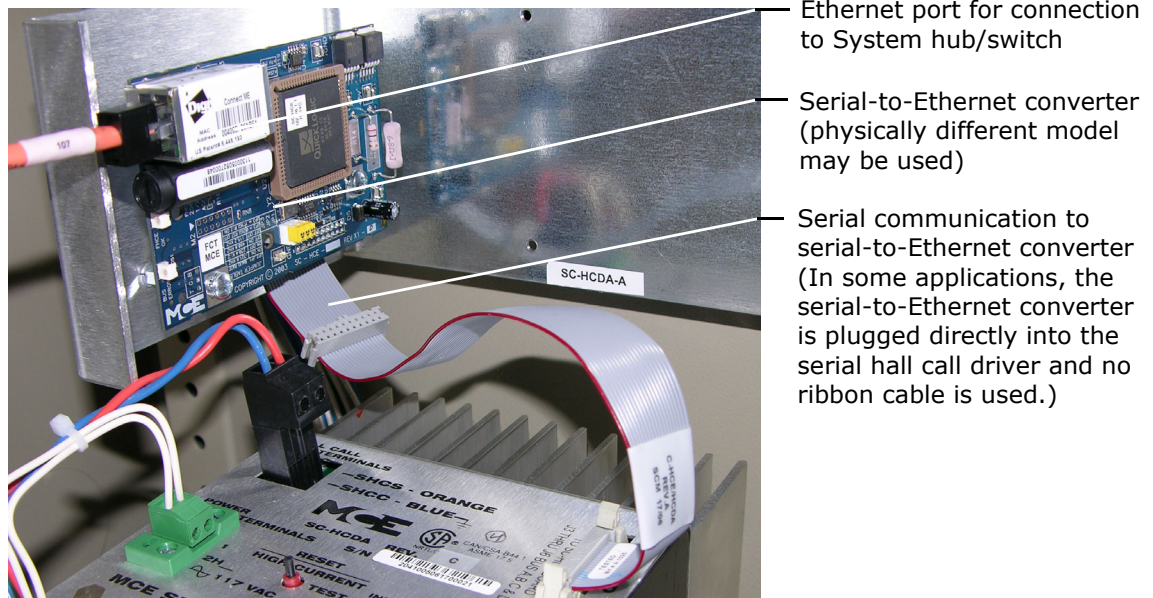
Wiring the Nodes Each serial bus consists of a twisted pair of wires, one orange and one blue. Each “node” on the bus (i.e., a hall call button/lantern pair), has a connection to the orange wire and a connection to the blue wire in addition to button and indicator lamp connections. See the job prints and instructions accompanying the hall call kits for details.

System Options

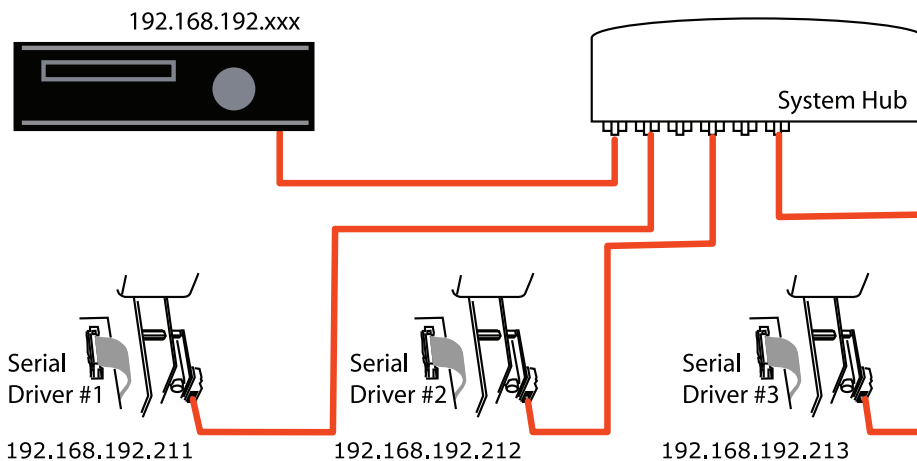
Checking Serial to IP Connections

Each Serial Hall Call bus originates from a Serial Hall Call Driver. Each Serial Hall Call Driver communicates with iCue through the System Ethernet switch.

Figure 5.9 Serial to TCP/IP Connection



1. Verify an orange Ethernet cable from the Serial-to-Ethernet converter to the System hub/switch.



The Serial-to-Ethernet converters each have their own IP address. The IP address is preset at the factory and should not need to be changed.



Caution

Always power down the serial hall call driver and wait at least one minute before installing, replacing, disconnecting, or connecting an SC-HCE serial to Ethernet board to avoid potential damage from a high voltage spike.

Troubleshooting

This section describes some basic troubleshooting techniques for the serial/Ethernet translation units and the Serial Hall Call Driver Assembly (SC-HCDA).

Serial/Ethernet Translation

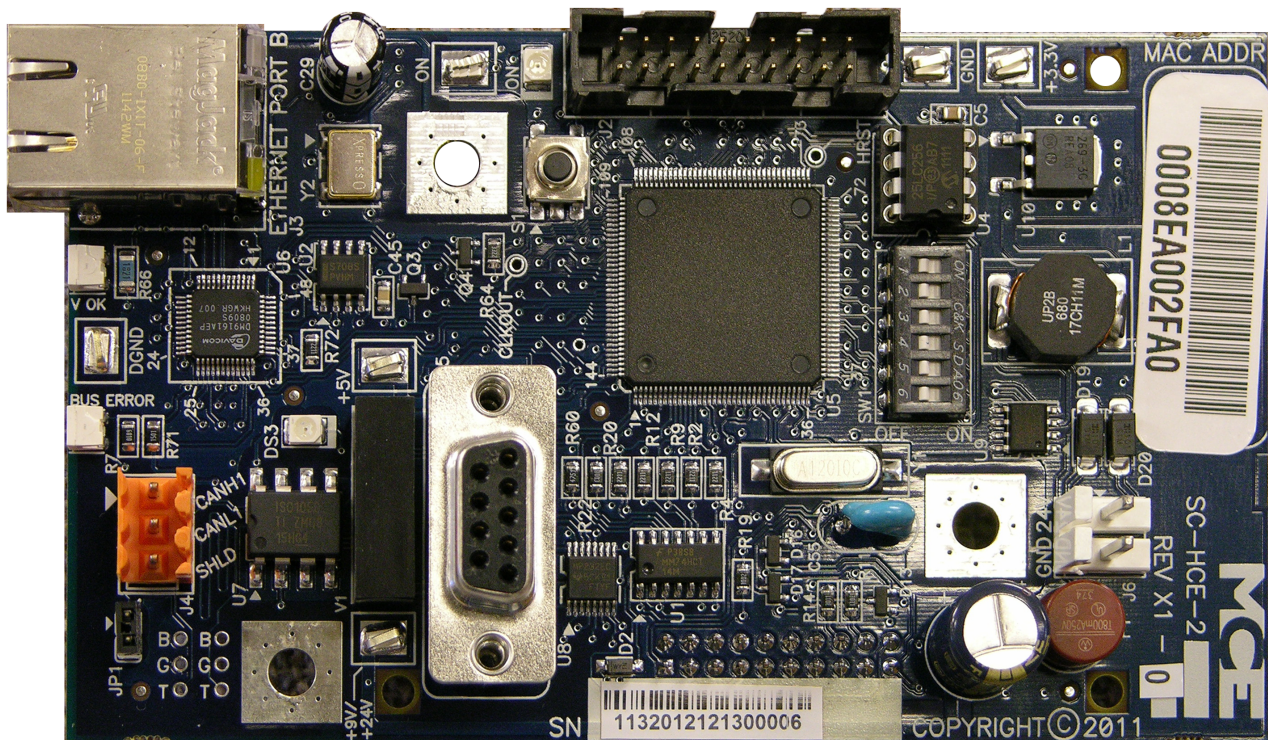
The serial I/O protocol used for MCE serial hall call and serial I/O board connections is translated to and from Ethernet bus protocol for system level communication over the iControl System network by the SC-HCE board. (System hub/switch in iCentral dispatcher. Orange TCP/IP cables.)

SC-HCE Assemblies

The SC-HCE-2 is the newest release assembly. Older systems may use the SC-HCE-ME board (not pictured). The SC-HCE-2 assembly is shown in the illustration below.

After making changes to SC-HCE-2 board configuration, reset the iCue PC so that it can rebuild internal communication tables.

Figure 5.10 SC-HCE-2 Serial/Ethernet Translation Assembly



System Options

Mechanical Configuration

- Ethernet Port: Standard Ethernet port. Used to connect this assembly to the System Ethernet hub/switch using an orange Ethernet cable.

Figure 5.11 Ethernet Ports

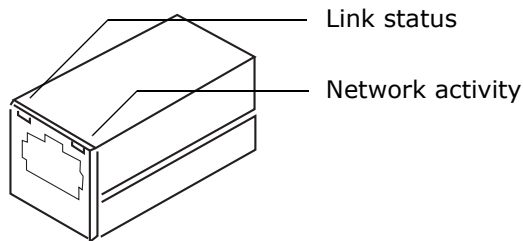


Table 5.2 Ethernet Port LEDs

LED	Color	Description
Link Status/Integrity	yellow	Network link is operational: On continuously indicates that an Ethernet connection is made.
Network Activity/Diagnostic	orange	Network Activity: Blinks when network traffic detected.

Table 5.3 SC-HCE-2 Indicators

Indicator	Description
Bus Error	ON = Communication problem. Blinking Rapidly = Bootloader running.
DS3	ON = Isolated CAN power supply OK
Link Status	Yellow indicator, ON = Network link is operational. (located on the Ethernet connector)
Network Activity	Orange indicator, Blinks = Network traffic detected. (located on the Ethernet connector)
ON	ON = Board processor operating. Blinking Rapidly = another board at same address. When board is first powered up or reset, this LED blinks the first digit, second digit, and third digit of the software version number with a very short blink between each group for separation.
V OK	ON = Power to the board OK.

Table 5.4 SC-HCE-ME Indicators

LED	Color	Description
Bus Error		ON = Communication problem. Blinking Rapidly = Bootloader running.
Link Status/Integrity	yellow	Network link is operational: On continuously indicates that an Ethernet connection is made or an access point is engaged.
Network Activity/Diagnostic	green	Network Activity: On when network traffic detected; off when no traffic detected. Diagnostic: Flashes three times in even duration during power up or reset, indicating successful startup.
FHCE OK		ON = Power to the board OK.

Table 5.5 SC-HCE-2 DIP Switch SW1

Switch	Run State	Function
1	OFF	Not used.
2	OFF	When ON, enables in-circuit programming through serial port.
3	OFF	When ON, enables in-circuit programming through serial port.
4	OFF	When ON, runs the Ethernet bootloader instead of main application (on board startup).
5		Sets high bit of board ID. See following table.
6		Sets low bit of board ID. See following table.

Table 5.6 SCE-HCE-2 Board ID, Switches 5 and 6 of SW1

5	6	Riser ID	Board TCP/IP Address
0	0	0	192.168.192.211
0	1	1	192.168.192.212
1	0	2	192.168.192.213
1	1	3	192.168.192.214

Table 5.7 SC-HCE-ME Board Switch Schedule

JP3	JP2	JP1	Result
Off	Off	Off	115.2 kHz serial port baud rate (default setting)
Off	Off	On	460.8 kHz serial port baud rate
Off	On	Off	230.4 kHz serial port baud rate
Off	On	On	921.6 kHz serial port baud rate
For board programming			
On	Off	Off	Board may be programmed

Table 5.8 SC-HCE-ME Board Switch Schedule for FPGA software V6.5.0 1DB38F

Jumper	Position	Description
JP1	Off	115.2 kHz baud rate (default setting)
	On	230.4 kHz baud rate
JP2	Off	Over clocking enabled (default setting)
	On	Over clocking disabled
JP3	Off	Self resetting of (Digi) data converter enabled (default setting)
	On	Self resetting of (Digi) data converter disabled



Caution

Always power down the serial hall call driver and wait one minute before installing, replacing, disconnecting, or connecting an SC-HCE to avoid damaging the board.

System Options

Trouble Indications

- Hall Call buttons do not work
 - Building Hall Call buttons do not light when pressed
 - Building Hall Call buttons do not stay on until elevator arrives
- Elevator reports “Wild Operation” (stopping at every floor)
 - iBox LCD displays Emergency Dispatch
- LEDs not lighted on the base board of the serial/Ethernet assembly
- Both Network Link and Network Activity LEDs OFF
- Hall Call LEDs or lamps flashing or not operating normally

If you are seeing any of the above problems, evaluate using the “Check” procedures below.

Quick Check

- During power up, -2 Boards:
 - Two red SC-HCE board LEDs (V OK and Bus Error) should remain on for 30-40 seconds after the Hall Call Driver is powered-up.
 - After solid-on, LEDs will cycle through a period of start up activity then indicate normal operation as described below.
- During power up, -ME Boards:
 - Two red SC-HCE board LEDs (FHCE and Bus Error) should remain on for 30-40 seconds after the Hall Call Driver is powered-up.
 - After solid-on, LEDs will cycle through a period of start up activity then indicate normal operation as described below.
- Normal operation indication, -2 Boards:
 - Network Link Status LED on solidly (right, yellow).
 - Network/Serial Port Activity LED flashes once every five seconds or more (left, orange) when communicating with iCue.
 - Network/Serial Port Activity LED should flash once when a Hall Call button is pressed.
 - DS3 (red) LED on SC-HCE board solidly on.
 - Bus Error (red) LED on SC-HCE board off. DIP switches 5 and 6 determine IP address; the other switches should be OFF.
- Normal operation indication, -ME Boards:
 - Network Link Status LED on solidly (left, yellow).
 - Network/Serial Port Activity LED flashes once every five seconds (right, green) when communicating with iCue.
 - Network/Serial Port Activity LED should flash once when a Hall Call button is pressed.
 - FHCE (red) LED on SC-HCE board solidly on.
 - Bus Error (red) LED on SC-HCE board off.
- Auto Reset
 - Check that the iCue software is running properly on the PC. If not, restart iCue by clicking the Windows Start button and selecting Start/Programs/Startup/iCue.

General Check

1. Check all power and data cable connections.
 - Port status LED on System hub/switch should light when the Ethernet cable is plugged in between the hub/switch and the serial/Ethernet board.
 - Ribbon cable (if used) seated properly on the hall call driver and the serial/Ethernet board.
 - Use a voltmeter to measure between each of the three DC voltages (3.3V, 5V, 9V) on the serial/Ethernet (SC-HCE) board to ground. Voltages should read the provided level, +/- 10%.

5

iView Check Use the iView System I/O Configuration screen, Bus tab to see if trouble is indicated and to check that hall calls are addressed as specified in your job prints.

1. Launch iView and connect to the group.
2. Open the System I/O Configuration screen and select the Bus tab.
3. Verify the state of the indicator LEDs and that the addresses are as defined in the group job prints (inputs as expected per serial address and Labels mapped to correct floor).

System
Bus

Inventory / Test response

Select bus 1

Node address	Input inventory	Output inventory	Input / Output	Association	Test results
010					
011					
012					
013					
014					
015					
016					
017					
018					
019					
020					
021					
022					
023					

Input inventory
Output inventory
Input test
Output test

Bus status

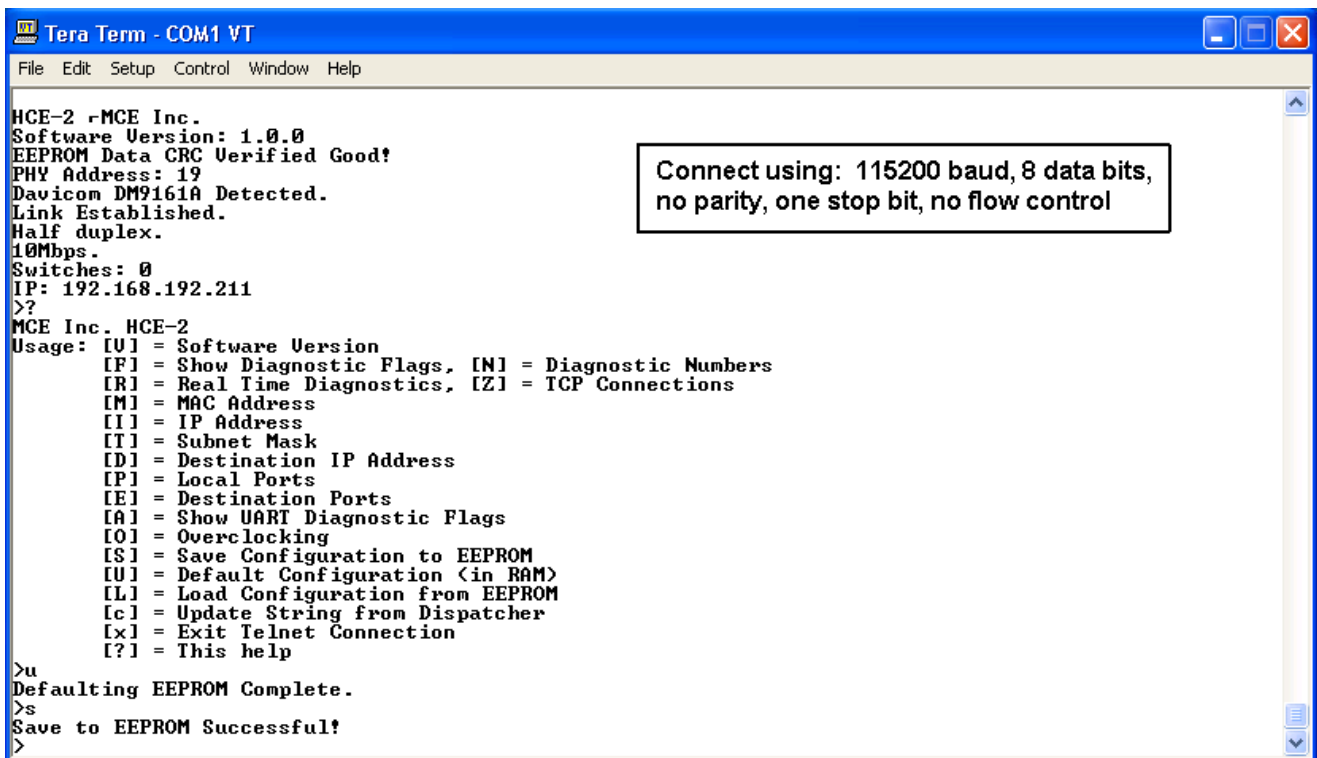
	Bus 1	Bus 2	Bus 3	Bus 4
Connected	●	●	●	●
Bus voltage	●	●	●	●
Driver VDC	●	●	●	●
Node control	●	●	●	●
Bus enabled	●	●	●	●
High current	●	●	●	●

Wrapback option

☒ Bus 1
☒ Bus 2
☒ Bus 3
☒ Bus 4

System Options

Serial Connection Check, -2 Board The Hyperterminal utility may be used to check or default internal settings on SC-HCE boards. Contact MCE for information.



```

Tera Term - COM1 VT
File Edit Setup Control Window Help

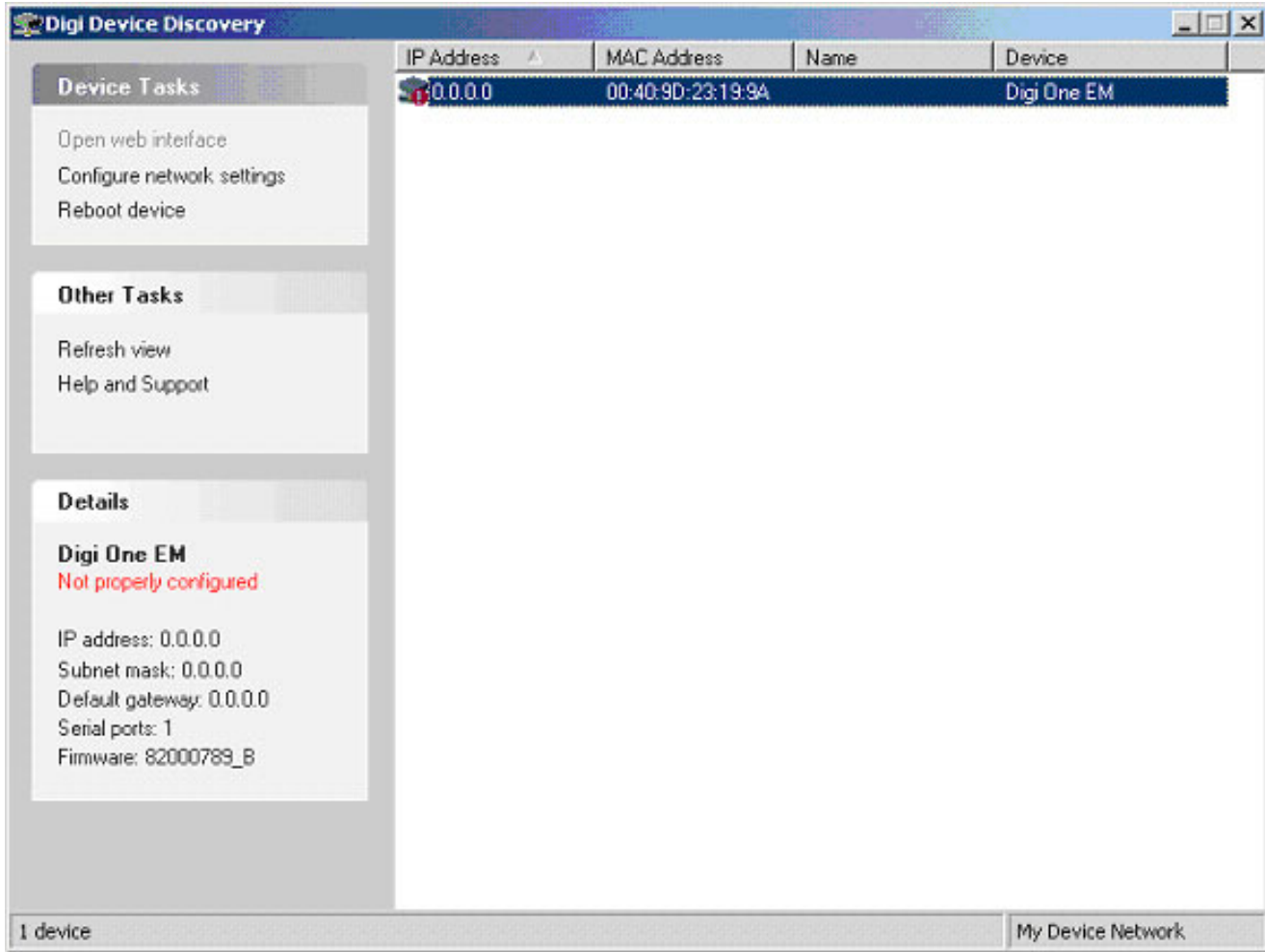
HCE-2 rMCE Inc.
Software Version: 1.0.0
EEPROM Data CRC Verified Good!
PHY Address: 19
Davicom DM9161A Detected.
Link Established.
Half duplex.
10Mbps.
Switches: 0
IP: 192.168.192.211
>?
MCE Inc. HCE-2
Usage: [U] = Software Version
       [F] = Show Diagnostic Flags, [N] = Diagnostic Numbers
       [R] = Real Time Diagnostics, [Z] = TCP Connections
       [M] = MAC Address
       [I] = IP Address
       [T] = Subnet Mask
       [D] = Destination IP Address
       [P] = Local Ports
       [E] = Destination Ports
       [A] = Show UART Diagnostic Flags
       [O] = Overclocking
       [S] = Save Configuration to EEPROM
       [U] = Default Configuration (in RAM)
       [L] = Load Configuration from EEPROM
       [c] = Update String from Dispatcher
       [x] = Exit Telnet Connection
       [?] = This help
>u
Defaulting EEPROM Complete.
>s
Save to EEPROM Successful!
>
  
```

Connect using: 115200 baud, 8 data bits,
no parity, one stop bit, no flow control

TCP Address Check, -ME Board The Digi Device Discovery utility may be used to check and/or reset the TCP/IP address of the serial/Ethernet assembly (SC-HCE-ME). This utility is available from MCE.

1. Start the Digi Device Discovery utility. The utility will launch, and check the System network for any connected SC-HCE-ME.

5



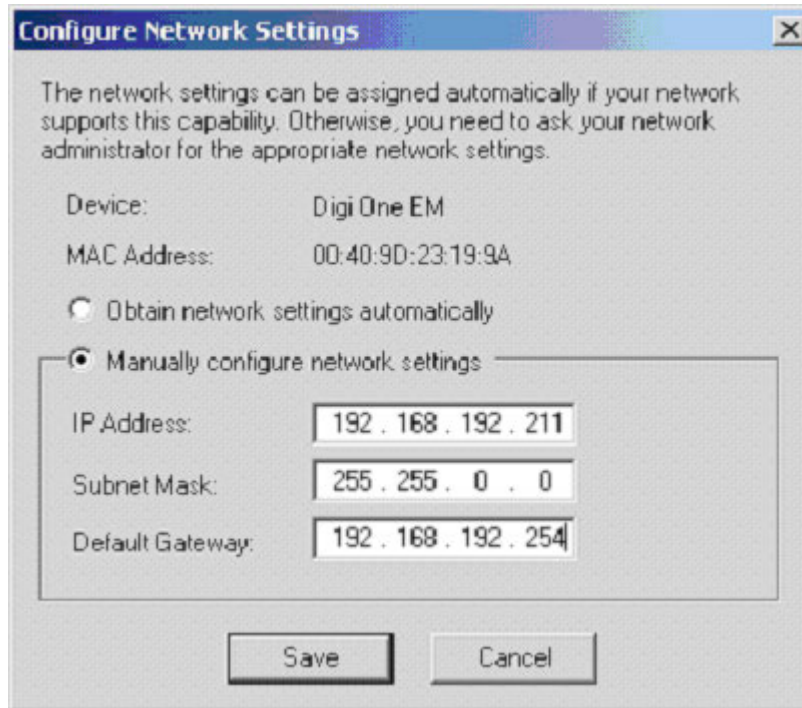
2. Select the device. Click on Configure Network Settings.

Note that, to change Digi configuration, you will need to provide USN Name and Password:

- Default USN Name: root
- Default USN Password: dbps

System Options

3. In the Configure Network Settings dialog that appears, select Manually configure network settings.

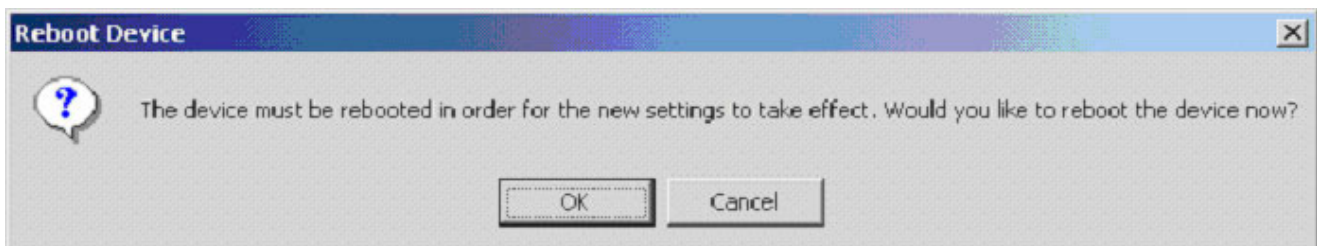


4. Check the drawing package for the dispatcher or the Ethernet Address examples drawing in the manual.
5. If the IP address of the device is incorrect, set it appropriately.

 Note

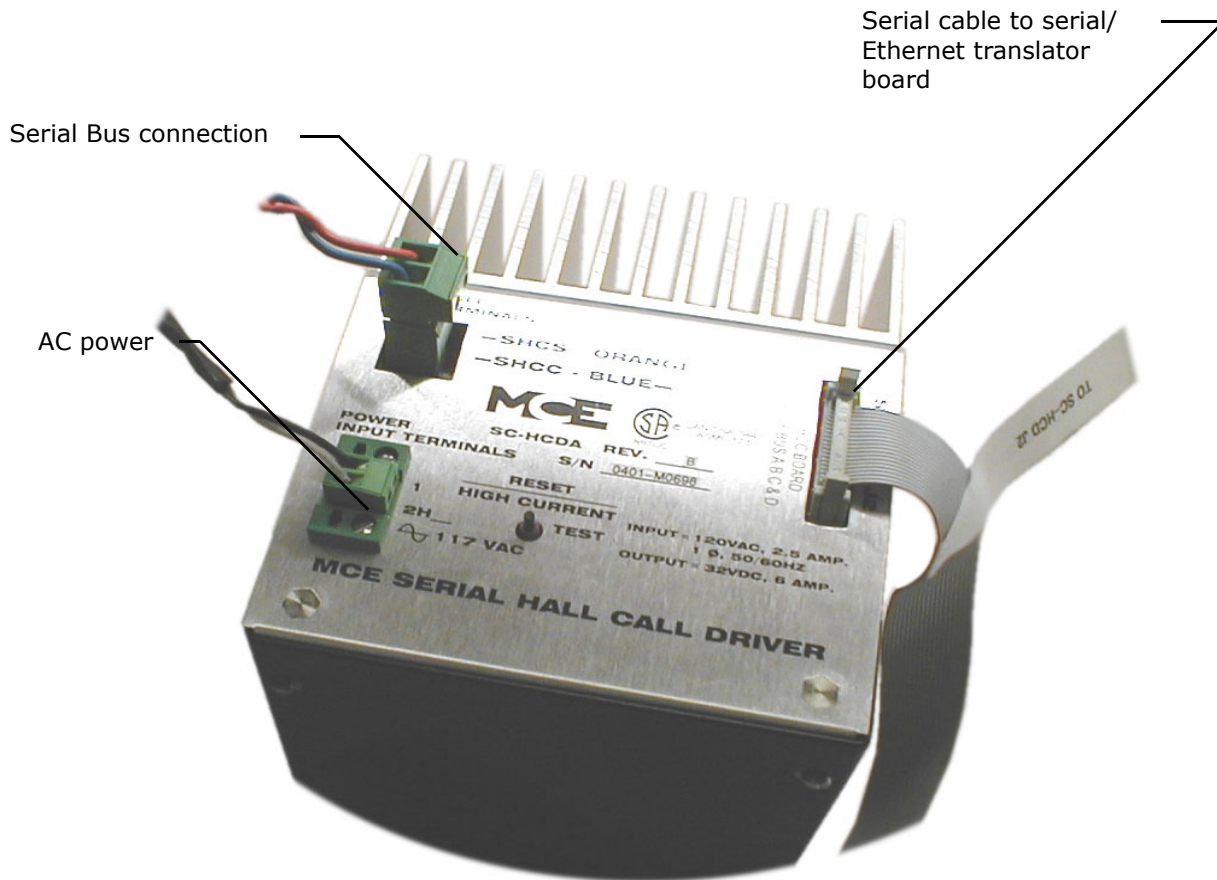
When entering the IP address, do not enter leading zeros. For example, in the address 192.168.192.056, 056 is entered as 56, with no leading zero.

6. Click Save. A Reboot Device dialog will appear:



7. Wait for ten to fifteen seconds (until the Diagnostic LED on the serial/Ethernet assembly blinks for eight to ten seconds and then goes off), then click OK.
8. Restart the iCue PC.

Hall Call Driver



5

Quick Test You can do a basic functionality test on the hall call driver.

With power applied:

1. Verify 120VAC power to the driver.
2. Unplug the Serial Bus connection (orange/blue wires).
3. Use a voltmeter to check the voltage between SHCS and SHCC. You should see approximately 30V, + or - 10%. (This voltage will only be present if the SC-HCE-ME or EM is working properly as verified in preceding troubleshooting steps.)

If this voltage is present, the driver is probably operating properly.

System Options

Driver Voltages Test The hall call driver can be more thoroughly tested if necessary. The test is relatively simple on iCentral units shipped after July, 2005 because a female, “test” connector has been installed in the middle of the ribbon cable connecting the driver to the SC-HCE (Digi board) assembly. Earlier units do not have the test connector.

Note

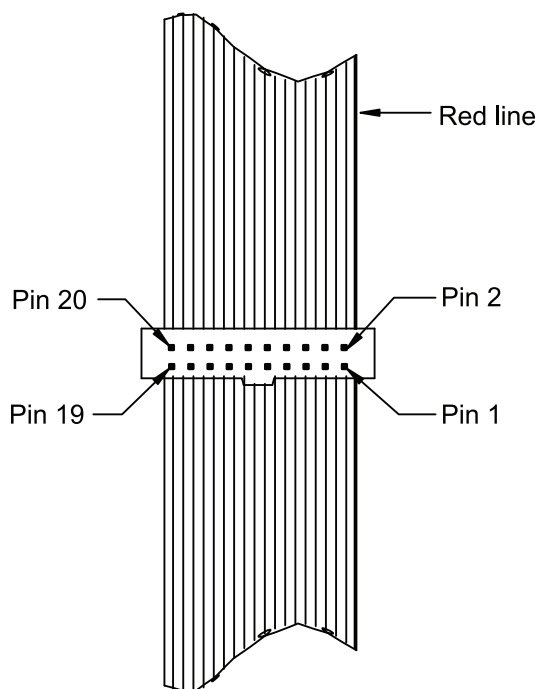
Digi-board connector ground pins are 2,3,4,6,9,11,12,13,14,15, and 17.

1. Cut three pieces of 22 AWG solid wire 2” in length. Strip ½” insulation off each end. These will be used as “jumpers” and test probes during the test.
2. At the SC-HCE board end, disconnect the ribbon cable connected to the hall call driver. Note the test connector in the middle of the cable. Its pinout is as shown.

Note

Alternatively, if the cable does not have a test connector, insert a 20 conductor ribbon cable, with a female connector at each end, into the SCHCD J2 socket.

3. Remove orange and blue bus wires from the hall call driver bus terminal connector.
 4. Connect 120 VAC power to Serial Hall Call Driver power input terminals.
 5. Insert the negative DC voltmeter lead to the Hall Call Bus SHCC Terminal connector.
- Driver DC power supply test
 1. Insert a wire test probe into pin 19. Connect the positive voltmeter lead.
 2. You should see 42-volts (+/- 10%). Remove the wire probe.
 - Digi-board DC power supply test
 1. Connect the positive voltmeter probe/lead to pin 8.
 2. You should see 10-volts (+/- 10%).



- Node Response test
 1. Insert a probe wire into pin 20, connect the positive voltmeter lead.
 2. You should see 5-volts, +/- 10%. Leave the probe wire in place.
 3. Bend the wire/jumper and short pin 20 to pin 17.
 4. Insert a probe at pin 5 and connect the positive voltmeter lead.
 5. You should see something under 1-volt.
 6. Leave the pin 20 to pin 17 jumper in place and the positive voltmeter lead connected to pin 5.
 7. Use a second jumper to short pin 10 to pin 12.
 8. You should see something over 20 volts.
 9. Leave the pin 20 to pin 17 jumper in place. Remove the lead from pin 5.
- Driver output voltage test
 1. Place the positive DC voltmeter lead on the Hall Call Bus SHCS Terminal.
 2. You should see something over 35-volts.
 3. Insert a probe wire at pin 16 and connect the positive voltmeter lead
 4. You should see something over 25-volts.
 5. Leave the pin 20 to pin 17 jumper in place. Remove the lead from pin 16.
- Node control flag test
 1. Insert a probe wire at pin 18 and connect the positive voltmeter lead.
 2. Bend the wire probe and temporarily short pin 18 to pin 17 or pin 15.
 3. Watch the voltmeter as you unplug the wire from pin 17 (or 15), it should read less than 1-volt when the short is released.
- Node control flag test preferred alternate method
 1. Install a ¼ Watt 10K Ohm (brown, black, red) resistor between pin 15 and pin 18 and connect voltmeter to pin 18.
 2. Release pin 20 from the ground (pin 17). The voltmeter should read something over 20-volts.

If the **preferred alternate** method is used you will see a short positive pulse on your voltmeter.

1. Place the positive DC voltmeter lead on the Hall Call Bus SHCS Terminal. The voltmeter should indicate less than 1-volt.
2. Remove all test connections. If the driver passed all of the above tests it will likely operate OK.

Flexible I/O

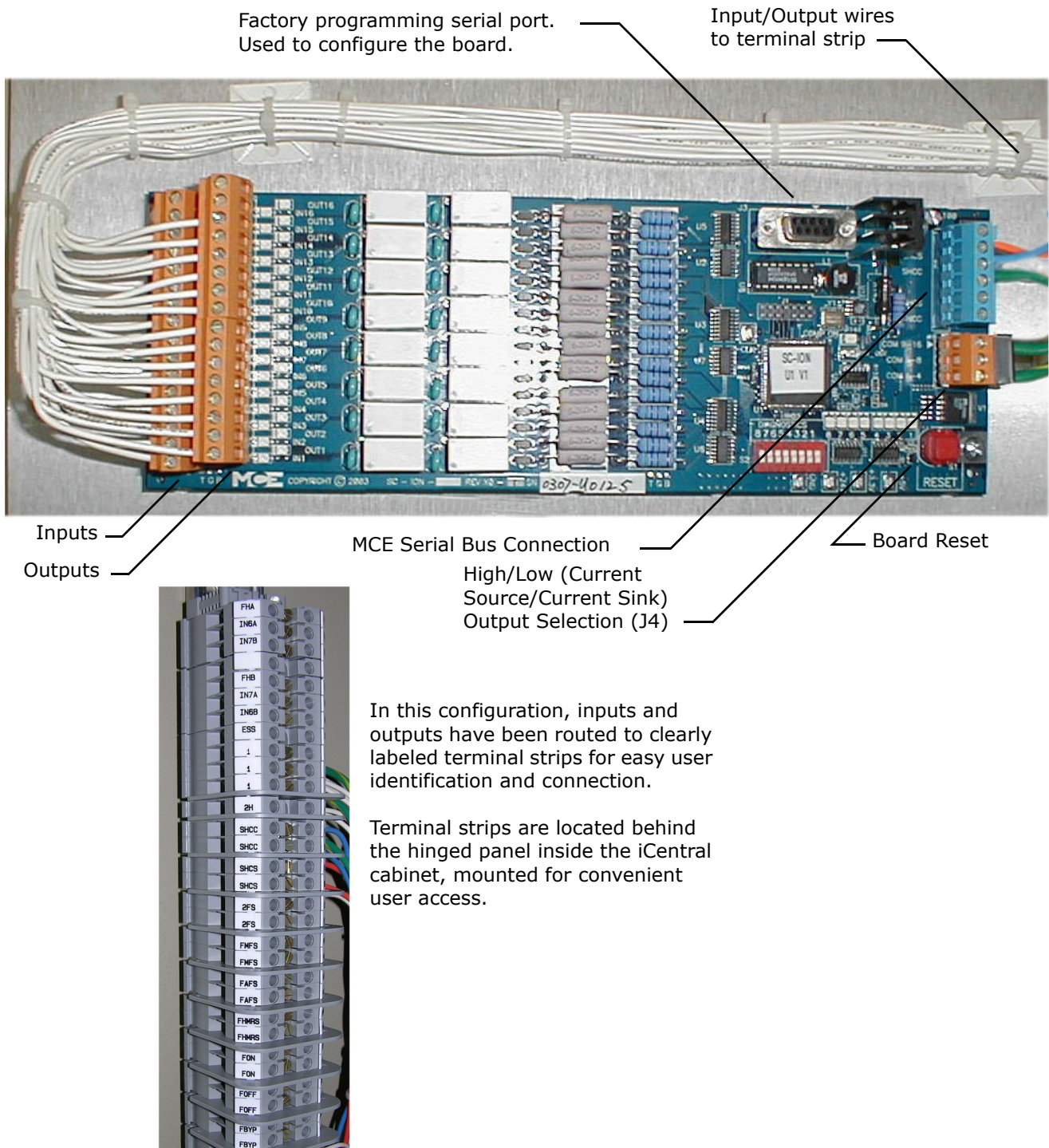
iCue makes extensive use of a serial bus to handle a range of communication and control needs. The serial bus is used to service the MCE Serial Hall Call System and to control I/O through one or more SC-ION boards (input/output expansion boards). Each SC-ION board provides 16 user-configurable inputs and 16 user-configurable outputs. Input and output configuration, using the MCE iView graphical user interface, is described in Section 6 of this guide. This section describes physical I/O connections.

System Options

SC-ION Boards

The number of SC-ION boards in an iCue system will vary depending upon system configuration and the number of additional inputs and outputs required for the job. A typical job might have one SC-ION board, providing 16 additional inputs and 16 additional outputs.

Figure 5.12 SC-ION Board in iCue Cabinet



I/O Connections

Connect inputs and outputs as shown in your job prints. SC-ION board inputs are always 117VAC. Outputs may be configured (in specific groups) to provide either a path to ground or current to drive indicator lamps/LEDs.

Output State Selection The outputs are divided into three groups. Each group shares a common. The common may be wired to provide a current source or a path to ground. The groups are:

- Relays 1 — 4
- Relays 5 — 8
- Relays 9 — 16

The commons for the groups are determined by the connections made to board connector J4. The appropriate connections are determined during the job survey. Each system is configured before shipment. You need only connect the inputs and outputs as shown on the job prints.

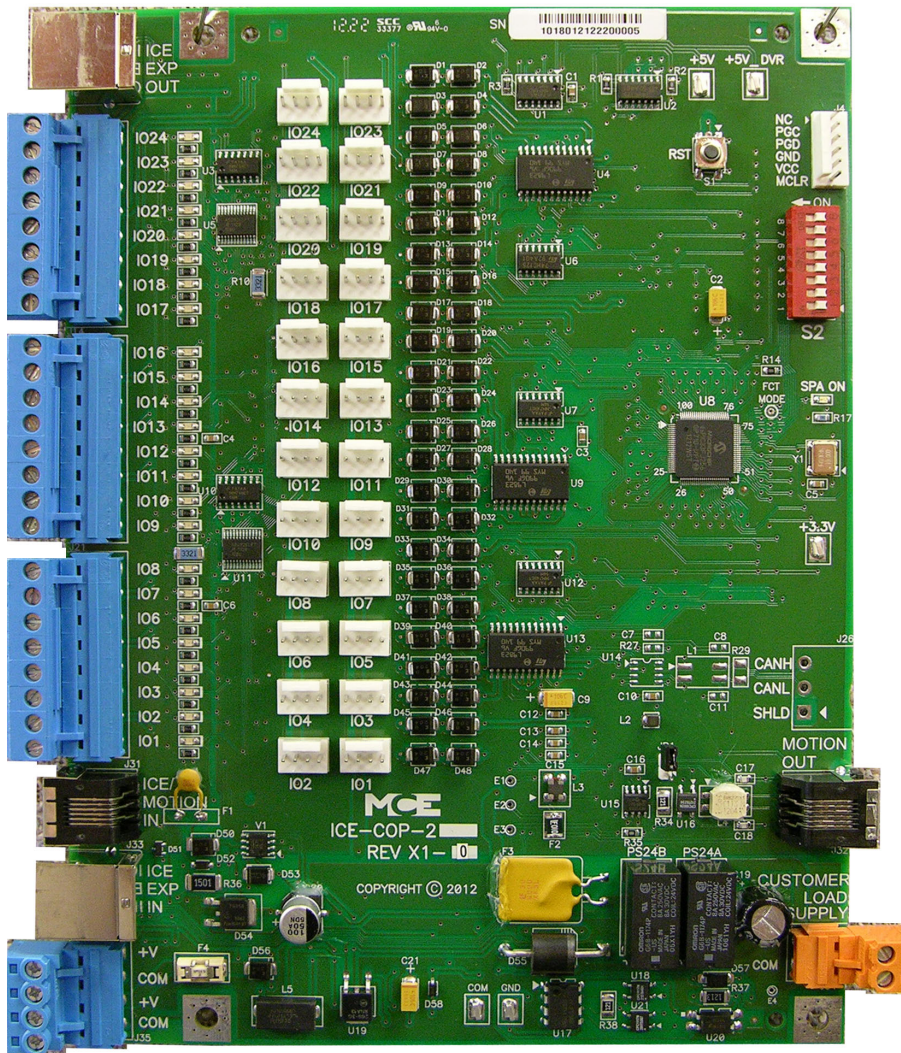
Board Addresses Each of the 16 inputs and 16 outputs on the board has an address on the system bus. The addresses are assigned as indicated by the job survey before the system is shipped. A software tool, accessed through the iView, System, I/O screen, is used to set individual addresses and also to set the address range (10-488 or 10-988) for the job. To configure the board, a iCue PC must be physically connected to the board serial port.

System Options

Serial COP

With the Serial Car Operating Panel system, car call buttons connect directly to a serializing board located in the car station enclosure. Multiple Serial COP boards daisy-chain together to accommodate high-rise installations with a lot of call buttons.

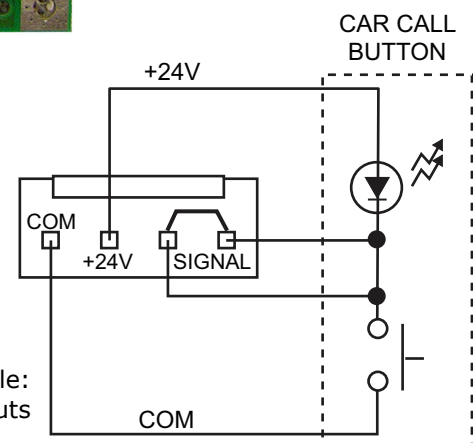
Figure 5.13 Serial COP board - typical installation



Caution

This system is designed for 24 VDC circuits maximum. Connecting 120VAC or DC will open the input fuses.

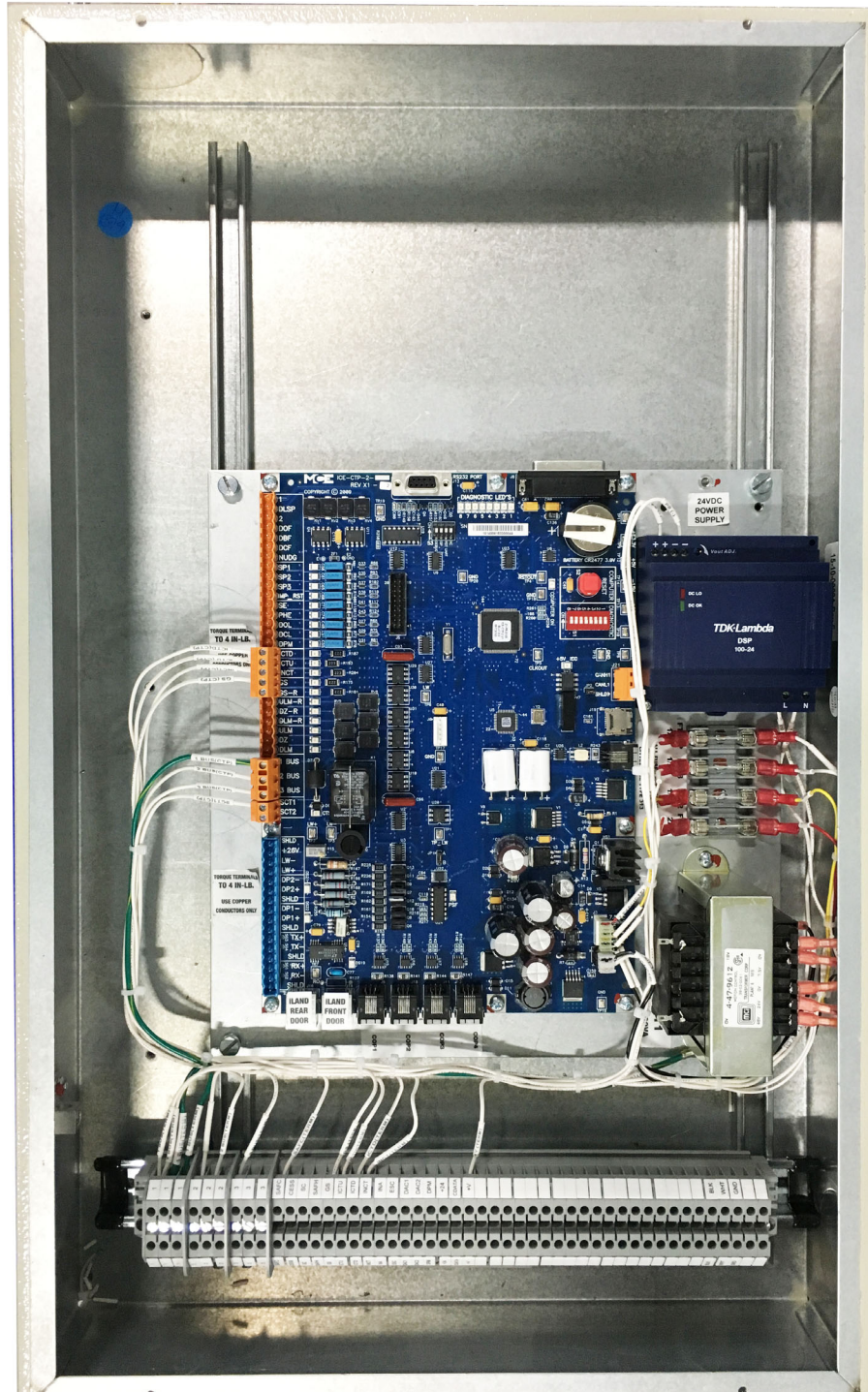
Connection Example:
Universal 4-pin inputs



Wiring from the Serial COP board(s) to the iLink cartop box is a short length of shielded cable with a telephone-style RJ-11 connector at each end. The iLink cartop box supports up to four serial control panel connections. Communication between iLink and the controller is also serial, thereby reducing the traveler and hoistway cabling.

Figure 5.14 iLink Cartop Box

5



System Options

Serial COP Board Specifications

Each Serial COP board handles up to 24 call buttons or switches. If more inputs are required, Serial COP boards are daisy-chained together.

- Each of the Serial COP board's 24 I/O connections can be used as an input, an output or a combined call input and output.
- Pluggable connections are provided for COP buttons and switches.
- Inputs can be 12 - 24 VDC (24V preferred).
- Outputs: 24V, 6W (maximum) lamps or 250mA LEDs recommended.
- Socketed, easily replaceable drivers protect the board from damage due to out-of-range inputs.
- The initial Serial COP board (ICE-COP) communicates with the iLink ICE-CTP board using an RJ-11 cable.
- Additional Serial COP boards (ICE-COP-X) are daisy-chained using RJ-11/RJ-45 cables.
- All Serial COP board I/O assignments are field configurable using the iView Configuration > I/O Boards > Configuration tab. The signal types include:
 - Car calls
 - Car call enables (security)
 - Enable overrides (security)
 - Door controls
 - Car status
 - Position indicators
 - Alarm I/O
 - Load indicators
 - Operating mode I/O including: Fire service, Attendant service, Independent service, Flood operation, Inspection operation, Swing operation, Earthquake operation, Sabbath operation, Recall operation and CFSS (Commandeer for Special Service) operation.

Serial COP Installation

1. Mount the Serial COP boards in the car operating panel.
2. Connect the COP switches and lamps to the Serial COP board(s) using the pluggable connectors. Refer to job print drawings - Cartop Details (-CTx).
3. Verify the COP board I/O assignments using the iView Configuration > I/O Boards > Configuration tab.

ICE-COP Board Diagnostics The DIP switches and LEDs in the upper right corner of the ICE-COP board provide diagnostic information. [Please refer to "ICE-COP-2 Serial Car Operating Panel Board" on page 6-90.](#)

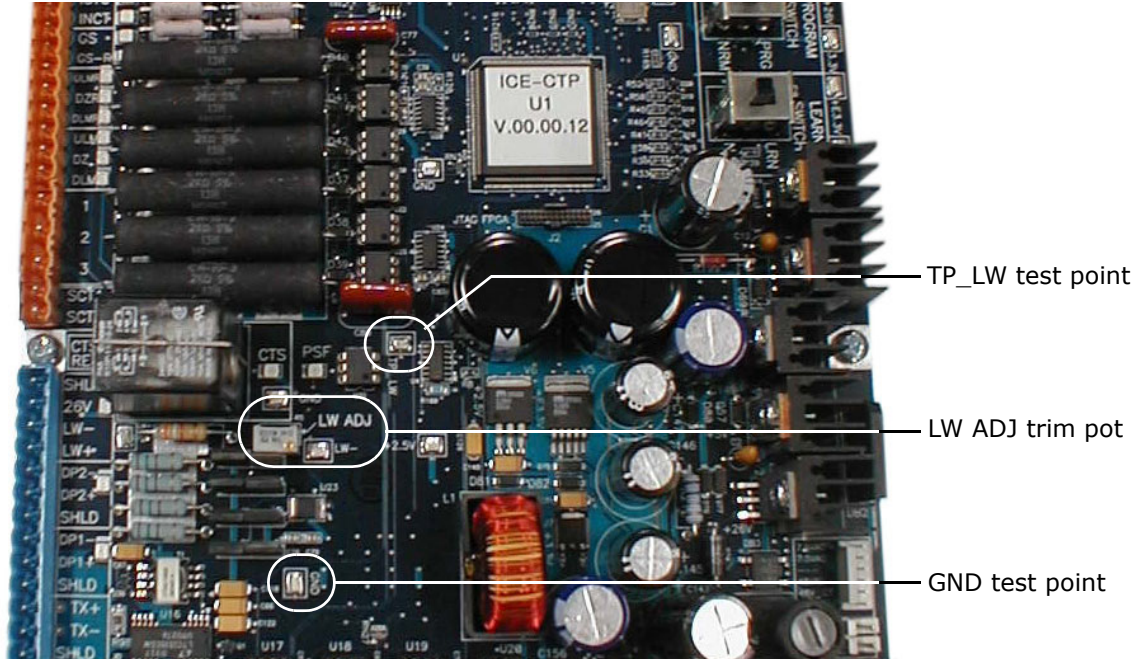
Load Weighers

Please see the installation instructions shipped with the selected load weigher.

Weigher Calibration with iControl

1. Connect a multimeter to test points **TP_LW** and **GND** on the ICE-CTP board in the cartop Box. Adjust trimpot **LW ADJ** until the meter reads the same value noted in step 6 in the calibration procedure.

Figure 6. ICE-CTP Cartop Processor Board



2. To view load weigher voltages using the iView Virtual Oscilloscope:
 - Connect to the controller; display the Virtual Oscilloscope (View > Virtual Oscilloscope)
 - Select Load Weigher (Raw) for Test point 1
 - Observe Load Weigher voltage values on the digital display.
3. To verify the linearity of the load weigher, place weights in the car that represent the following and observe the voltage values:
 - Empty car - about 0.0 volts
 - 25% of overload weight - about 2.5 volts
 - 50% of overload weight - about 5.0 volts
 - 75% of overload - about 7.5 volts
 - Full load weight - about 8 volts
 - Overload weight - about 10 volts
4. On the iView Controller > Configuration > Load Weigher tab:
 - Set *Load weighing device type* to *Analog signal*.
 - Set *Sensing type* to *Cross head deflection or rope tension sensing*.

System Options

5. If the load weigher will be used to implement dispatching options, the parameters associated with these options must be set (see *Load Weigher Adjustment for Dispatching* in Section 4).
6. iControl needs to learn the empty and full load weights at every landing available to this car. This is a semi-automated process (see *Learning Load Values* in Section 4).



Troubleshooting

About Troubleshooting

This section contains information to help you diagnose and correct problems. If you are viewing this on a computer, click the page number to jump to the appropriate section.

Troubleshooting Topics	Description	See
Troubleshooting Tools	Lists the troubleshooting tools available.	page 6-2
Safety String Bypass Jumper	Temporarily bypasses an open safety string.	page 6-3
iControl Messages	Fault and status messages table - includes a description, car reaction and troubleshooting tips for each message.	page 6-15
iBox Troubleshooting	A description of the iBox boot process, procedure for upgrading iBox firmware and for replacing an iBox.	page 6-85
Replacing Circuit Boards	Instructions for removing and replacing circuit boards	page 6-88
Circuit Board Quick References	Descriptions of circuit board connections, indicators, jumpers and test points.	page 6-89
COP Board Diagnostics	Use to diagnose problems with Serial COP boards.	page 6-92
iLink Cartop Diagnostics	Use to diagnose problems with iLink.	page 6-95
System 12 SCR Drive	Information for troubleshooting and replacing various components in the System 12 Drive.	page 6-127
Quattro DC Drive Faults	For Quattro DC Drive faults and alarms, refer to the <i>Troubleshooting</i> section of the Quattro DC Elevator Drive Technical Manual.	

Troubleshooting Tools

The iBox provides status and trouble shooting information:

- The status line of the iBox display scrolls messages about system operation. [Please refer to “LCD Display and Keypad” on page 7-2.](#)
- The iBox Event Log captures a FIFO file of the last 50 system events by event number and name, and provides additional data for each. Press softkey (1) beneath the *Car* label, scroll down to *View Event Log* and press Enter. To view event details, scroll to the desired event and press Enter. *Scroll down to see all of the data, including the event name.* A description and troubleshooting suggestions for each event can be found in iView online Help (Help > iView Help > Messages Reference) and in the iControl Messages table in this user guide. [Please refer to “iControl Messages” on page 6-15.](#)

iView provides an extensive toolset to help you diagnose problems, including:

- **Hoistway:** The Hoistway window (Controller > View > Hoistway) shows the current position of the car in the hoistway, calls registered, car speed and current operating mode.
- **Operational Status tab:** The Operational Status tab shows the current speed, position, pattern, and motion of the car. Also, the status of the Safety and Cartop processors, safety circuits, leveling sensors and door locks is shown. The Faults and Car status text boxes show general and car operation faults and car status so that you can monitor them easily while viewing hoistway information and running the car. A description and troubleshooting suggestions for each fault or status message can be found in iView online Help (Help > iView Help > Messages Reference) and in the iControl Messages table in this user guide. [Please refer to “iControl Messages” on page 6-15.](#)
- **Event Log:** The Event Log tab (View > Diagnostics > Event Log) monitors and records system events. You can easily save event log information to a file on your iView PC for archival and future reference. A description and troubleshooting suggestions for each event can be found in iView online Help (Help > iView Help > Messages Reference) and in the iControl Messages table in this user guide. [Please refer to “iControl Messages” on page 6-15.](#)
- **Fault Bypass:** The Fault Bypass tab (View > Diagnostics > Fault Bypass) allows you to bypass over 50 system faults. The Fault Bypass switch on the iBox must be ON and each fault bypass times out after fifteen minutes to prevent the possibility of unintended, long term bypassing of a critical faults. To bypass faults, the car must be on Machine Room Inspection or Test Operation.
- **Diagnostic Flags:** The Diagnostic Flags tab (View > Diagnostics > Diagnostic Flags) allows you to view system diagnostic flags and car statuses in four classifications (Operation, Motion, Safety, Drive).
- **Terminal Switches Status:** The Terminal Switches Status tab (View > Diagnostics > Terminal Switches Status) shows information about the speed and position of the car when each Normal and Emergency Terminal Switch opened.
- **Diagnostic Outputs:** Diagnostic Outputs (View > Diagnostics > Diagnostic Outputs window) allows you to choose and simultaneously monitor up to 16 system outputs on screen.
- **Virtual Oscilloscope:** The oscilloscope (View > Diagnostics > Virtual Oscilloscope) allows you to select and view two system outputs simultaneously on a virtual oscilloscope.

Safety String Bypass Jumper

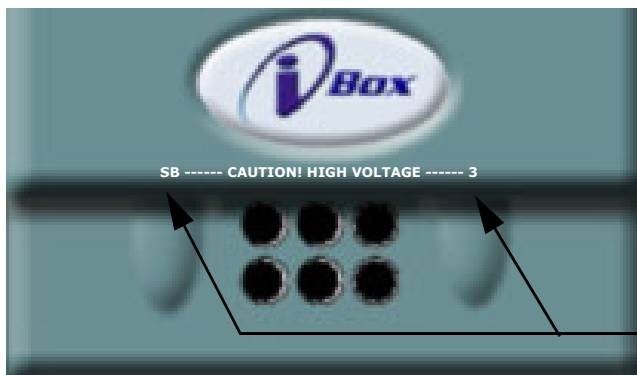
If any switch or relay in the safety string opens, the car immediately loses power and stops. In some situations, you may need to temporarily bypass an open safety string to move the car so that the safety string can once again be “made up.” For example, if the car has tripped a final limit, you will need to bypass the safety string and move the car up (or down) the hoistway past the limit switch so that the safety string can again be completed. Once the safety string is complete again, you must immediately remove the bypass jumper.

The safety string bypass location is accessed through ports on the front cover of the iBox. The ports are sized so that a jumper wire (16AWG minimum) with insulated clips on each end can be used to short the SB and 3 terminals to bypass the safety string.



Danger

You are jumpering 110VDC. Place the jumper with caution, being certain that you are insulated from the possibility of electrical shock.



Safety String Bypass Jumper

The safety bypass circuitry is intelligent. The jumper will have no effect if it is put in place with the safety string intact (other than to generate a time out after 15 minutes pass). The jumper will bypass the string and allow the car to be moved only if it is placed after the safety string has opened. **If the jumper is in place when the string opens, you must remove the jumper, then replace it before it will bypass the string.**

The jumper is monitored by a timer. If the jumper is in place for longer than 15 minutes, the timer will expire, drop the brake and motor contactors and generate a Safety Bypass Jumper Time Out. To clear the fault and restart the car, you must remove the bypass jumper. If more time is needed, re-install the jumper and the fifteen-minute timer will restart.

The table below specifies what is and is not bypassed by the jumper.

Table 6.1 Safety String Bypass Jumper

Bypasses	Does not bypass
Cartop exit input	Rope Gripper OK from Rope Gripper board
Emergency Stop switch on car	Unintended motion fault already tripped
Governor switch input	Rope brake fault already tripped
Hoistway safety string	Machine Room Emergency Stop switch
Car safety string	Any Safety Processor A or B fault

Troubleshooting

iControl Messages List - Numerical

Almost all troubleshooting begins with examining system messages. System outputs are displayed alternating with other messages on the iBox LCD. Status, Fault, and Event messages are displayed by iView. (iBox maintains an Event Log as well.) This section contains two tables. Table 6.2 provides a cross-reference from iBox ID numbers to the associated iControl message name. Table 6.3 lists system messages in alphabetical order and describes the cause and recommended troubleshooting procedures if appropriate.

Table 6.2 Cross Reference: iBox Event Log ID Numbers to iControl Messages

ID #	iControl Message (iBox Event Log and iView Controller Event Log)
1	Drive On Fault (was Drive Ready On Fault)
2	Brake Enable Fault
4	Insufficient Brake Feedback Fault
5	Brake Voltage Not On Fault
6	Excessive Brake Feedback Fault
7	Brake One Pick Fault
8	Brake Module Over Temperature Fault
9	Heat Sensor Fault 2
10	Heat Sensor Fault 3
11	Heat Sensor Fault 4
12	Power Supply Fault 1
13	Power Supply Fault 2
14	Power Supply Fault 3
15	Power Supply Fault 4
16	Drive At-Speed Fault
17	Drive Fault
18	Drive Ready Fault
19	Front Door Close Time-out
20	Front Door Close Fault
21	Front Door Open Time-out
22	Front Door Open Fault
23	Rear Door Close Time-out
24	Rear Door Close Fault
25	Rear Door Open Time-out
26	Rear Door Open Fault
27	Earthquake Operation (Seismic Switch)
28	Earthquake Operation (Counterweight)
29	Earthquake Run
30	Earthquake Operation Activated
31	Earthquake Operation Deactivated
32	Earthquake Emergency Stop
33	Fire Service Recall Main
34	Fire Service Recall Alternate
35	Fire Service In-car Activated
36	Elevator Recall Operation (Switch 1)
37	Elevator Recall Operation (Switch 2)
38	Elevator Recall Operation (Switch 3)
39	Elevator Recall Operation (Switch 4)
40	Elevator Recall Operation (Switch 5)

ID #	iControl Message (iBox Event Log and iView Controller Event Log)
41	Elevator Recall Operation (Switch 6)
42	Emergency Power Recall
43	Emergency Power Shutdown
44	Emergency Power Run
45	Front Door Contact Fault
46	Rear Door Contact Fault
47	Front Photo Eye Failure
48	Front Safe Edge Failure
49	Rear Photo Eye Failure
50	Rear Safe Edge Failure
51	Cartop Inspection Operation
53	Hoistway Access Operation
54	Machine Room Inspection Operation
55	Test Mode
56	Capture Mode
57	Independent Service
60	Attendant Service
61	Passenger Operation
62	Up Normal Terminal Switch 1 Position Fault
63	Up Normal Terminal Switch 2 Position Fault
64	Up Normal Terminal Switch 3 Position Fault
65	Up Normal Terminal Switch 4 Position Fault
66	Up Normal Terminal Switch 5 Position Fault
67	Up Emergency Terminal Switch Position Fault
68	Down Normal Terminal Switch 1 Position Fault
69	Down Normal Terminal Switch 2 Position Fault
70	Down Normal Terminal Switch 3 Position Fault
71	Down Normal Terminal Switch 4 Position Fault
72	Down Normal Terminal Switch 5 Position Fault
73	Down Emergency Terminal Switch Position Fault
74	Position Quadrature Fault
75	Position Speed Threshold Fault
76	Position Speed Deviation Fault
77	Motion Start Fault
78	User code accessing an invalid logical indicator (internal event)
79	Car shut down due to emergency power operation with no supervisor (Activated)
80	Car shut down due to emergency power operation with no supervisor (Deactivated)
81	Car delayed with doors open
82	Car delayed with doors closed
83	Car out of service with doors open
84	Car out of service with doors closed
85	Earthquake board power supply ON
86	Earthquake board power supply OFF
87	Earthquake reset button stuck ON
88	Earthquake reset button OK
89	Fire Service In-car Hold Operation
90	Fire Service In-car Recall Operation
91	Load learn process activated

Troubleshooting

ID #	iControl Message (iBox Event Log and iView Controller Event Log)
92	Load learn process deactivated
93	Car Heavy Load Activated - Hall Calls Bypassed
94	Car Over Load Activated
95	Fire Service Recall Deactivated
96	Fire Service In-car Deactivated
97	Emergency Power Activated
98	Emergency Power Deactivated
100	Car Dispatch Load
102	Car Heavy Load - Deactivated
104	Car Over Load Deactivated
105	Photo Eye Anti-nuisance
106	Light Load Anti-nuisance
107	Nudging Operation
108	Front Photo Eye Bypassed
109	Rear Photo Eye Bypassed
110	Front Safe Edge Bypassed
111	Rear Safe Edge Bypassed
118	Inspection Overspeed Fault
119	Tach Error Fault
120	Drive Enable Feedback Fault
121	Safety A Inspection Overspeed Fault
122	IO Map Compare Fault
123	IO Map Toggle Compare Fault
124	Fault Bypass Switch Timed Out
125	Safety Bypass Jumper Timed Out
126	Learn Switch Timed Out Fault
127	Safety A SIB Device Fault
128	Safety B SIB Device Fault
129	QPRAM Device Error
130	EEPROM Device Error
131	Front Door Open Button Bypassed
132	Rear Door Open Button Bypassed
135	Door Lock Clipped Greater than 200fpm
136	Safety String Open
137	Motion stopped due to IO toggle test
138	Safety Configuration Mismatch
139	Safety Configuration Learn Fault
140	IO Map Compare Alert
141	Safety A Contract Overspeed Fault
142	Safety A Inspection Leveling Overspeed Fault
143	Safety Inventory Checksum Fault
144	Safety Configuration Checksum Fault
145	Limit Switches Checksum Fault
146	Safety Configuration Inventory Cross Check Fault
147	Safety Inventory Learn Fault
148	Limit Switches Learn Fault
149	Dual Channel QUAD Fault
150	Single Channel QUAD Fault

ID #	iControl Message (iBox Event Log and iView Controller Event Log)
151	Loss of Position or Speed Indicators
152	Safety Inventory Comparison Fault
153	Safety Inventory Creation Fault
154	Position Quadrature Reversed Fault
155	Down Normal Terminal Switch 1 Level 1 Speed Fault
156	Down Normal Terminal Switch 2 Level 1 Speed Fault
157	Down Normal Terminal Switch 3 Level 1 Speed Fault
158	Down Normal Terminal Switch 4 Level 1 Speed Fault
159	Down Normal Terminal Switch 5 Level 1 Speed Fault
160	Down Normal Terminal Switch 1 Level 2 Speed Fault
161	Down Normal Terminal Switch 2 Level 2 Speed Fault
162	Down Normal Terminal Switch 3 Level 2 Speed Fault
163	Down Normal Terminal Switch 4 Level 2 Speed Fault
164	Down Normal Terminal Switch 5 Level 2 Speed Fault
165	Up Normal Terminal Switch 1 Level 1 Speed Fault
166	Up Normal Terminal Switch 2 Level 1 Speed Fault
167	Up Normal Terminal Switch 3 Level 1 Speed Fault
168	Up Normal Terminal Switch 4 Level 1 Speed Fault
169	Up Normal Terminal Switch 5 Level 1 Speed Fault
170	Up Normal Terminal Switch 1 Level 2 Speed Fault
171	Up Normal Terminal Switch 2 Level 2 Speed Fault
172	Up Normal Terminal Switch 3 Level 2 Speed Fault
173	Up Normal Terminal Switch 4 Level 2 Speed Fault
174	Up Normal Terminal Switch 5 Level 2 Speed Fault
175	Safety A DETS Level 2 Speed Fault
176	Safety A UETS Level 2 Speed Fault
177	Excessive Faults Shutdown
178	Safety A Unintended Motion Fault
179	Ascending Car Overspeed Fault
180	Position Synchronization Required at Terminal
181	Position Synchronized at Terminal
182	Position Synchronization Required at Floor
183	Position Synchronized at Floor
184	Cartop Communication Fault
185	Cartop Inspection Unintended Motion Fault
186	Cartop Automatic Unintended Motion Fault
187	Motor Limit Timed Out
188	Safety B Fault Bypass Switch Timed Out
189	Safety B Safety Bypass Jumper Timed Out
190	IO Map Compare Long Term Alert
191	IO Map Compare Long Term Fault
192	Position Location Error Fault
193	Position Cartop Offset Fault
194	Motor Contactor Driver Proofing Fault
195	Motor Contactor Proofing Fault
196	Brake Contactor Driver Proofing Fault
197	Brake Contactor Proofing Fault
198	Safety B UETS Level 2 Speed Fault

Troubleshooting

ID #	iControl Message (iBox Event Log and iView Controller Event Log)
199	Safety B DETS Level 2 Speed Fault
200	Safety B Inspection Overspeed Fault
201	Safety B Inspection Leveling Overspeed Fault
202	Safety B Contract Overspeed Fault
203	Excessive Relevels Fault
204	Excessive Restarts Fault
205	Cartop Emergency Stop
206	Cartop Power Loss
207	Up Direction Limit Open
208	Down Direction Limit Open
209	Floor Location Fault
210	Floor Sensor Fault
211	Power Transfer Input Activated
212	Power Transfer Input Deactivated
213	Invalid Front Door Position
214	Invalid Rear Door Position
215	Earthquake Reduce Speed
216	Cartop Inspection Operation
217	Car Panel Inspection Operation
218	Hoistway Access Inspection Operation
219	Machine Room Inspection Operation
220	Inspection Operation
221	Construction Cartop Inspection Operation
222	Construction Car Panel Inspection Operation
223	Construction Hoistway Access Inspection Operation
224	Construction Machine Room Inspection Operation
225	Construction Inspection Operation
226	Door Lock Clipped Less than 200fpm
227	Invalid Configuration Input (was Invalid Input)
228	Emergency Medical Service Recall Activated (Switch 1)
229	Emergency Medical Service In-Car Activated (Switch 1)
230	Emergency Medical Service Deactivated
231	Emergency Medical Service Bypassed
232	SCR Power Supply Fault
233	SCR AC Phase Fault
234	SCR Contactor Fuse Fault
235	SCR Phase Lock Loop Fault
236	SCR Phase Lock Loop Warning
237	SCR Dynamic Brake Fault
238	SCR Instantaneous Over Current
239	SCR Armature Voltage On
240	SCR High Temperature Fault
241	SCR Loop Over Current
243	SCR Insufficient Armature Current
244	SCR Excessive Armature Current
245	SCR Excessive Current Command, Drive Enabled
246	SCR Excessive Current Command, Drive Disabled
247	Insufficient Motor Field Forcing Feedback Fault

ID #	iControl Message (iBox Event Log and iView Controller Event Log)
248	Insufficient Motor Field Feedback Fault
249	Swing Operation Activated
250	Swing Operation Deactivated
251	Field Module Over Temperature Fault
252	Speed Limit, MF Forcing
253	Tach Failure
254	Sabbath Operation Activated
255	Sabbath Operation Deactivated
256	Emergency Brake Tripped
257	Landing System Sensor Fault
258	Emergency Brake Leg 1 Short Fault
259	Emergency Brake Leg 2 Short Fault
260	Alternate Speed Profile 1 Activated
261	Alternate Speed Profile 1 Deactivated
262	Alternate Speed Profile 2 Activated
263	Alternate Speed Profile 2 Deactivated
264	Motor Field Forcing Timed Out
265	iView Logged On
266	iView Logged Off
267	iView Timed Out
268	iView Lost Connection
269	Balanced Mode
270	Lobby Peak Mode
271	Demand Up Peak Mode
272	Demand Down Peak Mode
273	CFSS Mode 1 Recall Activated
274	CFSS Mode 1 at Floor Activated
275	CFSS Mode 1 In-car Activated
276	CFSS Mode 2 Recall Activated
277	CFSS Mode 2 at Floor Activated
278	CFSS Mode 2 In-car Activated
279	Emergency Alarm Acknowledged
280	Emergency Alarm Activated (Safety opened)
281	Emergency Alarm Activated (Car delayed with doors closed)
282	Emergency Alarm Activated (Alarm button)
283	Emergency Alarm Activated (In-car stop switch)
284	Emergency Brake OK open
285	Cartop Exit Open
286	Governor open
287	Safety H String Open
288	Safety C String Open
289	Machine Room Stop Switch Open
290	Car Stop Switch Open
291	Controller Main Computer Startup
292	Floor Synchronization Fault
293	Terminal Synchronization Fault
294	Position Synchronization Fault
296	Up Emergency Terminal Switch Shutdown

Troubleshooting

ID #	iControl Message (iBox Event Log and iView Controller Event Log)
297	Down Emergency Terminal Switch Shutdown
298	Power Up Position Synchronization Required at Terminal
299	Learn U/DNT1-5 and U/DETS Speeds
300	Learn U/DNT1-5 and U/DETS Positions
301	Excessive Motor Field Feedback Fault
302	Brake Output Circuit Failure
303	Group Communication Lost
304	Group Communication Established
305	Flood Operation Activated
306	Flood Operation Deactivated
307	Emergency Brake UIM Reset Button Stuck
308	Exercise Operation Activated
309	Exercise Operation Deactivated
310	SCR Low Line Fault
311	SCR Low Line Caution Activated
312	SCR Low Line Caution Deactivated
313	SCR Low Line Test Fault
314	Excessive Restarts Warning
315	Governor Speed Reduction Switch Fault
316	Software Recall Switch Activated
317	SCR Drive Ready Fault
318	Retiring Cam Door Lock Fault Activated
319	Retiring Cam Door Lock Fault Deactivated
320	Retiring Cam Protection Fault Activated
321	Retiring Cam Protection Fault Deactivated
322	Watchdog Ordered Control Stop Before Reset
323	Front Hall Door Open Button Bypassed
324	Rear Hall Door Open Button Bypassed
327	Bus 2 Fuse Open
328	Bus 2D Fuse Open
329	Bus 2MC Fuse Open
330	Bus 2PI Fuse Open
331	Bus 3 Fuse Open
332	Bus 3HA Fuse Open
333	Watchdog Ordered Emergency Stop Before Reset
334	Local Dispatcher Activated
335	Local Dispatcher Deactivated
336	Drive Start Failure
337	Emergency Medical Service Recall Activated (Switch 2)
338	Emergency Medical Service In-Car Activated (Switch 2)
339	Pre-start Door Lock Fault
340	Emergency Alarm Deactivated without Acknowledgment
341	Cartop Exit no Counterweight Configuration Error
342	Front Door Close Fault Recovery Failure
343	Rear Door Close Fault Recovery Failure
344	Sheave Brake Pick Fault
345	Sheave Brake Drop Fault
346	Serial COP Buss 1 Comm Fault

ID #	iControl Message (iBox Event Log and iView Controller Event Log)
347	Serial COP Buss 2 Comm Fault
348	Serial COP Buss 3 Comm Fault
349	Serial COP Buss 4 Comm Fault
350	Serial COP Bus 1 Inventory Fault
351	Serial COP Bus 2 Inventory Fault
352	Serial COP Bus 3 Inventory Fault
353	Serial COP Bus 4 Inventory Fault
354	User Defined Event 1 On
355	User Defined Event 1 Off
356	User Defined Event 2 On
357	User Defined Event 2 Off
358	User Defined Event 3 On
359	User Defined Event 3 Off
360	User Defined Event 4 On
361	User Defined Event 4 Off
362	User Defined Event 5 On
363	User Defined Event 5 Off
364	User Defined Event 6 On
365	User Defined Event 6 Off
366	User Defined Event 7 On
367	User Defined Event 7 Off
368	User Defined Event 8 On
369	User Defined Event 8 Off
370	User Defined Event 9 On
371	User Defined Event 9 Off
372	User Defined Event 10 On
373	User Defined Event 10 Off
374	Drive Communication Fault
375	Drive Communication Warning
376	Motor Limit Protection Timer Elapsed
377	Shuttle Service Activated
378	Shuttle Service Deactivated
379	Event Log Cleared
380	Front Auxiliary Door Open Button Bypassed
381	Rear Auxiliary Door Open Button Bypassed
382	Backup Power Unit Failure Activated
383	Backup Power Unit Failure Deactivated
384	Backup Power Direction Reversal
385	Backup Power Recall ON
386	Backup Power Recall OFF
387	Machine Room Heat Detectors Activated
388	Machine Room Heat Detectors Deactivated
389	Hoistway Heat Detectors Activated
390	Hoistway Heat Detectors Deactivated
391	Floor Heat Detectors Activated
392	Floor Heat Detectors Deactivated
393	Heat Detectors Recall Activated
394	Heat Detectors Recall Deactivated

Troubleshooting

ID #	iControl Message (iBox Event Log and iView Controller Event Log)
395	Heat Detectors Recall Complete
396	Brake One Drop Fault
397	Cartop Communication Established
398	Hall Call Service Disabled
399	Hall Call Service Enabled
400	Nudging Front
401	Nudging Rear
402	Emergency Dispatch On
403	Emergency Dispatch Off
404	Safety B Unintended Motion Fault
405	SPA Spare Event 1
406	SPA Spare Event 2
407	SPA Spare Event 3
408	SPA Spare Event 4
409	SPA Spare Event 5
410	SPA Spare Event 6
411	SPA Spare Event 7
412	SPA Spare Event 8
413	LCD Fault
414	Battery Voltage Low - IMP
415	Emergency Brake OK open Off
416	Safety H String Open Off
417	Safety C String Open Off
418	Cartop Exit Open Off
419	Brake Pick Fault Off
420	IO Map Compare Fault Off
421	IO map Toggle Compare Fault Off
422	Safety A SIB Device Fault Off
423	Safety B SIB Device Fault Off
424	Invalid Configuration Input Off
425	Invalid Configuration Input DLMS
426	Invalid Configuration Input DLAT
427	Invalid Configuration Input DLAB
428	Invalid Configuration Input DCMS
429	Invalid Configuration Input DCAT
430	Invalid Configuration Input DCAB
431	Invalid Configuration Input DPM
432	Invalid Configuration Input CTEX
433	Invalid Configuration Input DLMSR
434	Invalid Configuration Input DCMSR
435	Invalid Configuration Input DPMR
436	Safety String Closed
437	IMP Switch Fault - Emergency Stop
438	IMP Switch Fault - Fault Bypass
439	IMP Switch Fault - Inspection DOWN
440	IMP Switch Fault - Inspection UP
441	IMP Switch Fault - Inspection Enable
442	IMP Switch Fault - Inspection

ID #	iControl Message (iBox Event Log and iView Controller Event Log)
443	IMP Switch Fault - Learn
444	IMP Switch Fault - Test
445	IMP Switch Fault - Write Enable
446	IMP Switch Fault - Hoistway Door Bypass
447	IMP Switch Fault - Car Door Bypass
448	IMP Switch Fault - None
451	Excessive Faults Warning
452	Stuck Cartop Inspection Input
453	Cartop Inspection Inputs OK
454	Stuck Car Panel Inspection Input
455	Car Panel Inspection Inputs OK
456	Cartop Inspection Disabled
457	Cartop Inspection Enabled
458	Hoistway Access Disabled
459	Hoistway Access Enabled
460	Car Panel Inspection Disabled
461	Car Panel Inspection Enabled
462	Machine Room Inspection Disabled
463	Machine Room Inspection Enabled
464	Stuck Inspection Input Fault
465	DBD Mode Activated
466	ETA Mode Activated
467	Hall Call Bypass Input ON
468	Hall Call Bypass Input OFF
469	Capture Input ON
470	Capture Input OFF
471	Brake Voltage Not Off Fault
474	Emergency Power Recall (In Service)
475	Emergency Stop Input Activated
476	Emergency Stop Input Deactivated
477	Silent Mode Activated
478	Silent Mode Deactivated
479	Safety B Fault Activated
480	Safety B Fault Deactivated
481	Jail Master Mode
482	Jail Secure Mode
495	DBD PHE Anti-nuisance
496	DBD Empty Car Anti-nuisance
498	Load Weigher Zero Calibration: Manual
501	Load Weigher Zero Calibration: Complete
508	ESTOP due to disabled direction of travel
509	Front Photo Eye2 Bypassed
510	Rear Photo Eye2 Bypassed
511	Front Photo Eye2 Failure
512	Rear Photo Eye2 Failure
513	Front Photo Eye Test Fail
514	Rear Photo Eye Test Fail
515	Cancel Calls and Cycle Doors

Troubleshooting

ID #	iControl Message (iBox Event Log and iView Controller Event Log)
516	Developer Data Trap Triggered
517	Developer Data Trap Tested
518	Group Communication Established to iCue 1
519	Group Communication Established to iCue 2
520	Group Communication Established to Local Dispatcher
521	Earthquake Slow Speed Hoistway Scan Activated
522	Earthquake Slow Speed Hoistway Scan Deactivated
523	Earthquake Slow Speed Hoistway Scan Completed
524	Earthquake Slow Speed Hoistway Scan Aborted
525	Suspension Member Shutdown ON
526	Suspension Members Shutdown OFF
527	System Comm Disabled
528	System Comm Enabled
534	IMP Firmware Updated
535	BOOT Firmware Updated
536	SPA Firmware Updated
537	SPB Firmware Updated
538	SPC Firmware Updated
539	! NOT CURRENTLY USED
540	! NOT CURRENTLY USED
541	LOGF Enhanced Diagnostics ON
542	LOGF Enhanced Diagnostics OFF
543	KTR Machine Brake Pressure Switch Fault
544	KTR Machine Brake Oil Level Fault
545	KTR Machine Brake Oil Temperature Fault
546	KTR Machine Brake Motor Protection Fault
547	KTR Machine Brake Pad Wear Fault
548	KTR Emergency Brake Pressure Switch Fault
549	KTR Emergency Brake Oil Level Fault
550	KTR Emergency Brake Oil Temperature Fault
551	KTR Emergency Brake Motor Protection Fault
552	KTR Emergency Brake Pad Wear Fault
553	Car Shut Down Due to Emergency Power Operation with No EPM (Activated)
554	Car Shut Down Due to Emergency Power Operation with No EPM (Deactivated)
563	Exercise Operation Fail
567	Dynamic Braking IGBT Failure
568	Brake Two PICK FAULT
569	Brake Two DROP FAULT

iControl Messages

Table 6.3 iControl Messages

iControl Messages	
Alternate Floor Smoke Sensor Recall, ALTERNATE FLOOR SMOKE	
Description: Recall to main fire floor due to smoke detector input(s) from floors other than main recall floor.	
Car Reaction: Car proceeds to user-defined main fire recall floor. Once at recall floor, door operation is according to user-defined door operation under fire recall operation.	
Troubleshooting:	
1. If in error, inspect the sensor input and connections.	
2. Related Inputs: Smoke and fire sensors as indicated in job prints.	
Alternate Speed Profile 1 Activated, Alternate Speed Profile 1, ALT SPEED PROFILE 1	
Description: Indicates that the Alternate Speed Profile has been enabled via a keyed or switched input. When so configured, Alternate Speed Profiles 1 and 2 use Alternate 1 and Alternate 2 performance patterns respectively. (Pattern Configuration/Alternate 'n').	
Car Reaction: Car uses assigned pattern (Alternate 1 or 2).	
Alternate Speed Profile 1 Deactivated	
Alternate Speed Profile 2 Activated. Alternate Speed Profile 2 ALT SPEED PROFILE 2. See Alternate Speed Profile 1 Activated.	
Alternate Speed Profile 2 Deactivated	
Ascending Car Overspeed Fault, ASCND CAR OVR SPD FLT	
Description: Ascending Car Overspeed Fault. This fault is tripped if the elevator is traveling in the up direction, the Governor contact opens, and the Rope Gripper option is selected on the Safety Configuration screen. You will also see a Governor Open fault.	
Car Reaction: Emergency stop: Motor contactor and brake contactor immediately dropped. The rope brake drops if installed. If you do not have a RG (Rope Gripper) or EB (Emergency Brake) board in your controller, this fault will not appear.	
Troubleshooting:	
1. Check the iView event log for related events.	
2. Identify and correct any operational problems. Check for proper governor operation.	
3. Resetting the Governor switch will automatically clear this fault.	
Attendant Service, Attendant Svc	
Description: Indicates that the elevator is operating under Attendant Service mode of operation. Generally initiated via an input (switch or button) at the car operating panel.	
Car Reaction: Car operates under attendant mode.	
Troubleshooting:	
1. Related input: Attendant service as indicated on the job prints.	
Automatic Stop	
Description: The Automatic Stop feature has been enabled.	
Car Reaction: The car will stop at a user-defined floor whenever it passes that floor in a user-defined direction and the doors will open and remain open for a user-defined time.	
Troubleshooting:	
1. Check the parameters on the Configuration > Car Operation > Auto Stop tab for proper configuration.	
Backup Power Direction Reversal	
Description: The <i>Backup power recall reverse direction</i> input has been activated (signal from the TAPS Trac-tion Auxiliary Power Supply).	
Car Reaction: The car direction of travel is reversed unless the car is on Earthquake operation and the <i>CW1/CW2 inputs</i> (Counterweight movement sensor) are active and reversal would move the car in the direction towards the counter weight.	
Backup Power Recall OFF	
Description: The <i>Backup power recall</i> input has been deactivated.	

Troubleshooting

Table 6.3 iControl Messages

iControl Messages	
Backup Power Recall ON, BACKUP POWER RECALL	
Description: The <i>Backup power recall</i> input has been activated (signal from the TAPS Traction Auxiliary Power Supply).	
Car Reaction: If the car is not currently at a floor, it will move to a floor and cycle the doors. If no load weigher is used, the car will move to the closest floor. If a load weigher is used, direction is dependent on the car load and the Counterweight percentage parameter. If load weight is greater than Counterweight percentage, car moves down and vice versa.	
Backup Power Unit Failure Activated, Backup power unit failure, BACKUP POWER FAILURE	
Description: The <i>Backup power unit failure</i> input is low.	
Car Reaction: None. The event is displayed and logged.	
Troubleshooting:	
1. Check the UPS unit for faults. 2. Check the connection to the <i>Backup power unit failure</i> input. 3. It may be necessary to replace the battery	
Backup Power Unit Failure Deactivated	
Description: The <i>Backup power unit failure</i> input has changed back to its normally high state.	
Balanced Mode	
Description: Passenger operation. Up and Down traffic treated equally. Assigned by group controller.	
Battery Voltage Low-IMP, BATTERY VLTG LOW-IMP	
Description: The voltage on Battery B1 on the IMP board has dropped below 2.22 VDC and the battery must be replaced. Otherwise the BBRAM will be unable to retain the data stored during a power loss or shut down.	
Blocking New Remote Connections, BLOCKING REMOTE UIS	
Description: When a car switches from Local to Local Dispatcher, many parameters and connections to other cars must be stabilized. During this time the new Local Dispatcher will not accept any new remote connections for 30 seconds.	
Car Reaction: iView will remain connected if it was already connected. Any new iMonitor, iReport, Liftnet, BMS, etc. connections will be denied for 30 seconds while the car is syncing up and stabilizing data.	
Troubleshooting:	
1. If this message is persistent for more than 30 seconds or if it seems to come and go for extended periods of time, the car may be confused as to if it should be the Local Dispatcher. Check the Alternate Dispatcher settings (System Configuration > Building tab), and Car ID (Controller > General > General tab) parameters. This has been an issue when upgrading a car designated as Alternate Dispatcher with a Car ID not = 1. A reboot was necessary to fix it, but is also necessary after an upgrade anyway.	
BOOT Firmware Updated	
Description: The Bootrom firmware was successfully updated.	
Brake Contactor Driver Proofing Fault, BRAKE CNT DRV PRF FLT	
Description: Fault signal for brake contactor driver proofing.	
Car Reaction: None	
Troubleshooting:	
1. Verify brake contactor driver proofing circuits.	
Brake Contactor Proofing Fault, BRAKE CONT PRF FAULT	
Description: Fault signal for brake contactor proofing.	
Car Reaction: None	
Troubleshooting:	
1. Verify brake contactor proofing circuits.	

Table 6.3 iControl Messages

iControl Messages	
Brake One Drop Fault, BRAKE ONE DROP FAULT	
Description: Indicates brake contact input (SP2D or Brake One Switch) was not in the state required by the "Brake is picked when SP2D or Brake Switch terminal is high (low)" parameter, indicating brake was not fully dropped for more than one second after the car had stopped. This fault may be bypassed on the Controller > Diagnostics > Fault Bypass tab by setting Brake Switch.	
Car Reaction: Car is removed from service.	
Troubleshooting:	
1. Controller > Configuration > Brake > Control tab, check "Brake is picked when SP2D or Brake Switch terminal is high (low)" to determine proper state of terminal SP2D or Brake One Switch when brake is dropped. 2. Verify operation of brake and brake switch (open or closed, see step 1) when the brake is fully dropped. 3. With the brake dropped, verify the state of input SP2D or Brake One Switch (low or high, see step 1). Please refer to "Installing Brake Monitoring" on page 3-5. 4. Use the iBox Fault reset button to clear the fault.	
Brake Two Drop Fault, BRAKE TWO DROP FAULT	
Description: Indicates brake contact input (Brake Two Switch) was not in the state required by the "Brake is picked when SP2D or Brake Switch terminal is high (low)" parameter, indicating brake was not fully dropped for more than one second after the car had stopped. This fault may be bypassed on the Controller > Diagnostics > Fault Bypass tab by setting Brake Switch.	
Car Reaction: Car is removed from service.	
Troubleshooting:	
1. Controller > Configuration > Brake > Control tab, check "Brake is picked when SP2D or Brake Switch terminal is high (low)" to determine proper state of terminal Brake Two Switch when brake is dropped. 2. Verify operation of brake and brake switch (open or closed, see step 1) when the brake is fully dropped. 3. With the brake dropped, verify the state of input Brake Two Switch (low or high, see step 1). Please refer to "Installing Brake Monitoring" on page 3-5. 4. Use the iBox Fault reset button to clear the fault.	
Brake Enable Fault	
Description: When the brake module is enabled, a feedback signal is generated for the iBox. If the feedback signal is not detected, this fault is generated.	
Car Reaction: Emergency stop: Motor and brake contactors immediately dropped.	
Troubleshooting:	
1. Check the Brake Voltage Feedback test point on the iView Oscilloscope screen. 2. Check the iField Brake Module connections. 3. Check the brake and brake connections. 4. If brake feedback voltage is actually present, the iBox Safety board may be defective.	
Brake Module Over Temperature Fault, BRAKE OVER TEMP FAULT	
Description: Temperature sensor in the brake module detected an overheat condition.	
Car Reaction: If the car is running, it will continue to answer current call. After the car is stopped at a floor, the car will not be allowed to run until the overheat condition clears.	
Troubleshooting:	
1. Check for excessive machine room ambient temperature. (Should not exceed 104 degrees F or 40C.) 2. Verify that air enters through the bottom of the power box and is only expelled via the fan at the top of the power box. 3. Check the running temperature inside the power box (should not exceed 105 degrees F). 4. Check for insufficient air circulation through the power box. 5. Check for improperly picking brake. 6. Check for faulty brake module. 7. Check for faulty connection between brake module and iBox.	

Troubleshooting

Table 6.3 iControl Messages

iControl Messages	
Brake Output Circuit Failure, BRAKE OUTPUT FAILURE	
Description: The flywheel brake IGBT has failed or the fuse has opened.	
Car Reaction: Normal stop.	
Troubleshooting: - Verify proper operation of the brake module while running on machine room inspection: - Does the brake pick voltage match the setting on the Configuration > Brake tab? - Does the brake hold voltage match the setting on the Configuration > Brake tab? - Verify proper operation of the brake module while performing the Brake Calibration: - Does the voltage max out and then slowly ramp down to about 10% of maximum supply voltage? - Does the current max out and then slowly ramp down to about 10% of maximum supply current? If the brake module is constantly outputting maximum voltage and current based on the testing in steps 1 and 2, the main IGBT on the module is most likely damaged. The module must be replaced. CAUTION: An open or damaged RB resistor can cause the IGBT to fail. Check the resistor by removing the center tap and measuring the value of the entire resistor. It is strongly recommended to do this before installing another brake module.	
Brake One Pick Fault, BRAKE ONE PICK FAULT	
Description: Indicates brake contact input (Brake One Switch) not in state required by "Brake is picked when SP2D or Brake Switch terminal is high (low)" parameter, indicating brake not fully picked during one entire run or was late going low (or high) indicating slow picking brake during three consecutive runs. Fault may be bypassed on Controller > Diagnostics > Fault Bypass tab by setting Brake Switch.	
Car Reaction: Car completes it's nearest run and is removed from service.	
Troubleshooting: - Controller > Configuration > Brake > Control tab, check "Brake is picked when SP2D or Brake Switch terminal is high (low)" to determine proper state of terminal SP2D or Brake One Switch when brake is picked. - Verify operation of brake and brake pick switch (open or closed, see step 1) when brake is fully picked. - With the brake picked, verify the state of input SP2D or Brake Switch (low or high, see step 1). Please refer to "Installing Brake Monitoring" on page 3-5. Use the iBox Fault reset button to clear the fault.	
Brake Two Pick Fault, BRAKE TWO PICK FAULT	
Description: Indicates brake contact input (Brake Two Switch) not in state required by "Brake is picked when SP2D or Brake Switch terminal is high (low)" parameter, indicating brake not fully picked during one entire run or was late going low (or high) indicating slow picking brake during three consecutive runs. Fault may be bypassed on Controller > Diagnostics > Fault Bypass tab by setting Brake Switch.	
Car Reaction: Car completes it's nearest run and is removed from service.	
Troubleshooting: - Controller > Configuration > Brake > Control tab, check "Brake is picked when SP2D or Brake Switch terminal is high (low)" to determine proper state of terminal Brake Two Switch when brake is picked. - Verify operation of brake and brake pick switch (open or closed, see step 1) when brake is fully picked. - With the brake picked, verify the state of input Brake Two Switch (low or high, see step 1). Please refer to "Installing Brake Monitoring" on page 3-5. Use the iBox Fault reset button to clear the fault.	
Brake Pick Fault Off (See: Brake Pick Fault)	
Brake Voltage Not Off Fault, BRAKE V NOT OFF FAULT	
Description: Indicates that after the brake contactor picked and before the brake was enabled, brake output voltage exceeded 70% of picking voltage. The likely cause is a shorted IGBT in the brake module.	
Car Reaction: Emergency stop. Fault will self clear and car will attempt to run again.	
Troubleshooting: Check resistance between TP5 (+ lead) and FMSO (- lead) on brake module. Less than 500 ohms indicates that the brake IGBT is shorted.	

Table 6.3 iControl Messages

iControl Messages	
Brake Voltage Not On Fault, BRAKE V NOT ON FAULT	
Description: After brake contactors are picked and controller did not receive more than 30% of the picking voltage after 1 second, this fault is generated. May be bypassed on the iView Fault Bypass screen.	
Car Reaction: Emergency stop: Motor contactor and brake contactor immediately dropped. Fault will self clear and car will attempt to run again.	
Troubleshooting:	
1. Verify Brake AC input voltage at FB1 and FB2. Verify FB1 and FB2 fuses are good.	
2. Verify BRAKE connector (25 pin DSUB) on right side of iBox is seated properly.	
3. Verify brake output voltage with multimeter on terminals B1 and B2.	
4. Recalibrate brake module if applicable.	
5. Replace Communication cable (25pin M/F 6FT DSUB)(PN: C-COMM-25P-M/F-6) from iBox BRAKE port to iField Module inside the iPowerbox.	
Bus 2 Fuse Open, BUS 2 FUSE OPEN	
Description: The bus 2 fuse is open.	
Car Reaction: Emergency stop. Cancel demand and open doors. No further movement is allowed.	
Troubleshooting: Check bus 2 fuse located at bottom of iBox.	
Bus 2D Fuse Open, BUS 2D FUSE OPEN	
Description: The bus 2D fuse is open.	
Car Reaction: Emergency stop. Cancel demand and open doors. No further movement is allowed.	
Troubleshooting: Check bus 2D fuse located at bottom of iBox.	
Bus 2MC Fuse Open, BUS 2MC FUSE OPEN	
Description: The bus 2MC fuse is open.	
Car Reaction: Emergency stop. Cancel demand and open doors. No further movement is allowed.	
Troubleshooting: Check bus 2MC fuse located at bottom of iBox.	
Bus 2PI Fuse Open, BUS 2PI FUSE OPEN	
Description: The bus 2PI fuse is open.	
Car Reaction: None. The PI signals will not be active.	
Troubleshooting: Check bus 2PI fuse located at bottom of iBox.	
Bus 3 Fuse Open, BUS 3 FUSE OPEN	
Description: The bus 3 fuse is open.	
Car Reaction: Emergency stop. Cancel demand and open doors. No further movement is allowed.	
Troubleshooting: Check bus 3 fuse located at bottom of iBox.	
Bus 3HA Fuse Open, BUS 3HA FUSE OPEN	
Description: The bus 3HA fuse is open.	
Car Reaction: None. No further movement is allowed when on Access operation.	
Troubleshooting: Check bus 3HA fuse located at bottom of iBox.	
Cancel Calls and Cycle Doors	
Description: An operation resulted in cancelling all calls and cycling doors. Currently used for swing operation when enabled in accordance to the user-defined settings (Configuration > Car Operation > Passenger > Swing Operation)	
Car Reaction: All calls are canceled. Both front and rear doors are open then reclose.	
Troubleshooting:	
1. Check the related option. Uncheck it if this operation is not desired.	
Capture Input OFF (see Capture Input ON)	

Troubleshooting

Table 6.3 iControl Messages

iControl Messages	
Capture Input ON	
Description:	Discrete input used to capture the car. This input will activate Capture mode, similar to the iBox Capture switch (see also: Capture Mode).
Car Reaction:	The car takes itself out of hall call service. Hall calls are canceled if no other car is available for hall call service. The car is also not eligible for parking.
Troubleshooting:	Check the related discrete inputs.
Capture Mode, Capture	
Description:	Indicates the Capture mode switch on the iBox has been placed in the ON position.
Car Reaction:	Car enters capture mode, removing itself from group operation (hall calls assigned to it will be reassigned to another elevator if possible). The car answers registered car calls but does not respond to hall call demand. Intended to allow maintenance personnel access to the car.
Car delayed with doors closed, CAR DEL DOORS CLOSED	
Description:	Indicates that a car, with doors fully closed, has been delayed in reaching an assigned destination.
Car Reaction:	Assigned hall calls will be reassigned to other available cars.
Troubleshooting:	1. Determine what is inhibiting the car from reaching its destination. 2. Check the event log for any faults that may have prevented the car from moving.
Car delayed with doors closing, CAR DEL DOORS CLOSING	
Description:	Indicates that a car, with doors closing, has been delayed in reaching an assigned destination.
Car Reaction:	Assigned hall calls will be reassigned to other available cars.
Troubleshooting:	1. Determine what is inhibiting the car from reaching its destination. 2. Check the event log for any faults that may have prevented the car from moving.
Car delayed with doors open, CAR DEL DOORS OPEN	
Description:	Indicates that a car, with doors fully open, has been delayed in reaching an assigned destination.
Car Reaction:	Assigned hall calls will be reassigned to other available cars.
Troubleshooting:	1. Determine what is keeping the doors open or inhibiting them from closing. 2. Check the event log for any faults that may have prevented the doors from closing.
Car delayed with doors opening, CAR DEL DOORS OPENING	
Description:	Indicates that a car, with doors opening, has been delayed in reaching an assigned destination.
Car Reaction:	Assigned hall calls will be reassigned to other available cars.
Troubleshooting:	1. Determine what is inhibiting the doors from opening. 2. Check the event log for any faults that may have prevented the doors from opening.
Car delayed with doors stalled, CAR DEL DOORS STALLED	
Description:	Indicates that a car, with doors stalled, has been delayed in reaching an assigned destination.
Car Reaction:	Assigned hall calls will be reassigned to other available cars.
Troubleshooting:	1. Determine what is inhibiting the doors from closing. 2. Check the event log for any faults that may have prevented the doors from closing.
Car delayed with unknown door position, CAR DEL DOORS UNKNOWN	
Description:	Indicates that a car, with unknown door position, has been delayed in reaching an assigned destination.
Car Reaction:	Assigned hall calls will be reassigned to other available cars.
Troubleshooting:	1. Determine what is causing the doors to be reported in an invalid condition.
Car Dispatch Load. Not currently used.	

Table 6.3 iControl Messages

iControl Messages	
Car Door Bypass, CAR DOOR BYPASS	
Description: The Car Door Bypass switch on the iBox is in the Bypass position. (View-only on iView Safety screen, enabled/disabled by MCE according to safety jurisdiction.)	
Car Reaction: The car is placed in Inspection mode. To move the car, you must place it in either cartop or car panel inspection mode. No other modes of operation are allowed.	
Car Heavy Load Activated - Hall Calls Bypassed, CAR HEAVY LOAD	
Description: The load in the car has exceeded the Heavy Load Threshold setting.	
Car Reaction: Hall calls are bypassed until the heavy load condition is cleared. Hall calls assigned to this car are reassigned to other cars if possible.	
Troubleshooting: (If displayed in error)	
1. Verify the programmed "Heavy Load Threshold" value and adjust if needed (Load Weigher Configuration screen). 2. Evaluate whether or not the load in the car exceeds the Heavy Load Threshold. Calibrate the load weigher if needed. 3. For discrete input load weighers, check the Heavy Load Input shown on the job prints.	
Car Heavy Load - Deactivated	
Car out of service with doors closed, CAR OS DOORS CLOSED	
Description: A delayed car with closed doors has remained so for an excessive period of time (as determined by a user-programmed timer parameter, Car Operation Screen/Passenger tab.	
Car Reaction: The car removes itself from car and hall call service (car calls are canceled and hall calls are canceled or reassigned).	
Troubleshooting:	
1. Determine what is inhibiting the car from reaching its destination. 2. Check the event log for any faults that may have prevented the car from moving.	
Car out of service with doors closing, CAR OS DOORS CLOSING	
Description: A delayed car with closing doors has remained so for an excessive period of time (as determined by a user-programmed timer parameter, Car Operation Screen/Passenger tab.	
Car Reaction: The car removes itself from car and hall call service (car calls are canceled and hall calls are canceled or reassigned).	
Troubleshooting:	
1. Determine what is inhibiting the car from reaching its destination. 2. Check the event log for any faults that may have prevented the car from moving.	
Car out of service with unknown door position, CAR OS DOORS UNKNOWN	
Description: A delayed car with invalid doors has remained so for an excessive period of time (as determined by a user-programmed timer parameter, Car Operation Screen/Passenger tab.	
Car Reaction: The car removes itself from car and hall call service (car calls are canceled and hall calls are canceled or reassigned).	
Troubleshooting:	
1. Determine what is inhibiting the car from reaching its destination. 2. Check the event log for any faults that may have prevented the car from moving.	
Car out of service with doors open, CAR OS DOORS OPEN	
Description: A delayed car with open doors has remained so for an excessive period of time (as determined by a user-programmed timer parameter, Car Operation Screen/Passenger tab.	
Car Reaction: The car removes itself from car and hall call service (car calls are canceled and hall calls are canceled or reassigned).	
Troubleshooting:	
1. Determine what is inhibiting the car from reaching its destination. 2. Check the event log for any faults that may have prevented the car from moving.	

Troubleshooting

Table 6.3 iControl Messages

iControl Messages	
Car out of service with doors opening, CAR OS DOORS OPENING	
Description: A delayed car with opening doors has remained so for an excessive period of time (as determined by a user-programmed timer parameter, Car Operation Screen/Passenger tab).	
Car Reaction: The car removes itself from car and hall call service (car calls are canceled and hall calls are canceled or reassigned).	
Troubleshooting:	
1. Determine what is inhibiting the car from reaching its destination. 2. Check the event log for any faults that may have prevented the car from moving.	
Car out of service with doors stalled, CAR OS DOORS STALLED	
Description: A delayed car with stalled doors has remained so for an excessive period of time (as determined by a user-programmed timer parameter, Car Operation Screen/Passenger tab).	
Car Reaction: The car removes itself from car and hall call service (car calls are canceled and hall calls are canceled or reassigned).	
Troubleshooting:	
1. Determine what is inhibiting the car from reaching its destination. 2. Check the event log for any faults that may have prevented the car from moving.	
Car Over Load Activated, CAR OVERLOAD	
Description: The load in the car has exceeded the Overload Threshold setting.	
Car Reaction: The car is held at the floor with doors open. Over load indicators, if present, will be activated.	
Troubleshooting:	
1. If this message appears to be displayed in error, verify the programmed Over Load Threshold value and adjust if needed. 2. Evaluate whether or not the load in the car exceeds the Over Load Threshold value. Calibrate the load weigher if necessary. 3. For discrete input load weighers, check the Over Load input shown on the job prints.	
Car Over Load Deactivated	
Car Panel Inspection Disabled, CP INSP. DISABLED	
Description: Car Panel inspection operation has been disabled.	
Car Reaction: The car cannot be run on car panel inspection operation.	
Troubleshooting:	
1. Check for any car status that might prevent car panel inspection operation, e.g. earthquake. 2. Check for the Stuck Inspection Input Fault. 3. Check all inspection buttons (Enable, Up, Down) and verify that none are stuck in the ON position.	
Car Panel Inspection Enabled	
Description: Car Panel inspection operation which was previously disabled is now enabled.	
Car Panel Inspection Inputs OK	
Description: One or more previously stuck cartop inspection inputs (Enable, Up, Down) have been deactivated (see Stuck Car Panel Inspection Input message).	
Car Panel Inspection Operation, Car Panel Inspection, Car Panel Insp.	
Description: Car has been placed in inspection using a (typically) keyed switch on car operation panel.	
Car Reaction: If running, car makes an emergency stop and is taken off passenger service. Car uses inspection pattern settings and can only be moved using car panel inspection key switches.	
Troubleshooting:	
1. Check the car panel inspection switch and related inputs. 2. The Car Panel Inspection input is Normally High.	
Car Shut down due to Emergency Power Operation with no EPM (Activated)	
Description: A controller that is part of MCE's network emergency power manager (EPM) is shut down due to its emergency power input being active (no longer on commercial power) while there is no EPM manager.	
Car Reaction: All calls are canceled, the car makes an immediate stop. The car remains shut down until an EPM is detected.	

Table 6.3 iControl Messages

iControl Messages	
Troubleshooting: 1. Verify that an EPM manager is up and running and properly communicating with the group that the car belongs to. And that the EPM manager option is enabled on that group. 2. Verify the emergency power configuration on the EPM manager.	
Car Shut down due to Emergency Power Operation with no EPM (Deactivated)	
Description: A controller on emergency power that is part of MCE's network emergency power manager (EPM) has detected the presence of the EPM manager and is no longer shut down. Car Reaction: Car get its emergency power command from its group which gets them from the EPM manager.	
Car shut down due to emergency power operation with no supervisor (Activated)	
Description: iControl has detected that an emergency power condition exists and has not established communication with the emergency power supervisor (typically a group controller). Car Reaction: Car is not allowed to move to prevent overloading emergency power generator. If car is moving when event occurs, car will make an emergency stop. Motor contactor and brake contactor are immediately dropped. The car is also shut down (calls and all other demands are canceled).	
Troubleshooting: 1. If condition exists and system is NOT operating under emergency power, refer to job prints and verify wiring to controller Emergency Power status input. 2. Verify correct input state (high/low) on iView/Car Operation/Emergency Power/EPI Input setting. 3. Check group to car communication.	
Car shut down due to emergency power operation with no supervisor (Deactivated)	
Description: Emergency power condition, without communication with group supervisor, has been resolved. Either communication with supervisor has been established or emergency power condition has resolved. Car Reaction: While emergency power is in effect, car is allowed to move as determined by group controller (iCue). Car selection for recall and emergency power operation is user-determined (iView/Car Operation/Emergency Power and iCue iView/Emergency Power Configuration screens).	
Cartlift: Call, Cartlift: CALL	
Description: The Cartlift is answering a Call demand to pick up a cart.	
Cartlift Cart ON Fault Activated, Cart ON Fault, Cartlift: CART ON FAULT	
Description: A cart has been detected inside the cartlift when there is no demand in the system. Troubleshooting: Check the Cartlift for any carts or the CartMatic transfer equipment.	
Cartlift Cart ON Fault Deactivated (see Cartlift Cart ON Fault Activated)	
Cartlift Dispatch Mode	
Description: Cartlift Dispatch mode has been activated (see job specs for operation details).	
Cartlift Dispatch/Return Mode	
Description: Cartlift Dispatch/Return mode has been activated (see job specs for operation details).	
Cartlift Fault Activated, Cartlift Fault, Cartlift: FAULT	
Description: A Cartlift fault has been detected due to a cartlift equipment failure. Troubleshooting: 1. Check the CartMatic fault input to the controller and related equipment, e.g. doors, Cartmatic, etc. 2. Press the CartMatic Stalled reset button to clear the fault.	
Cartlift Fault Deactivated (see Cartlift Fault Activated)	
Cartlift Load, Cartlift: LOAD	
Description: A Cartlift load cycle is in progress.	
Cartlift Maintenance Mode	
Description: Cartlift Maintenance mode has been activated (see job specs for operation details).	
Cartlift Load Failure Activated, Cartlift Load Failure, Cartlift: LOAD FAIL	
Description: During the load cycle, a cart was not detected inside the Cartlift within a user defined time.	

Troubleshooting

Table 6.3 iControl Messages

iControl Messages	
Troubleshooting: 1. Check related cart transfer equipment or adjust the related user defined timer. 2. If on manual mode, make sure a cart is manually pushed inside the Cartlift.	
Cartlift Load Failure Deactivated (see Cartlift Load Failure Activated)	
Cartlift Return Mode	
Description: Cartlift Return mode has been activated (see job specs for operation details)	
Cartlift Send, Cartlift: SEND	
Description: The Cartlift is answering a Send demand to deliver a car.	
Cartlift Send Fail, Cartlift SEND FAIL	
Description: Unable to register the Send demand due to a car being detected at the floor where the loaded car is to be delivered.	
Cartlift Unload, Cartlift: UNLOAD	
Description: A Cartlift unload cycle is in progress.	
Cartlift Unload Failure Activated, Cartlift Unload Failure, Cartlift: UNLOAD FAIL	
Description: During an unload cycle, a cart was still detected inside the Cartlift within a user defined time.	
Troubleshooting: 1. Check related cart transfer equipment or adjust the related user defined timer. 2. If on Manual mode, make sure a cart is manually removed from the Cartlift.	
Cartlift Unload Failure Deactivated (see Cartlift Unload Failure Activated)	
Car Stop Switch Open, CAR STOP SWITCH OPEN	
Description: The car panel stop switch input has dropped (in-car stop switch has been activated). This switch may be bypassed during special modes of operation such as fire, CFSS, or EMS.	
Car Reaction: Emergency stop if running. The car is not allowed to run again until the car panel stop switch is moved to the RUN position.	
Troubleshooting: 1. Check the in-car stop switch and switch connections. 2. Check current mode of operation and verify that the stop switch operation is as expected.	
Cartop Automatic Unintended Motion Fault, CARTOP AUTO UIM FLT	
Description: Unintended motion fault detected while car was running under Passenger operation.	
Car Reaction: Emergency Stop. Cancel all calls. This fault will self reset.	
Troubleshooting: 1. Check the iView Event Log for preceding activity. 2. Correct initiating problem, if any.	
Cartop Communication Established	
Description: Communication between iControl (iBox) and the iLink ICE-CTP board has been established. This communication is through twisted-pair, shielded cabling in the traveler cable.	
Cartop Communication Fault, CARTOP COMM FAULT	
Description: Communication fail between iControl and iLink. This communication is through twisted-pair, shielded cabling in the traveler cable.	
Car Reaction: Emergency Stop. Cancel all calls.	
Troubleshooting: 1. Check connections at the iBox and iLink ends. Refer to -CW job print drawing. 2. If connections are clean and tight, use an oscilloscope to check TX and RX signals. Or, if practical, connect the iBox end of the connection to another iControl in the machine room and see if that controller can communicate with the iLink box. 3. If required, replace the iLink Cartop board or the iBox as appropriate.	

Table 6.3 iControl Messages

iControl Messages	
Cartop Emergency Stop	
Description: The cartop processor has detected a fault and initiated an emergency stop. The Cartop Safety relay has opened in response to an unsafe condition.	
Car Reaction: Emergency stop: Motor contactor and brake contactor immediately dropped. Cancel all calls.	
Troubleshooting:	
1. Check the iView Event Log for related preceding events.	
2. Troubleshoot and correct any initiating problem.	
3. Restore safety string and test.	
Cartop Exit Open, CARTOP EXIT OPEN	
Description: The Cartop Exit Switch input has dropped. The input is normally on when the configuration states that the switch is installed. The input may be bypassed by: 1) the car being on car top or car panel inspection while on earthquake, and 2) the safety bypass jumper being installed.	
Car Reaction: Emergency stop if running. The car is not allowed to run until the problem is corrected.	
Troubleshooting:	
1. Check the switch status and configuration (Safety screen).	
2. Check elements related to bypassing.	
Cartop Exit Open Off (see: Cartop Exit Open)	
Cartop Exit no Counterweight Configuration Error, CTEX NO CWI CFG ERROR	
Description: Car Top Exit, on the Safety tab, has been checked but Counter weight displacement detection, on the Car Operation - Earthquake tab, has not been checked. A car equipped with both Earthquake Operation and Cartop Exit must have a counterweight derailment device.	
Car Reaction: The car is not allowed to run until the problem is corrected.	
Troubleshooting:	
1. Verify the status of the Car Top Exit parameter (Safety tab).	
2. Verify the status of the Counter weight displacement detection parameter (Car Operation - Earthquake tab).	
Cartop Firmware Update Mode, CARTOP FW UPDATE MODE	
Description: The cartop processor is not running the cartop application firmware but is instead either waiting for or processing the firmware update (iView > File > Firmware update).	
Car Reaction: The car is not allowed to run until the procedure is completed.	
Cartop Inspection Disabled, CT INSP. DISABLED	
Description: Cartop inspection operation has been disabled.	
Car Reaction: The car cannot be run on cartop inspection operation.	
Troubleshooting:	
1. Check for any car status that might prevent cartop inspection operation, e.g. earthquake.	
2. Check for the Stuck Inspection Input Fault.	
3. Check all inspection buttons (Enable, Up, Down) and verify that none are stuck in the ON position.	
Cartop Inspection Enabled	
Description: Cartop inspection operation which was previously disabled is now enabled.	
Cartop Inspection Inputs OK	
Description: One or more previously stuck cartop inspection inputs (Enable, Up, Down) have been deactivated (see Stuck Cartop Inspection Input message).	
Cartop Inspection Operation, Cartop Inspection, Cartop Insp	
Description: The car has been placed in Inspection mode using the cartop inspection switch.	
Car Reaction: The car enters inspection mode and uses the Inspection pattern settings.	

Troubleshooting

Table 6.3 iControl Messages

iControl Messages	
Cartop Inspection Unintended Motion Fault, CARTOP INSP UIM FLT	
Description: An unintended motion fault was detected while the car was being operated on Cartop Inspection Operation.	
Car Reaction: Car motion stopped after 24 inches of travel. The safety circuit is opened.	
Troubleshooting:	
1. Check the iView Event Log for related events. 2. Troubleshoot and correct any initiating problems. 3. Press iBox Fault Reset. 4. Test.	
Cartop Power Loss	
Description: A loss of power was detected by the iLink processor.	
Car Reaction: Emergency stop: Motor contactor and brake contactor immediately dropped.	
Troubleshooting:	
1. Check 1, 2, and 3 bus terminal voltages from iControl, through traveler, to car terminal strip. 2. Refer to job print drawing CT, check strip to iLink connections. 3. Check iLink fuses F1 and FCT1.	
CFSS Mode 1-4 at Floor Activated, CFSS 1-4 at Floor. See CFSS Mode 1-4 In-car Activated.	
CFSS Mode 1-4 In-car Activated, CFSS 1-4 In-car.	
Description: Commandeer for Special Services (CFSS) is a special operating mode. When activated, typically by a keyed hall switch, the car recalls to that floor. Four CFSS operating modes (1 - 4) may be configured on the Configuration > Car Operation > CFSS tab. Typically, one mode is used for Hospital Operation and the others as the user determines. Once recall is activated, the car disposes of existing calls as configured on the CFSS tab (Transition), then moves to the recall floor. At the recall floor, In-Car CFSS is activated by an in-car switch or as configured on the CFSS tab (In-Car).	
Car Reaction: As configured on the Configuration > Car Operation > CFSS tab.	
Troubleshooting: Check the operation of the hall and in-car switches and associated inputs.	
CFSS Mode 1-4 Recall Activated, CFSS 1-4 Recall. See CFSS Mode 1-4 In-car Activated.	
Construction Car Panel Inspection Operation, Cnstr Car Panel Insp, Cnstr CP Insp	
Description: The car is on Construction mode and car panel inspection.	
Car Reaction: Car is out of service and cannot be moved using the car panel inspection key switches.	
Troubleshooting: When Construction mode is active, car panel operation switches are ignored. The car can only be moved using Machine Room or Cartop Inspection switches. Place the car on Machine Room or Cartop Inspection and use the appropriate switches to move the car.	
Construction Cartop Inspection Operation, Cnstr Cartop Insp, Cnstr CT Insp	
Description: Car is on Construction mode and Cartop Inspection. When in construction mode, the iBox is always "on inspection" operating only in Cartop or Machine Room inspection. Car top has precedence over Machine Room, just as in Passenger operation. If neither of these two modes of operation are selected, the controller goes into a non-specific inspection mode and will not run for any inspection direction input.	
Car Reaction: The car can be moved using the cartop inspection key switches.	
Troubleshooting:	
1. If it appears that the car is on Cartop Inspection operation in error, verify wiring to the iBox INCT input. If no voltage exists on this input, the car will operate under Cartop Inspection operation.	
Construction Hoistway Access Inspection Operation, Cnstr HA Inspection, Cnstr HA Insp	
Description: Car is on construction mode and hoistway access.	
Car Reaction: Car is out of service and cannot be moved using the hoistway access Up or Down switches.	
Troubleshooting: When Construction mode is active, hoistway access switches are ignored. The car can only be moved using Machine Room or Cartop Inspection switches. Place the car on Machine Room or Cartop Inspection and use the appropriate switches to move the car.	

Table 6.3 iControl Messages

iControl Messages	
Construction Inspection Operation, Cnstr Inspection	
Description:	The car is operating in Inspection mode and the Construction setting on the Safety Configuration screen is selected.
Car Reaction:	The car will operate using the Inspection performance pattern using Cartop or machine room inspection modes only.
Construction Machine Room Inspection Operation, Cnstr Mach Room Insp, Cnstr MR Insp	
Description:	Car is on inspection mode using the iBox inspection switch while on construction mode.
Car Reaction:	Car begins operating in Inspection mode. If running, car will make an emergency stop and be taken out of normal service. In this mode of operation, car can be moved using Inspection Up/Down.
Troubleshooting:	1. Related inputs: MachineRoomInspection: Normally high
Controller Main Computer Startup	
Description:	iBox main processor booting up.
DBD Mode Activated	
Description:	The Destination Based Dispatching engine is now active.
DBD PHE Anti-nuisance	
Description:	DBD Photo Eye Anti-nuisance option set and although a call had been assigned to the car per a source floor entry, the photo eye has registered no entry and calls assigned to the car have been canceled.
Car Reaction:	Car is available for new assignment.
Troubleshooting:	If calls were canceled in error, verify that the photo eye device is working. If this functionality is not desired, turn OFF the DBD Anti-nuisance option.
DBRTF Dynamic Braking Resistor Temperature Fault	
Description:	The controller has detected a dangerous over temperature in the dynamic braking resistor cabinet. Car will cancel all calls and shut down at next available floor. Doors will cycle. This fault is only cleared when input is deactivated. Car is put into Machine Room Inspection and must be cleared in iView.
Troubleshooting:	Check drive IGBT carefully. If this fault latched, the drive sent significantly high current to the Dynamic Braking Resistors. MCE is not responsible for property damage caused if this fault is cleared and car put back into service without replacing the drive.
Demand Down Peak Mode, DEMAND DOWN PEAK MODE	
Description:	The car is running in Demand Down Peak mode, favoring traffic in the down direction as configured on the group control screens.
Demand Up Peak Mode, DEMAND UP PEAK MODE	
Description:	The car is running in Demand Up Peak mode, favoring traffic in the up direction as configured on the group control screens.
Developer Data Trap Triggered	
Description:	Custom data trap has detected event to save relevant fault information to BBRAM. The information for ten events is stored. Additional events overwrite the information for the oldest event.
Dispatcher = Car 'n', DISPATCHER = CAR'n' (n = 1 to 15)	
Description:	Communication with the main iCue dispatcher has been lost or not established. This car is communicating with Car 'n' (n = 1 to 15) which is acting as the backup dispatcher.
Troubleshooting:	Check the group to car communication related connections and parameters.

Troubleshooting

Table 6.3 iControl Messages

iControl Messages	
Door Lock Clipped Greater than 200fpm, DOOR LK CLIPPED G200	
Description: The door lock signal (DLAT, DLMS, DLAB, or GS) went low for over 300mS while the car was moving at over 200 fpm.	
Car Reaction: Emergency stop: Motor contactor and brake contactor immediately dropped.	
Troubleshooting:	
1. Use Event Log to determine where fault occurred. Examine the locks in that area of the hoistway first. 2. Usually caused by a misadjusted door, where the pickup rollers do not have adequate running clearance from the door clutch. 3. Because this fault must persist for over 300mS, a slight "bumping" of the door lock will not set it off. If the door clutch/pickup roller clearance is adequate, make sure the door contacts are clean and the door lock mechanism drops cleanly without friction or binding.	
Door Lock Clipped Less than 200fpm, DOOR LK CLIPPED L200	
Description: The door lock signal (DLAT, DLMS, DLAB, or GS) went low while the car was moving at under 200 fpm.	
Car Reaction: ASAP stop.	
Troubleshooting:	
1. Usually caused by a misadjusted or damaged door. Because it only occurs at speeds under 200 fpm, it is usually seen when the car leaves the floor where the problem door is located.	
DOOR LOCK OPENED	
Description: Status message indicating safety processor has detected open door lock. A fault is generated if car is moving or attempts to move while door lock open.	
Down Direction Limit Open, DOWN DIR LIMIT OPEN	
Description: Down normal terminal direction limit switch is open.	
Car Reaction: Initiate an immediate stop if moving. Further down direction movement is prevented.	
Troubleshooting:	
1. Verify that the switch is operating properly. 2. Verify correct state of the iBox DNTD input. 3. Verify DNTD switch is activating/deactivating at correct location (normally 2" below bottom terminal).	
Down Emergency Terminal Switch Position Fault, DN ETS POSITION FAULT	
Description: Reported position upon encountering Terminal Switch differed from learned position by more than set position margin. This fault may be bypassed on the Diagnostics > Fault Bypass tab.	
Car Reaction: Emergency Stop: Motor contactor and brake contactor immediately dropped. All hall and car calls canceled. After car is stopped, it will run at Correction speed to next available floor and cycle door. Door Open button will remain operational. If fault generated when car is moving, fault will stay latched and Fault Reset button must be pushed to clear it. If generated when car is not moving, fault will self clear when condition no longer exists.	
Troubleshooting:	
1. Physically check the integrity of the switch and wiring. 2. Check the iBox input for the switch. 3. On the Diagnostics > Terminal Switches Status tab, compare the last pass position against the learned position for this switch. Verify that Position Margin is within a reasonable range. Relearn the NTS and ETS switches. Please refer to "Learning Normal & Emergency Terminal Limit Switches" on page 4-12.	

Table 6.3 iControl Messages

iControl Messages	
Down Emergency Terminal Switch Shutdown, DOWN ETS SHUTDOWN	
Description: Down Emergency Terminal switch opened at a speed or position exceeding its specified threshold. Fault stays latched and Fault Reset button must be pushed to clear. If generated when car is stopped, fault will self clear when the condition no longer exists.	
Car Reaction: Emergency stop: Motor contactor and brake contactor immediately dropped.	
Troubleshooting:	
1. Fault is logged in conjunction with either a speed or position fault at DETS. Check Event Log and follow troubleshooting for Down Emergency Terminal Switch Position Fault or Safety A (or B) DETS Level 2 Speed Fault. 2. Press iBox Fault Reset to reset fault.	
Down Normal Terminal 'n' Level 1 Speed Fault, DN NTS n L1 SPEED FLT (n = 1 to 5)	
Description: A Level 1 Overspeed fault has been detected at Down Normal Terminal switch 'n' (1 to 5). When switch opened, car was traveling faster than defined by level 1 overspeed settings (sum of learned speed plus Overspeed 1 Margin percentage on Configuration > Terminal Switches tab) but not fast enough to trigger Level 2 overspeed fault. This fault may be bypassed on the Diagnostics > Fault Bypass tab.	
Car Reaction: Controlled stop using Emergency Slowdown pattern parameters.	
Troubleshooting:	
1. On Diagnostics > Terminal Switches Status tab, compare last pass and Learned speeds for switch. If appropriate, increase Overspeed 1 Margin on Configuration > Terminal Switches tab. 2. May be caused by a change in Pattern parameters. Always re-learn terminal switches after any changes to Pattern parameters. 3. One or two floor runs can sometimes come in "hotter" than multi-floor runs. (Remember that switches are learned making full hatch runs.) If short runs are causing this, you may have to increase Overspeed 1 Margin or lower Standard profile - High Roll Jerk parameter. 4. Can also be caused by a car that is following pattern poorly, possibly due to heavy load or poor speed loop performance. In this case, adjust speed loop to follow pattern as well as possible and/or alter pattern parameters to produce a gentler deceleration and approach to floor (then re-learn switches). Please refer to "Terminal Switch Overspeed and Position Faults" on page 4-61.	
Down Normal Terminal 'n' Level 2 Speed Fault, DN NTS'n' L2 SPEED FLT (n = 1 to 5)	
Description: A Level 2 Overspeed fault has been detected at Down Normal Terminal switch 'n' (1 to 5). When the switch opened, the car was traveling faster than defined by Level 2 overspeed settings (105% of the sum of the learned speed plus the Overspeed 1 Margin percentage setting on the Configuration > Terminal Switches tab). This fault may be bypassed on the Diagnostics > Fault Bypass tab.	
Car Reaction: Emergency stop: Motor contactor and brake contactor immediately dropped.	
Troubleshooting:	
1. On the Diagnostics > Terminal Switches Status tab, compare the Last pass and Learn speeds for this switch. If appropriate, increase the Overspeed 1 Margin on the Configuration > Terminal Switches tab. 2. May be caused by a change in the Pattern parameters. Always re-learn the terminal switches after any changes to Pattern parameters. 3. One or two floor runs can sometimes come in "hotter" than multi-floor runs. (Remember that the switches are learned making full hatch runs.) If short runs are causing this, you may have to increase the Overspeed 1 Margin or lower the Standard profile - High Roll Jerk parameter. 4. Can also be caused by a car that is following the pattern poorly, possibly due to heavy load or poor speed loop performance. In this case, adjust the speed loop to follow pattern as well as possible and/or alter the pattern parameters to produce a gentler deceleration and approach to the floor (then re-learn the switches). Please refer to "Terminal Switch Overspeed and Position Faults" on page 4-61.	

Troubleshooting

Table 6.3 iControl Messages

iControl Messages	
Down Normal Terminal 'n' Position Fault, DN NTS'n' POSITION FLT (n = 1 to 5)	
Description: When the switch opened or closed, the car's reported position was different from the learned position by an amount exceeding the margin set on the Configuration > Terminal Switches tab. This may mean that the switch opened early, late or not at all on approach to the terminal. It may also mean that the switch closed early, late, or not at all on departure from the terminal. Finally, the switch can go open while standing at a floor where its learned position is closed, or go closed at a floor where its learned position is open. This fault may be bypassed on the Diagnostics > Fault Bypass tab.	
Car Reaction: If traveling down, the car executes an emergency slowdown, then continues at low speed until it encounters a floor. The car stops at the floor, opens its doors, and performs a floor sync operation. If the fault persists, the car goes out of service. If traveling up, the car continues normally to the first stop, opens its doors and performs a floor sync operation. If the fault persists, the car goes out of service. If stopped at a floor, the car opens its doors, does a floor sync, and, if the fault persists, takes itself out of service.	
Troubleshooting:	
1. Diagnostics > Terminal Switches Status tab, compare Last pass position to Learned position for switch. 2. If the fault is mechanical (switch movement, magnet movement, or bad traveler cable), the fault will tend to repeat at the same position every time. 3. A stuck switch is easy to spot by running the car on inspection and observing the input LEDs on the iBox. 4. Perform a Terminal Sync operation (Terminal button on the Configuration > Pattern > Common tab).	
Drive At-Speed Fault, DRIVE AT-SPEED FAULT	
Description: Detected by the drive, this fault indicates that the motor speed is outside threshold limits defined by the drive parameter. AC controls only. (This fault is not monitored for the TORQMAX F5 drive).	
Car Reaction: Emergency stop: Motor contactor and brake contactor immediately dropped.	
Troubleshooting:	
1. If the job has a TORQMAX F5 drive and this fault occurs, verify that wires AT and GND (from iBox J46) are connected to drive terminal X2A-26 (Common).	
Drive Communication Fault, DRIVE COMM FAULT	
Description: Indicates that the iBox is unable to communicate with the AC drive. It can only be generated if "Drive interface" and "Reference type" are set to "Serial" (Controller > Configuration > Drive > General tab).	
Car Reaction: Emergency stop: Motor contactor and brake contactor immediately dropped and the car will not move until communication is established.	
Troubleshooting:	
1. Verify that a proper and functional serial cable (not an off-the-shelf serial cable) is connected between the iBox (MODEM) and the drive (operator serial port - bottom). 2. Verify that the drive is configured for control signals via serial communication (LF.02 Signal/operating mode is set to SErSP Serial Comm. Speed Control).	
Drive Communication Warning, DRIVE COMM WARNING	
Description: Not currently used.	
Drive Enable Feedback Fault, DRIVE ENABLE FDBK FLT	
Description: iControl failed to send the Drive Enable signal to the drive or the drive failed to respond to the Drive Enable signal. (applies to both AC and DC drives).	
Car Reaction: Emergency stop: Motor contactor and brake contactor immediately dropped. Followed by normal run. Fault will self clear and car is able to run again.	
Troubleshooting:	
1. This fault may indicate a problem with the Gate Switch, or one of the door locks, opening up during the initial start of car motion. Verify that the inputs (GS, DLAT, DLAB, DLMS) remain high. 2. Verify that Safety Processors A and B are looping (iBox status LEDs). 3. Verify that there are no faults active on Safety Processors A and B that would prevent motion. 4. Check the iBox power supply. 5. Verify that all drive connections match wiring prints.	

Table 6.3 iControl Messages

iControl Messages	
Drive Fault, DRIVE FAULT	
Description: Detected by the drive, this fault indicates that the motor speed is outside threshold limits defined by the drive parameter. (TORQMAX drive only.)	
Car Reaction: Emergency stop: Motor contactor and brake contactor immediately dropped.	
Troubleshooting:	
1. Verify encoder wiring and polarities. 2. Check F5 drive terminals X2A-29 (Drive Fault) to X2A-26 (Common). The value should be high during normal operation and low during a fault condition. 3. Verify that the brake is working correctly. 4. Verify drive gains, Proportional Gain (LF.31) and Integral Gain (LF.32). 5. Check drive parameters, Speed Following Error (LF.57), Speed Difference (LF.58), and Following Error Timer (LF.59). Refer to the TORQMAX manual.	
Drive Inspection Overspeed Fault, DRIVE IOS FAULT	
Description: Inspection Overspeed fault. (TORQMAX drive only.)	
Car Reaction: Emergency stop.	
Troubleshooting:	
1. Check Inspection speed. 2. Check safety configuration. 3. Calibrate car speed with a hand-held tachometer.	
Drive On Fault, DRIVE ON FAULT (was Drive Ready On Fault)	
Description: When the SCR drive receives Direction (UP/DN), Run Enable (RE) and M Contactor (M1/M2 side mount auxiliaries) it must activate the DRO signal within 0.250 seconds. If not, this fault is generated. (DC drive only)	
Car Reaction: Emergency stop: Motor contactor and brake contactor immediately dropped.	
Troubleshooting:	
1. Check M1 & M2 Contactor side-mount auxiliaries. N.O. contact may not be making. 2. Check the 26 pin connector J5 on SCR-LGA board for proper seating at both ends (46 pin D-sub on the right side of the PowerBox). 3. Then verify that the cable that extends to the iBox (AC/DC Drive jack) is properly seated. If the cable inside the PowerBox is suspect, temporarily connect directly from the drive into the iBox. 4. Check the RJ45 serial drive cable (J8 on the SCR-LGA board) to the <i>Serial Drive</i> jack on the iBox. 5. On iView, display the Controller > Diagnostics > Diagnostic Outputs > Drive screen and verify that the commands are being sent from the iBox to the System 12 drive. 6. Check M1 and M2 side mount auxiliaries again. 7. Verify that Speed Pick Delay 1 is 0.2 or higher.	
Drive Ready Fault, DRIVE READY FAULT	
Description: AC drive ready signal is low. (TORQMAX drive only.)	
Car Reaction: Emergency stop: Motor contactor and brake contactor immediately dropped.	
Troubleshooting:	
1. Check F5 drive terminal X2A-24 to X2A-26 (Common). X2A-24 should be low during normal operation and high during fault. 2. Check connection from AC drive to iPower Box and J46 connector on ICE-SAF board.	
Drive Start Failure	
Description: The drive control logic has not responded to a movement request from the motion control logic for more than ten seconds.	
Car Reaction: The motion control logic will continue to request movement from the drive logic for up to ten seconds before declaring a Motion Start Failure fault.	
Troubleshooting: Verify that no drive or motor faults exist.	

Troubleshooting

Table 6.3 iControl Messages

iControl Messages	
Dual Channel QUAD Fault, DUAL CHANNEL QUAD FLT	
Description: The Safety system did not detect movement of the car even though the iBox processor reported car movement, or the Safety system reported car movement while the processor did not.	
Car Reaction: Emergency stop: Motor contactor and brake contactor immediately dropped.	
Troubleshooting:	
1. Press the Fault Reset button. 2. Check the wiring for the DP1 and DP2 encoder signals from the landing system to the iBox. 3. Check the motor encoder or tachometer (whichever is present). 4. Compare Pattern Command and Speed Feedback on the iView oscilloscope screen to make certain they track one another. 5. Check reported speed accuracy using a hand-held tachometer.	
Dynamic Braking IGBT Failure	
Description: The controller has detected a dangerous over temperature in the dynamic braking resistor cabinet. This fault is only cleared when input is deactivated. Car is put into Machine Room Inspection and must be cleared in iView.	
Car Reaction: Car will cancel all calls and shut down at next available floor. Doors will cycle.	
Troubleshooting: Check drive IGBT carefully. If this fault latched, the drive sent significantly high current to the Dynamic Braking Resistors. MCE is not responsible for property damage caused if this fault is cleared and car put back into service without replacing the drive.	
Earthquake Board Power Supply OFF	
Description: The controller has detected a failure of the earthquake board power supply.	
Car Reaction: The car behaves as if the counterweight derailment detector has been triggered (car generally makes an emergency stop, and is removed from service at the next available landing).	
Troubleshooting:	
1. Check board connections. 2. Replace the EQ board.	
Earthquake Board Power Supply ON	
Description: The earthquake board (ICE-EQ) power supply is operational.	
Car Reaction: Car is no longer prevented from operating due to a loss of the earthquake board power supply.	
Earthquake Emergency Stop	
Description: Earthquake operation has been activated by the seismic or counterweight displacement switches and the car has performed an emergency stop as specified by the earthquake user settings.	
Car Reaction: The car will perform an emergency stop. After a pause, the car will react as directed by user settings on the Car Operation screen Earthquake tab.	
Troubleshooting:	
1. Check the wiring for the seismic and counterweight displacement inputs. 2. Check the earthquake user settings on the Car Operation screen Earthquake tab.	
Earthquake Operation Activated	
Description: The car is on earthquake operation.	
Car Reaction: Car behavior is according to the user settings on the Car Operation screen Earthquake tab. This operation is latched until the EQ reset button is pressed on the ICE-EQ board.	
Troubleshooting: NA. See also "Earthquake Operation (Seismic Switch)" and "Earthquake Operation (Counterweight)."	
Earthquake Operation Deactivated	

Table 6.3 iControl Messages

iControl Messages	
Earthquake Operation (Counterweight)	
Description: The Counterweight Derailment Detector has been activated, indicating an earthquake condition.	
Car Reaction: The car will typically make an emergency stop, then move slowly to the next available floor in a direction away from the counterweight. The fault is latched until the EQ reset button (ICE-EQ board) is pressed.	
Troubleshooting:	
1. If it is suspected that this event happened in error, check the counterweight derailment detector operation and associated wiring to the ICE-EQ board.	
Earthquake Operation (Seismic Switch)	
Description: The Seismic Switch has been activated (input has gone low), indicating an earthquake condition.	
Car Reaction: The car will react as determined by user configuration. (iView/Car Operation/Earthquake) The car will either make an emergency stop and then move slowly to the next available floor or it will stop normally at the next available floor in the direction of travel. The fault is latched until the EQ reset button (ICE-EQ board) is pressed.	
Troubleshooting:	
1. If it is suspected that this event happened in error check the seismic switch input and the associated wiring to the ICE-EQ board. The seismic input is normally on.	
Earthquake Reduce Speed	
Description: An earthquake event (seismic switch) has initiated a car speed reduction (150 fpm or less) as required by some code jurisdictions.	
Car Reaction: Control stop.	
Earthquake Reset Button OK	
Description: A previously declared failure of the earthquake reset button has been resolved.	
Car Reaction: Previous failure is no longer a reason to keep the car out of service.	
Earthquake Reset Button Stuck ON	
Description: The controller has detected that the earthquake reset button (located on the ICE-EQ board) has failed in the "on" state.	
Car Reaction: If moving, the car will complete its run. Once stopped, the car is removed from service.	
Troubleshooting:	
1. It is likely that the reset button (or related circuitry) on the ICE-EQ board is faulty.	
2. Replace the ICE-EQ board.	
Earthquake Run, EARTHQUAKE RUN	
Description: Some code jurisdictions allow the car to run normally (at a speed no greater than 150 fpm) under earthquake conditions. This event indicates that the car is being allowed to run in this manner.	
Car Reaction: Car operates "normally" at reduced speed.	
Troubleshooting:	
1. Check the wiring for the seismic and counterweight displacement inputs.	
2. Check the earthquake user settings on the Car Operation screen Earthquake tab.	
Earthquake Shutdown, EARTHQUAKE SHUTDOWN. See Earthquake Operation Activated.	
Earthquake Slow Speed Hoistway Scan Activated	
Description: The earthquake hoistway scan (required by section 8.4.10.1.3 of the A17.1-2016 Elevator Safety code) has been initiated by emergency personnel.	
Car Reaction: Car travels from terminal to terminal floor (at a speed not to exceed 150ft/min) before returning to the starting floor without opening doors.	
Troubleshooting:	
1. Check all related earthquake inputs and options.	
2. Related inputs: Earthquake Hoistway Scan Switch.	
Earthquake Slow Speed Hoistway Scan Deactivated	

Troubleshooting

Table 6.3 iControl Messages

iControl Messages	
Description: The earthquake slow speed hoistway scan has been deactivated due to earthquake operation being reset.	
Car Reaction: Car return to normal service operation.	
Earthquake Slow Speed Hoistway Scan Complete	
Description: The earthquake slow speed hoistway scan has been successfully completed.	
Car Reaction: Doors open once the car has returned to the starting floor (where slow speed hoistway scan was initiated).	
Earthquake Slow Speed Hoistway Scan Aborted	
Description: The earthquake slow speed hoistway scan has been aborted due to activation of a seismic device.	
Car Reaction: Car is shut down again according to the earthquake operation per the elevator safety code.	
Troubleshooting:	
1. Check the related seismic devices.	
2. Related inputs: ESS, CW1 and CW2 terminals on the earthquake board.	
EEPROM Device Error, EEPROM DEVICE ERROR	
Description: Safety Processor A EEPROM fault.	
Car Reaction: Emergency stop: Motor contactor and brake contactor immediately dropped.	
Troubleshooting:	
1. Verify Safety Processor A EEPROM - board test. Contact MCE.	
Elevator Recall Operation (Switch 'n'), ELEVATOR RECALL SW 'n' (n = 1 to 6)	
Description: Elevator Recall Operation has been initiated by the switch identified.	
Car Reaction: In most usages, the car immediately removes itself from hall call service, answers remaining car calls, then proceeds to the recall floor and cycles its doors. (The disposition of car calls, recall floor, and door operation are user-programmable. iView/Car Operation/Elevator Recall.)	
Emergency Alarm Acknowledged	
Description: This message indicates that the emergency alarm has been acknowledged and reset by the Emergency Alarm Reset input.	
Car Reaction: The Distress Light and the Distress Buzzer outputs will be extinguished.	
Troubleshooting: NA	
Emergency Alarm Activated (Alarm button), Emergency Alarm Activated, EMERG ALARM ACTIVATED	
Description: Emergency Alarm input activated. Typically used to sound an alarm and/or illuminate an indicator light to alert security personnel.	
Car Reaction: Distress Light will be illuminated until acknowledged by Emergency Alarm Reset input. Distress Buzzer output will either pulsate or be continuously activated as long as car remains in this condition.	
Troubleshooting:	
1. Attend to the car and verify the distress signal.	
2. To reset, verify alarm button is restored to normal condition and activate Emergency Alarm Reset input.	
Emergency Alarm Activated (Car delayed with doors closed)	
Description: This message indicates that the emergency alarm has been activated due to the car being delayed with its doors closed. This is an optional emergency alarm monitor specified by the user.	
Car Reaction: The Distress Light will be illuminated until it is acknowledged by the Emergency Alarm Reset input. The Distress Buzzer output will be active as long as the car remains in this condition.	
Troubleshooting:	
1. Attend to the car and verify the distress signal.	
2. To reset the alarm, verify that the car condition is restored to normal and activate the Emergency Alarm Reset input.	

Table 6.3 iControl Messages

iControl Messages	
Emergency Alarm Activated (In-car stop switch)	
Description: This message indicates that the emergency alarm has been activated due to the in-car emergency stop switch being pulled.	
Car Reaction: The Distress Light will be illuminated until it is acknowledged by the Emergency Alarm Reset input. The Distress Buzzer output will be active as long as the switch remains active.	
Troubleshooting:	
1. Attend to the car and verify the distress signal. 2. To reset the alarm, verify that the car emergency stop switch is restored to normal position and activate the Emergency Alarm Reset input.	
Emergency Alarm Activated (Safety opened)	
Description: This message indicates that the emergency alarm has been activated due to the safety circuit being opened (excluding the in-car emergency stop switch). This is an optional emergency alarm monitor specified by the user.	
Car Reaction: The Distress Light will be illuminated until it is acknowledged by the Emergency Alarm Reset input. The Distress Buzzer output will be active as long as the car remains in this condition.	
Troubleshooting:	
1. Attend to the car and verify the distress signal. 2. To reset the alarm, verify that the car condition is restored to normal and activate the Emergency Alarm Reset input.	
Emergency Alarm Deactivated without Acknowledgment	
Description: This message indicates that the emergency alarm has been deactivated because all signals that would activate it are now off and the Require Acknowledgment parameter is not checked.	
Car Reaction: The Distress Light and Distress Buzzer outputs are deactivated.	
Emergency Brake Leg 1 Short Fault, EMERG BRK LEG 1 SHORT	
Description: Emergency brake board (ICE RB or ICE EB) verification failed after a stop or as a result of a fault reset. During these scenarios, the emergency brake circuitry is verified by transitioning between leg 1 and leg 2. One of the legs must be active to prevent the emergency brake from deploying.	
Car Reaction: Emergency stop.	
Troubleshooting:	
1. Verify system configured for emergency brake board (ICE-RG or ICE EB). 2. Make sure the emergency brake board is physically present and correctly connected.	
Emergency Brake Leg 2 Short Fault, EMERG BRK LEG 2 SHORT. See Emergency Brake Leg 1 Short Fault.	
Emergency Brake OK open, EMERG BRAKE OK OPEN	
Description: The Emergency Brake OK input has dropped (off) when the configuration states that the brake is installed and therefore the input should be picked (on).	
Car Reaction: Emergency stop if running. The car is not allowed to run until the problem is corrected.	
Troubleshooting:	
1. Verify that the Rope Gripper board is properly installed, connected, and powered. 2. If this job has a sheave brake, verify that the associated circuitry is per the job prints.	
Emergency Brake OK open Off (See: Emergency Brake OK open)	
Emergency Brake Tripped, EMERG BRAKE TRIPPED	
Description: The emergency brake output (ICE RG or ICE-EB board) has gone low, causing the emergency brake to set.	
Car Reaction: Emergency stop.	
Troubleshooting:	
1. Check that the output did not go low in error and is properly connected. 2. Check the elevator for underlying causes.	

Troubleshooting

Table 6.3 iControl Messages

iControl Messages	
Emergency Brake UIM Reset Button Stuck, EM BK UIM RESET STUCK	
Description: The reset button on the Rope Gripper board (ICE-RG) or Emergency Brake board (ICE-EB) has been activated for more than 15 seconds.	
Car Reaction: The car is not allowed to move. If in motion, the car is allowed to finish the run.	
Troubleshooting: Check the reset button on the ICE-RG or ICE-EB board.	
Emergency Dispatch On, Emergency Dispatch, EMERGENCY DISPATCH	
Description: The car is automatically servicing the building in a pre-defined pattern. This operation is invoked when a failure of the hall calls bus or group communication is detected. This operation may also be activated using a key switch input.	
Car Reaction: The car automatically moves to every floor in the building in a predefined pattern and cycles its doors.	
Troubleshooting:	
1. Check group/car communications.	
2. Check the hall call bus drivers.	
3. Check the Emergency Dispatch input.	
Emergency Dispatch Off (see Emergency Dispatch On)	
Emergency Medical Service Bypassed	
Description: EMS is active but has been bypassed by another mode of operation.	
Car Reaction: EMS service is bypassed and the car operates under the new mode of operation.	
Troubleshooting:	
1. Check the current mode of operation and the EMS user settings.	
Emergency Medical Service Deactivated	
Description: EMS has been deactivated.	
Car Reaction: Car is returned to prevailing mode of operation.	
Troubleshooting: NA	
Emergency Medical Service In-Car Activated (Switch 'n'), EMS In-car (Switch 'n') (n = 1 or 2)	
Description: EMS In-Car service activated by in-car EMS switch. Also referred to as EMS Phase II operation.	
Car Reaction: Car remains out of hall call service. Car calls are enabled. After answering a car call, doors will open automatically but close with constant pressure on Door Close Button only.	
Troubleshooting:	
1. EMS In-Car terminated by taking car to EMS recall floor by car call and deactivating in-car EMS switch or by removing in-car EMS switch from pre-programmed IO configuration.	
2. Related inputs:	
EMSCarSwitch0: Normally low	
EMSCarSwitch1: Normally low	
Emergency Medical Service Recall Activated (Switch 'n'), EMS Recall (Switch 'n') (n = 1 or 2)	
Description: EMS recall activated via one of the EMS recall key-switches located next to the designated EMS elevator. This is also referred to as the EMS Phase I operation.	
Car Reaction: Momentary activation of EMS recall switch will initiate recall to user-defined EMS Recall floor. Car removes itself from car and hall call service. Once at EMS recall floor, door operation is in accordance to user-defined door operation under EMS recall. Car will remain on EMS Phase I as long as hall switch is activated. Once hall switch is deactivated, car will return to normal operation upon expiration of user-defined timer if in-car switch has not been activated.	
Troubleshooting:	
1. Verify no hall EMS recall switch is activated.	
2. EMS Recall operation can also be terminated by removing in-car EMS switch from pre-programmed IO configuration.	
3. Related inputs:	
EMSHallSwitch0: Normally low	
EMSHallSwitch1: Normally low	

Table 6.3 iControl Messages

iControl Messages	
Emergency Power Activated	
Description: Commercial power has been lost and power is now supplied by an emergency power generator.	
Car Reaction: Car will make an emergency stop due to loss of power and will remain shut down until commanded to either lower to a pre-determined floor or proceed to next available floor. Once all cars have reached a floor, one or more cars will be selected to run under emergency power generator.	
Troubleshooting:	
1. Related inputs: EPI: Active level field adjustable.	
Emergency Power and no communication with group, EMERG PWR NO COMM	
Description: iControl has detected that an emergency power condition exists and it has not established communication with the emergency power supervisor (typically a group controller).	
Car Reaction: The car is not allowed to move to prevent overloading the emergency power generator. If the car is moving when the event occurs, the car will make an emergency stop. motor contactor and brake contactor are immediately dropped. The car is also shut down (calls and all other demands are canceled).	
Troubleshooting:	
1. If this condition exists and the system is NOT operating under emergency power, refer to the job prints and verify wiring to the controller Emergency Power status input.	
2. Verify correct input state (high/low) on iView/Car Operation/Emergency Power/EPI Input setting.	
3. Check group to car communication.	
Emergency Power Deactivated. See Emergency Power Activated.	
Description: This event is logged when commercial power is restored.	
Troubleshooting:	
1. Related inputs: EPI: Active level field adjustable.	
Emergency Power Recall, EMERG POWER RECALL. See Emergency Power Activated.	
Description: Logged when elevator has been commanded to lower to emergency power recall floor.	
Car Reaction: Car proceeds to user-defined emergency power recall floor. Door operation at recall floor in accordance with user defined door operation under emergency power recall conditions.	
Troubleshooting:	
1. Related inputs: EPR: Normally low (high to lower the car) PTR: Normally low (low to lower the car)	
Emergency Power Recall (In Service), EP RECALL-IN SERVICE	
Description: This event is logged and related car status messages displayed on the OBD and iView if a car that has been commanded to recall during emergency power remains in service for car calls.	
Car Reaction: An attendant operated car (FIRE II, IND, ATS, CFSS In-Car, EMS) goes back into service for car calls only when it is selected to recall. The car is shut down once it is at a floor with doors open or if the car fails to move or open its doors within a user defined timer (30 seconds).	
Troubleshooting: Check the Emergency Power Version option (System > Configuration > Emergency Power) and set it to Pre 2008 if this operation is not desired.	
Emergency Power Run, EMERG POWER RUN. See Emergency Power Activated.	
Description: This elevator is allowed to respond to calls during emergency power operation.	
Troubleshooting:	
1. Related inputs (only on elevators with emergency power overlay operation) EPR: Normally low (low to run the car) PTR: Normally low (low to run the car)	

Troubleshooting

Table 6.3 iControl Messages

iControl Messages	
Emergency Power Shutdown, EMERG POWER SHUTDOWN. See Emergency Power Activated.	
Description: This event is logged when emergency power is initially activated or if communication with the emergency power supervisor has been lost while on emergency power.	
Car Reaction: Emergency stop. Car removed from service.	
Troubleshooting:	
1. Related inputs:	
EPI: Active level field adjustable.	
Emergency Stop Input Activated, EMERGENCY STOP INPUT	
Description: The events are logged and related car status messages displayed on the OBD and iView to reflect the status of the Emergency Stop Input.	
Car Reaction: When the Emergency Stop Input is activated, the car makes an emergency stop and cancels all calls. This input has priority over all modes of operation including Fire Service.	
Troubleshooting: Check the status of the Emergency Stop Input.	
Emergency Stop Input Deactivated see Emergency Stop Input Activated.	
ESTOP due to disabled direction of travel	
Description: The car has performed an emergency stop because the current travel direction has been disallowed due to flood operation becoming active, disallowing the destination floor.	
Car Reaction: After stopping, the car will correct to a floor above the flood zone.	
ETA Mode Activated	
Description: The Estimated Time of Arrival dispatching engine is now active.	
Event Log Cleared	
Description: Indicates that all of the events previously logged in the event log were removed using the "Clear all" button (iView Controller > View > Diagnostics > Event Log tab).	
Excessive Brake Feedback Fault, EXCESS BRAKE FDBK FLT	
Description: After each brake activity, controller checks brake current is bleeding off properly. (After 1 second, brake voltage should be at or below 85% of voltage applied by last command.) This fault is issued if brake voltage remains too high when checked by the controller.	
Car Reaction: Emergency stop: Motor contactor and brake contactor immediately dropped.	
Troubleshooting:	
1. At factory, RB (brake resistor circuit value) set 3 to 5 times brake coil resistance. Reduce RB to allow current to bleed off more quickly. (Do not reduce RB below 3 times brake coil resistance.) Please refer to "Verifying Brake Current Resistance" on page 2-11.	
2. On the iView Brake screen, Timers tab, reduce Voltage Decay Time (minimum, 0.0 seconds).	
3. Check Brake Voltage Feedback test point on iView Oscilloscope screen.	
4. Check iField Brake Module connections.	
5. Check brake and brake connections.	
6. If this fault persists, you may have a defective brake module or iBox Safety board.	
Excessive Faults Shutdown, EXCESSIVE FAULTS	
Description: Generated if car is already at a floor or after it has reached a floor when Excessive Faults Warning detected. Also generated when there are another five faults that resulted in an emergency, controlled or ASAP stop as the car was trying to reach a floor after an Excessive Faults Warning fault (see also Excessive Faults Warning).	
Car Reaction: Emergency stop: Motor and brake contactor immediately dropped. Doors cycle if at a floor. Latching fault. Clear by pressing iBox Fault Reset button, toggling Inspection or cycling power to controller.	
Troubleshooting:	
1. Check Event Log for drive faults generated before fault triggered. Trouble discovered faults.	

Table 6.3 iControl Messages

iControl Messages	
Excessive Faults Warning, EXCESSIVE FLTS WARN	
Description: Excessive number of faults detected. Generated when more than five faults that resulted in an emergency, controlled or ASAP stop. The counter resets if the car makes ten normal runs without any faults.	
Car Reaction: Car taken out of service; registered calls canceled. Car proceeds to next available floor; cycles doors to let passengers out. At floor "Excessive Faults Shutdown" fault activated and car will remain shut down until iBox Fault Reset button is pressed, Inspection is toggled or power to the controller is cycled.	
Troubleshooting:	
1. Check Event Log to see drive faults generated before fault triggered. Troubleshoot discovered faults.	
Excessive Motor Field Feedback Fault, EXCESS MF FDBK FAULT	
Description: Excessive current in motor field. Threshold set to 85% of forcing current for more than 4 seconds. If fault is recurring, excessive faults will be generated and the motor field module will be disabled.	
Car Reaction: Emergency Stop.	
Troubleshooting: May be related to faulty motor field module, iBox, or invalid motor field calibration.	
1. If excessive faults (fault) generated, module is disabled and should not be outputting voltage. If this is not the case, there may be a problem with the motor field module.	
2. Calibrate the motor field. During calibration, the current and voltage should start at their maximum value and decrease as calibration proceeds. If this is not the case, there may be a problem with the iBox.	
Excessive Relevels Fault, EXCESS RELEVELS FAULT	
Description: The car has failed to relevel after ten attempts.	
Car Reaction: Cancel all calls and shutdown. The doors are cycled and the car remains shutdown until the fault is reset by pressing the iBox Fault Reset button, toggling Inspection or cycling power to the controller.	
Troubleshooting:	
1. Check for mechanical or other failure preventing proper releveling.	
2. Adjust brake and motor control during releveling with a full load in the car.	
Excessive Restarts Fault, EXCESS RESTARTS FAULT	
Description: Car has attempted movement from same floor an excessive number of times. This fault is issued after twenty-five attempts. The counter is reset if the car makes one successful run.	
Car Reaction: Cancel all calls and shutdown. Doors cycle and car remains shutdown for five minutes after first fault or until fault is reset by pressing iBox Fault Reset button, toggling Inspection or cycling power.	
Troubleshooting:	
1. Check for mechanical or other failure preventing car from moving away from floor the floor.	
Excessive Restarts Warning	
Description: The elevator has attempted to start movement from the same floor successively for an excessive number of times. This fault is issued after ten attempts. The counter is reset if the car makes one successful run.	
Car Reaction: None.	
Troubleshooting:	
1. Check for mechanical or other failure preventing car from moving away from floor the floor.	
Exercise Operation Activated, EXERCISE OPERATION	
Description: The car has been idle for a predetermined user-defined time and is now performing a user-defined number of Exercise operation runs.	
Car Reaction: The car lowers to the bottom landing, then proceeds to the top landing and back down to the bottom landing without cycling the doors. Moving the car to the top landing and then back down to the bottom landing is considered one exercise run. The user defines the number of exercise runs.	
Exercise Operation Deactivated	
Description: The car has completed all of the exercise runs or Exercise operation has been terminated due to change in mode of operation or calls being entered into the system.	
Exercise Operation Fail	
Description:	
Car Reaction:	

Troubleshooting

Table 6.3 iControl Messages

iControl Messages	
Fault Bypass Switch On, FAULT BYPASS SW ON	
Description: The iBox Fault Bypass switch is in the ON position.	
Car Reaction: None.	
Fault Bypass Switch Timed Out, FLT BYP SW TIMED OUT	
Description: Indicates that a fault bypass has timed out. (Bypasses are allowed for 15 minutes with the iBox Fault/Function Bypass switch in the ON position.)	
Car Reaction: Emergency stop: Motor contactor and brake contactor immediately dropped.	
Troubleshooting:	
1. To clear this fault, place the Fault/Function Bypass switch to the OFF position.	
F DPM OPEN-GS CLOSED. See Front DPM Open - GS Closed.	
F DR CLS FLT REC FAIL. See Front Door Close Fault Recovery Failure	
Field Module Over Temperature Fault, FIELD MODULE OVR TEMP	
Description: Motor Field module heat sink temperature is excessive (DC only).	
Car Reaction: Stop at next floor. Restart not permitted.	
Troubleshooting:	
1. Check machine room temperature (should not exceed 104 degrees F or 40 degrees C).	
2. Verify air enters through bottom of power box and is expelled via fan at top of power box.	
3. Check for insufficient air circulation through the power box.	
4. Check running temperature inside power box (should not exceed 105 degrees F).	
5. Check for faulty field module.	
6. Check for faulty iBox.	
7. Check for faulty connection between motor field module and iBox.	
Fire Service In-car Activated, Fire Service In-car, Fire Svc In-car	
Description: In-car firefighters service has been activated via the in-car fire service key-switch.	
Car Reaction: Car and Door operation according to user-defined fire code. (iView/Car Operation/Fire Service.)	
Troubleshooting:	
1. Related inputs:	
FireIION: Normally low	
FireIIOff: Normally high	
FireIIHold: Normally low	
Fire Service In-Car Deactivated	
Description: In-car firefighter service has been deactivated.	
Car Reaction: Car is returned to prevailing mode of operation.	
Fire Service In-car Hold Operation	
Description: Car is on in-car firefighter hold operation.	
Car Reaction: Car is held at a floor, typically with doors open. Car calls and door close buttons are disabled.	
Troubleshooting:	
1. Check the in-car firefighter switch status and Fire II hold operation user settings.	
Fire Service In-car Recall Operation	
Description: A car on in-car firefighter operation is being recalled to the designated fire recall floor.	
Car Reaction: Car proceeds to designated fire recall floor. At recall floor, door operation is according to user-defined door operation under fire recall operation.	
Troubleshooting:	
1. Check the in-car firefighter switch status and Fire II operation user settings.	

Table 6.3 iControl Messages

iControl Messages	
Fire Service Recall Alternate, Fire Recall Alternate, Fire Recall Alt.	
Description: Fire recall to the alternate fire floor has been initiated.	
Car Reaction: Car proceeds to user-defined alternate fire recall floor. Once at recall floor, door operation is according to the user-defined door operation under fire recall operation.	
Troubleshooting:	
1. If in error, inspect the fire sensor and switch inputs and connections.	
2. Related Inputs: Smoke sensors and fire recall switches as indicated on the job prints.	
Fire Service Recall Main, Fire Recall Main, Fire Recall Main	
Description: Fire recall to the main fire floor has been initiated.	
Car Reaction: Car proceeds to the user-defined main fire recall floor. Once at the recall floor, door operation is according to the user-defined door operation under fire recall operation.	
Troubleshooting:	
1. If in error, inspect the fire sensor and switch inputs and connections.	
2. Related Inputs: Smoke sensors and fire recall switches as indicated on the job prints.	
Fire Service Recall Deactivated	
Description: Fire service recall operation has been deactivated.	
Car Reaction: Car returns to its prevailing mode of operation.	
Troubleshooting: NA	
Flood Operation Activated, FLOOD OPERATION	
Description: Flood operation has been activated via system command or hardware switch.	
Car Reaction: A car in the flood zone area moves immediately to a floor outside the flood zone. The car will no longer service the floors in the flood zone until Flood Operation is deactivated.	
Troubleshooting: Check the flood zone switch and the user interface command.	
Flood Operation Deactivated	
Description: Flood operation has been deactivated.	
Car Reaction: The car will service all eligible floors.	
Floor Heat Detectors Activated, FLOOR HEAT DETECTORS	
Description: One or more floor heat detector inputs are activated. The fire warning light will flash until all heat detectors have been reset. The fire-warning buzzer will sound until the car is shutdown at a floor.	
Car Reaction: A car that is parked at a floor will open its doors and shut down. A car in motion will proceed in the current direction to the next available floor where the heat detector is not tripped. If all heat detectors in the current direction are tripped, the car will reverse direction and proceed to the first floor where the heat detector is not tripped. If again all heat detectors are tripped, the car will proceed to the main fire recall floor unless the car is also on Fire Service, in which case the car will proceed to the appropriate fire recall floor. Once the car is stopped at a floor it will automatically open its doors and shut down. Then, if the machine room or hoistway heat detectors are active, a signal is provided to disconnect the main power line and/or activate the sprinklers where available.	
Floor Heat Detectors Deactivated	
Description: All floor heat detector inputs are deactivated.	
Car Reaction: The car is allowed to run.	

Troubleshooting

Table 6.3 iControl Messages

iControl Messages	
Floor Location Fault, FLOOR LOCATION FAULT	
Description: Floor magnet location is recorded during the floor height learn procedure. The on and off positions for both the ULM and DLM sensors are recorded, for a total of four pieces of data for every floor magnet, front and rear. The controller watches for the floor magnets constantly and checks to see that each is in its learned location.	
Car Reaction: Run to next stop, then shut down.	
Troubleshooting: 1. Usually, a magnet has shifted position or fallen off. 2. Check the clearance between the floor sensor board and the magnets. Set if necessary. (Sometimes this clearance will be off just enough to make some magnets fail to register properly.) 3. Re-learn floor heights. 4. Perform a Terminal synchronization.	
Floor Sensor Fault, FLOOR SENSOR FAULT	
Description: The system did not detect a floor sensor while performing floor synchronization. Terminal synchronization will be performed as a result.	
Car Reaction: Normal stop.	
Troubleshooting: Indicates that the elevator location in the hoistway is not where the system expected or the door zone sensor is not being detected. 1. Fault will be generated if the car was moved while the controller was not powered. The system will detect movement of the elevator for only ten seconds after power is removed. This will be sufficient to accommodate the time required for an elevator to stop after power is removed when running at contract speed. 2. On Inspection, verify that the system is detecting the LU, DZ, and LD signals when the elevator passes a floor. The signals can be observed on the iView Floor Heights Configuration screen.	
Floor Synchronization Fault	
Description: While performing floor synchronization, the system either did not receive edge position data from the cartop or did not detect a floor position magnet where expected.	
Car Reaction: The car will stop and initiate terminal synchronization.	
Troubleshooting: 1. Verify that the car was not moved after power was shut off. 2. Move car past floors in vicinity of the fault and verify the proper activation of the LU and LD sensors. 3. Verify that the system is communicating with the cartop (no Cartop Communication Fault). 4. Verify that the absolute and cartop positions change by the same amount and in the same direction while moving the car. 5. Verify that a magnet has not fallen off. 6. Check the clearance between the floor sensor board and the magnets. Sometimes this clearance will be off just enough to make some magnets fail to register properly. Adjust clearance if necessary. 7. Re-learn the floor heights. 8. The iLink, iLand or iBox may be faulty.	
Front Auxiliary Door Open Button Bypassed, FRONT AUX DOB BYP	
Description: The front auxiliary door open button has been continuously activated for a user-defined time and is now bypassed according to the user-defined setting. (iView Controller > Configuration > Car Operation > Doors)	
Car Reaction: The front auxiliary door open button is rendered inoperative.	
Troubleshooting: 1. Check the corresponding input: Front Auxiliary Door - Open Button (Normally low). 2. The operation of the door open button can also be restored by setting the Door open button bypass option to off (unchecked) (iView Controller > Configuration > Car Operation > Doors).	

Table 6.3 iControl Messages

iControl Messages	
Front Door Close Fault, FRONT DOOR CLOSE FLT	
Description: One or more front door failures to close have been detected. The controller will attempt to close the doors as defined by user parameters (door close protection timer and number of attempts) before declaring this fault. (iView Controller > Configuration > Car Operation > Doors)	
Car Reaction: The doors will reopen fully. All car calls are canceled and car removes itself from hall call service (hall calls assigned to this car are canceled or reassigned to other cars if available). Doors may be closed using constant pressure on the front door close button.	
Troubleshooting:	
1. Door closed status is determined by the front door close limit and by the front door position monitor contact if applicable. Check the wiring of these signals. 2. Check the door close protection timer and number of closing attempts on the Car Operation - Doors tab.	
Front Door Close Fault Recovery Failure, F DR CLS FLT REC FAIL	
Description: The Door Close Fault Recovery timer starts when a Door Close Fault is generated. When the timer expires, the Door Close Fault is cleared to allow the doors to again attempt to close (see Front Door Close Fault). This is repeated the number of times specified by the Door Close Fault Recovery Attempts parameter. If the doors have failed to close when the number of attempts equals the recovery attempts parameter setting, the Front Door Close Fault Recovery Failure is generated.	
Car Reaction: The car is not allowed to run until a mode change is detected or the doors are successfully closed via constant pressure on the Door Close Button.	
Troubleshooting:	
1. Door closed status is determined by the front door close limit and by the front door position monitor contact if applicable. Check the wiring of these signals. 2. Check the door close protection timer and number of closing attempts on the Car Operation - Doors tab.	
Front Door Close Time-out	
Description: Front door failure to close detected. Controller will attempt to close doors for a period of time defined by Closing protection timer parameter (Door Motor Protection Timers). If timer elapses prior to doors closing fully, this event is generated.	
Car Reaction: Doors reopen fully and again attempt to close.	
Troubleshooting:	
1. Door closed status is determined by front door close limit and front door position monitor contact. 2. Check the wiring of these signals. 3. Check Closing protection timer (iView Car Operation Configuration/Doors Tab/General Tab/Door Motor Protection Timers).	
Front Door Contact Fault, FRONT DOOR CNTCT FLT	
Description: Faulty front door contact (gate switch, door lock) has been detected. This is detected when the doors are in their fully open position and either the gate switch contact is closed or the doors appear to be locked.	
Car Reaction: All car calls are canceled and the car removes itself from hall call service. The front doors are not allowed to close and the car is not allowed to run.	
Troubleshooting:	
1. Check the front door gate switch and door lock contact at the floor at which the car is located. 2. Check associated wiring for these signals.	
Front Door Open Button Bypassed, FRONT DOB BYPASSED	
Description: The front door open button has been continuously activated for a user-defined time and is now bypassed according to the user-defined setting. (iView Controller > Configuration > Car Operation > Doors)	
Car Reaction: The front door open button is rendered inoperative.	
Troubleshooting:	
1. Check the corresponding input: Front Door - Open Button (Normally low). 2. The operation of the door open button can also be restored by setting the Door open button bypass option to off (unchecked) (iView Controller > Configuration > Car Operation > Doors)	

Troubleshooting

Table 6.3 iControl Messages

iControl Messages	
Front Door Open Fault, FRONT DOOR OPEN FAULT	
Description: One or more front door failures to open fully detected. After repeated attempts to open door (as specified by user parameters), a door open failure is declared. Amount of time allowed for door to open and the number of attempts made are user parameters. iView Car Operation/Doors tab, plus Advanced dialog.	
Car Reaction: Door stalls at last position. Car calls are canceled and car removes itself from hall call service (hall calls assigned to this car are canceled or reassigned to other cars). Doors may be moved via constant pressure on door open and door close buttons.	
Troubleshooting:	
1. The door open status is determined by the front door open limit status. 2. Check the wiring of this signal. 3. Check door open protection timer and number of open attempts on Operation screen Doors tab and associated Advanced dialog.	
Front Door Open Time-out	
Description: Failure of front door to open detected. Controller will attempt to open doors for time defined by Opening protection timer (Door Motor Protection Timers). If timer elapses prior to doors opening fully, this event is generated.	
Car Reaction: Door open cycle is halted and door is allowed to reclose. If so configured, repeated attempts will be made to open the door. Otherwise, the car is allowed to leave the landing once the doors are closed.	
Troubleshooting:	
1. Door open status is determined by front door open limit and front door position monitor contact. 2. Check the wiring of these signals. 3. Check Opening protection timer, iView Car Operation Configuration/Doors Tab/Door Motor Protection Timers.	
Front Doors Stopped, FRONT DOORS STOPPED	
Description: The Door Stop button or Emergency Stop switch was activated causing the doors to be prevented from moving.	
Car Reaction: The car is not allowed to move unless the doors are fully closed.	
Troubleshooting: This condition can be cleared by activation of the Door Open button, Door Close button or if the car goes into Inspection or Fire Service mode, provided that the Door Stop input is off.	
Front DPM Open - GS Closed, F DPM OPEN-GS CLOSED	
Description: The front door position monitoring contact is open while the gate switch is closed.	
Car Reaction: None.	
Troubleshooting: Check the front door position monitoring contact, gate switch and all related circuitry.	
Front Hall Door Open Button Bypassed, FRONT HALL DOB BYP	
Description: The front hall door open button has been continuously activated for a user-defined time (Door open bypass timer) and is now bypassed in accordance with the user-defined setting (iView Controller > Configuration > Car Operation > Doors)	
Car Reaction: The front hall door open button is rendered inoperative.	
Troubleshooting:	
1. Check the corresponding input, Front Door - Hall Door Open Button: Normally low. 2. The operation of the hall door open button can also be restored by setting the Door open button bypass option to off (unchecked) (iView Controller > Configuration > Car Operation > Doors)	
Front Photo Eye Bypassed, FRONT PHOTO EYE BYP	
Description: The front photo eye device has been continuously activated for a user-defined time and is now bypassed in accordance to the user-defined setting. (iView/Car Operation/Passenger/Anti Nuisance.)	
Car Reaction: The front photo eye device is rendered inoperative.	
Troubleshooting:	
1. To restore the operation of the photo eye device, check the corresponding input. 2. Related inputs: PhotoEyeFront: Normally low	
Front Photo Eye 2 Bypassed, FRONT PHOTO EYE 2 BYP	

Table 6.3 iControl Messages

iControl Messages	
Description: The auxiliary front photo-eye device (required for Peele doors for PHE integrity tests) has been continuously activated for a user-defined time and is now bypassed in accordance to the user-defined settings (Configuration > Car Operation > Doors > Door Device > Photo Eye).	
Car Reaction: The auxiliary front photo eye device is rendered inoperative.	
Troubleshooting:	
1. To restore the operation of the photo eye device, check the corresponding input.	
2. The operation of the photo eye device can also be restored by changing the Photo Eye Bypass option to NO on iView.	
3. Related Inputs: PHE2 Front - Normally low.	
Front Photo Eye Failure, FRONT PHOTO EYE FAIL	
Description: This event is logged when the photo eye is continuously activated for a predetermined time (4 seconds) while the front doors are fully closed.	
Car Reaction: The front photo eye is rendered inoperative.	
Troubleshooting:	
1. Check for abnormal blockage or failure of the front optical device.	
2. Related inputs: FrontPhotoEye: Normally low	
Front Photo Eye Test Fail, FRONT PHOTO TEST FAIL	
Description: The front photo eye devices integrity test (required under section 2.13.3.4.9 of the A17.1a-2008/CSA B44a-08 elevator safety code) has failed. Indicating that one or both the main and auxiliary front photo eye devices are not functioning properly and unable to detect an object.	
Car Reaction: Car remains in service. Front doors are prevented from closing. The front photo eye devices integrity test is repeated until it is determined that both the main and auxiliary front photo eye devices are able to detect an object.	
Troubleshooting:	
1. Check that both the main auxiliary front photo eye devices are functioning properly and able to detect an object.	
2. Related Inputs: Front photo eye and PHE2 Front – Both Normally low	
Front Photo Eye 2 Failure, FRONT PHOTO EYE 2 FAIL	
Description: The auxiliary front photo eye device (required for Peele doors for PHE integrity tests) was continuously activated for a predetermined time (four seconds) while the front doors are fully closed.	
Car Reaction: The auxiliary front photo eye is rendered inoperative.	
Troubleshooting:	
1. Check for abnormal blockage or failure of the auxiliary front optical device.	
2. Related Inputs: PHE2 Front - Normally low	
Front Photo Eye 2 Test Failure, FRONT PHOTO EYE 2 TEST FAIL	
Description: This event is logged when the Front Photo Eye 2 input is ON while the front doors are fully closed.	
Troubleshooting: Check for abnormal blockage or failure of the front optical device. Related inputs: Front Photo Eye 2	
Front Safe Edge Bypassed, FRONT SAFE EDGE BYP	
Description: The front door safe edge has been continuously activated for a user-defined time and is now bypassed according to the user-defined setting. (iView Controller > Configuration > Car Operation > Doors)	
Car Reaction: The front safe edge is rendered inoperative.	
Troubleshooting:	
1. Check the state of the front safe edge input.	
2. Related inputs: SafeEdgeFront: Normally low	

Troubleshooting

Table 6.3 iControl Messages

iControl Messages	
Front Safe Edge Failure, FRONT SAFE EDGE FAIL	
Description: This event is logged when the front door safe edge is continuously activated for a predetermined time (4 seconds) while the front doors are fully closed.	
Car Reaction: The front door safe edge is rendered inoperative.	
Troubleshooting:	
1. Check for abnormal blockage or failure of the front door mechanical reopening device.	
2. Related inputs:	
FrontSafeEdge: Normally low	
Global Parameter Update, Reset Controller, PARAM CHNG-RESET CAR	
Description: Indicates controller parameters updated, controller reset required (iBox COMPUTER RESET).	
Car Reaction: Car is not allowed to run until parameter update completed and computer reset.	
Governor open, GOVERNOR OPEN	
Description: Gov input dropped. Will also cause an Ascending Car Overspeed Fault and set rope gripper if running up.	
Car Reaction: Emergency stop if running. The car is not allowed to run again until the problem is corrected.	
Troubleshooting:	
1. Check the GOV (Governor) input, connection, and function.	
Governor Speed Reduction Switch Fault, GOV SPEED SWITCH FLT	
Description: Generated if elevator is moving and Governor Speed Reduction Switch input goes low (input assigned via iView under Motor and Drive). Fault bypassed for Car/Counterweight Safety and Electrical Governor tests.	
Car Reaction: Immediate slowdown to leveling speed, stop at next floor and cycle the doors. Car is not allowed to run again until the fault is reset.	
Troubleshooting:	
1. Verify the state of the Governor Speed Reduction Switch and input.	
2. Reset the Governor Speed Reduction Switch and press the iBox Fault Reset button.	
Group Communication Established	
Description: The car has established communication with the main iCue dispatcher.	
Group Communication Established to iCue 1	
Description: Communication has been established to the main group (iCue 1).	
Car Reaction: The controller starts communicating and exchanging messages with the main group.	
Group Communication Established to iCue 2	
Description: Communication has been established to the backup or alternate group (iCue 2).	
Car Reaction: The controller starts communicating and exchanging messages with the backup or alternate group.	
Group Communication Established to Local Dispatcher	
Description: Communication has been established to the Local Dispatcher (another controller that has assumed the dispatcher functions).	
Car Reaction: The controller starts communicating and exchanging messages with the Local Dispatcher.	
Group Communication Lost	
Description: Communication with main iCue dispatcher has been lost.	
Car Reaction: Car establishes communication with backup dispatcher if one is selected. Otherwise car goes into emergency dispatch mode if that operation is not bypassed via the hardware override switch.	
Troubleshooting: Check the group to car communication related connections and parameters.	

Table 6.3 iControl Messages

iControl Messages	
Hall Call Bus 'n' Failure, HALL CALL BUS 'n' FAIL (n = 1 to 4)	
Description: There is no power to the named hall call bus.	
Car Reaction: No response to calls from the affected floor.	
Troubleshooting:	
1. Check bus fuses and connections.	
2. Test associated hall call bus driver.	
Hall Call Bypass Input OFF (see Hall Call Bypass Input ON)	
Hall Call Bypass Input ON, HALL CALL BYPASS INP.	
Description: Discrete input used to bypass hall calls.	
Car Reaction: Car takes itself out of hall call service. Hall calls remain registered until answered. Car is also not eligible for parking.	
Troubleshooting: Check the related discrete inputs.	
Hall Call Service Disabled	
Description: Car is rejecting hall calls (iBox <i>IN GROUP</i> indicator Off and <i>Hall call reject</i> status LED on iView Diagnostics > Diagnostic Outputs > Car Operation tab On) due to current mode of operation (Inspection, Test, Independent service, Capture) or fault condition.	
Car Reaction: Hall calls are rejected.	
Troubleshooting:	
1. Verify car is not on mode of operation in which hall calls are not accepted.	
2. Check iView Faults text box and Event Log for faults that would cause car to reject hall calls.	
3. If car is not responding to hall calls, but neither 1 or 2 apply, problem could be due to loss of communication with dispatcher, security settings, heavy load status or hall call system malfunction.	
Hall Call Service Enabled	
Description: Car is accepting hall calls (iBox <i>IN GROUP</i> indicator is On). See also, Hall Call Service Disabled.	
Heat Detectors Recall Activated, HEAT DETECTORS RECALL	
Description: A heat detector input has been activated.	
Car Reaction: A car parked at a floor will open its doors and shut down. A car in motion will proceed in current direction to next available floor where heat detector is not tripped. If all heat detectors in current direction are tripped, car will reverse direction and proceed to first floor where heat detector is not tripped. If again all heat detectors are tripped, car shall proceed to main fire recall floor. Once stopped at a floor car will automatically open doors and shut down.	
Heat Detectors Recall Complete	
Description: Indicates car has completed Heat Detectors Recall operation (reached a floor, doors fully open).	
Car Reaction: Car remains shut down until all heat detector inputs have been deactivated (see Heat Detectors Recall Deactivated).	
Heat Detectors Recall Deactivated	
Description: All heat detector inputs are deactivated.	
Car Reaction: The car is allowed to run.	
Heat Sensor Fault 'n' (n = 2 to 4)	
Description: Not currently used.	
Hoistway Access Disabled, HA INSP. DISABLED	
Description: Hoistway access inspection operation has been disabled.	
Car Reaction: The car cannot be run on hoistway access inspection operation.	
Troubleshooting:	
1. Check for any car status that might prevent hoistway access inspection operation, e.g. earthquake.	
2. Check for the Stuck Inspection Input Fault.	
3. Check all inspection buttons (Enable, Up, Down) and verify that none are stuck in the ON position.	
Hoistway Access Enabled	
Description: Hoistway access inspection operation which was previously disabled is now enabled.	

Troubleshooting

Table 6.3 iControl Messages

iControl Messages	
Hoistway Access Inspection Operation, Hoistway Access Operation, Hoistway Access	
Description: Car is on Hoistway access (enabled by the Hoistway access switch).	
Car Reaction: If running, the car will make an emergency stop and is taken out of normal service. Under this mode of operation, car can only be moved manually using the access key switches.	
Troubleshooting:	
1. Related inputs:	
HoistwayAccess: Normally high	
Hoistway Door Bypass, HOISTWAY DOOR BYPASS	
The Hoistway Door Bypass switch on the iBox is in the Bypass position. (View-only on iView Safety screen, enabled/disabled by MCE according to safety jurisdiction.) The ability to set this bypass must be enabled at the factory and is only available if allowed by safety regulations in your area. Check the iView Safety Configuration screen to see if the feature is enabled in your installation.	
Description:	
Car Reaction: The car is placed in Inspection mode. To move the car, you must place it in either cartop or car panel inspection mode. No other modes of operation are allowed.	
Hoistway Heat Detectors Activated, HOIST HEAT DETECTORS	
Description: The hoistway heat detector input is activated. The fire warning light will flash until all heat detectors have been reset. The fire-warning buzzer will sound until the car is shutdown at a floor.	
Car Reaction: A car that is parked at a floor will open its doors and shut down. A car in motion will proceed in the current direction to the next available floor where the heat detector is not tripped. If all heat detectors in the current direction are tripped, the car will reverse direction and proceed to the first floor where the heat detector is not tripped. If again all heat detectors are tripped, the car will proceed to the main fire recall floor unless the car is also on Fire Service, in which case the car will proceed to the appropriate fire recall floor. Once the car is stopped at a floor it will automatically open its doors and shut down. Then, if the machine room or hoistway heat detectors are active, a signal is provided to disconnect the main power line and/or activate the sprinklers where available.	
Hoistway Heat Detectors Deactivated	
Description: The hoistway heat detector input is deactivated.	
Car Reaction: The car is allowed to run.	
HOISTWAY LEARN ON	
Description: This status message, on the iBox display, indicates that the system is ready to perform the hoistway learn operation.	
IMP Firmware Updated	
Description: The IMP firmware was successfully updated.	
IMP Switch Fault - Car Door Bypass, IMP SW FLT:C DOOR BP	
Description: There is a problem with the iBox CAR DOOR BYPASS switch. Both poles must activate.	
Car Reaction: None	
Troubleshooting:	
1. Sometimes the switch fault can be temporarily cleared by toggling the switch multiple times.	
2. The iBox slide switches can be repaired using MCE part: IMP-SW-JUMPER-KIT.	
IMP Switch Fault - Emergency Stop, IMP SW FAULT: EM STOP	
Description: There is a problem with the iBox CONTROLLER STOP switch. Both poles must activate.	
Car Reaction: If stopped, the car is immediately shut down and taken out of service for all types of demands, including fire and medical emergencies. If the switch fault is detected while running, the car is allowed to reach its next destination before shutting down.	
Troubleshooting:	
1. Sometimes the switch fault can be temporarily cleared by toggling the switch multiple times.	
2. The iBox slide switches can be repaired using MCE part: IMP-SW-JUMPER-KIT.	

Table 6.3 iControl Messages

iControl Messages	
IMP Switch Fault - Fault Bypass, IMP SW FAULT: FLT BYP	
Description: There is a problem with the iBox FAULT/FUNCTION BYPASS switch. Both poles must activate.	
Car Reaction: None	
Troubleshooting:	
1. Sometimes the switch fault can be temporarily cleared by toggling the switch multiple times. 2. The iBox slide switches can be repaired using MCE part: IMP-SW-JUMPER-KIT.	
IMP Switch Fault - Hoistway Door Bypass, IMP SW FLT: H DOOR BP	
Description: There is a problem with the iBox HOISTWAY DOOR BYPASS switch. Both poles must activate.	
Car Reaction: None	
Troubleshooting:	
1. Sometimes the switch fault can be temporarily cleared by toggling the switch multiple times. 2. The iBox slide switches can be repaired using MCE part: IMP-SW-JUMPER-KIT.	
IMP Switch Fault - Inspection, IMP SW FAULT: INSP	
Description: There is a problem with the iBox INSPECTION switch. Both poles must activate.	
Car Reaction: If stopped, the car is immediately shut down and taken out of service for all types of demands, including fire and medical emergencies. If the switch fault is detected while running, the car is allowed to reach its next destination before shutting down.	
Troubleshooting:	
1. Sometimes the switch fault can be temporarily cleared by toggling the switch multiple times. 2. The iBox slide switches can be repaired using MCE part: IMP-SW-JUMPER-KIT.	
IMP Switch Fault - Inspection DOWN, IMP SW FAULT: INSP DN	
Description: There is a problem with the iBox Inspection DOWN switch. Both poles must activate.	
Car Reaction: None	
IMP Switch Fault - Inspection Enable, IMP SW FAULT: INSP EN	
Description: There is a problem with the iBox Inspection ENABLE switch. Both poles must activate.	
Car Reaction: None	
IMP Switch Fault - Inspection UP, IMP SW FAULT: INSP UP	
Description: There is a problem with the iBox Inspection UP switch. Both poles must activate.	
Car Reaction: None	
IMP Switch Fault - Learn, IMP SW FAULT: LEARN	
Description: There is a problem with the iBox LEARN switch. Both poles must activate.	
Car Reaction: None	
Troubleshooting:	
1. Sometimes the switch fault can be temporarily cleared by toggling the switch multiple times. 2. The iBox slide switches can be repaired using MCE part: IMP-SW-JUMPER-KIT.	
IMP Switch Fault - None, IMP SW FAULT: NONE	
Description: This message is generated when an IMP switch fault has occurred and is then cleared. If multiple switch faults occur at the same time, the message is generated when all faults have been cleared.	
Car Reaction: If the car had been shut down due to the IMP switch faults, it is cleared to run again.	
IMP Switch Fault - Test, IMP SW FAULT: TEST	
Description: There is a problem with the iBox TEST switch. Both poles of this switch must activate.	
Car Reaction: None	
Troubleshooting:	
1. Sometimes the switch fault can be temporarily cleared by toggling the switch multiple times. 2. The iBox slide switches can be repaired using MCE part: IMP-SW-JUMPER-KIT.	

Troubleshooting

Table 6.3 iControl Messages

iControl Messages	
IMP Switch Fault - Write Enable, IMP SW FLT: WRITE EN	
Description: There is a problem with the iBox WRITE ENABLE switch. Both poles must activate.	
Car Reaction: None	
Troubleshooting:	
- Sometimes the switch fault can be temporarily cleared by toggling the switch multiple times. - The iBox slide switches can be repaired using MCE part: IMP-SW-JUMPER-KIT.	
Independent Service, Independent Svc	
Description: Indicates that the Independent Service switch has been activated.	
Car Reaction: Car and door operation in accordance to user-defined settings for independent service. (iView/Car Operation/Independent Service.) Car does not respond to hall calls.	
Troubleshooting:	
If reported in error, check the Independent Service switch and wiring.	
Inspection Operation, Inspection	
Description: The car is operating in Inspection mode.	
Car Reaction: One of the inspection modes (in-car, machine room, or cartop) is active. The car will operate using the Inspection performance pattern.	
Inspection Overspeed Fault	
Description: While operating in Inspection mode, the car exceeded the Inspection Overspeed setting on the iView Safety Configuration screen.	
Car Reaction: Emergency stop: Motor contactor and brake contactor immediately dropped.	
Troubleshooting:	
- The fault will automatically clear 5 seconds after the car stops. The car is then allowed to run again. - If reported in error, check the Inspection Overspeed setting on the Safety Configuration screen. - Check the iView event log for any events immediately preceding the overspeed fault. - Determine and correct the cause of the overspeed.	
Insufficient Brake Feedback Fault, INSFCNT BRK FDBK FLT	
Description: Brake current feedback is abnormally low.	
Car Reaction: Emergency stop: Motor contactor and brake contactor immediately dropped.	
Troubleshooting:	
- Check DB-25 connector from iField module to iBox is seated properly. - Check power supply on brake iField module. - Verify all wiring connections on the brake (BK) contactors are properly terminated and conducting. - Verify brake voltage parameters. - If used, verify iField Module setting for terminals FMCI and FMHC. Please refer to "IFIELD-MODULE-L Terminals on the ICE-FM Board (Brake Module)" on page 6-101. - Verify that the brake is properly calibrated. Please refer to "Calibrating Actual Car Speed (System 12 SCR Drive)" on page 2-38. Please refer to "Brake Parameter Adjustments" on page 4-27. - Check Brake voltage on the Operational Status tab. If the value goes below 0.00 volts, and/or the drive offset (Input ADC) was recently calibrated or adjusted, verify / set the Input ADC = 0.0 on the Configuration > Drive > Calibration tab.	
Insufficient Motor Field Feedback Fault, INSFCNT MF FDBK FLT	
Description: Indicates that Motor Current Feedback signal is less than 50% of the commanded field current.	
Car Reaction: If detected four times over seven runs the car will shut down.	
Troubleshooting:	
- Check motor field AC supply off isolation transformer. - Check connections from controller to motor. - Check connections to iField motor module. - Check for open fuses. - Recalibrate motor field.	

Table 6.3 iControl Messages

iControl Messages	
Insufficient Motor Field Forcing Feedback Fault, INSFCNT MF FORCNG FLT	
Description: Motor field voltage is inadequate. DC motors only.	
Troubleshooting:	
1. Verify motor field voltage parameters. 2. The motor field may be improperly calibrated. Check settings (iView Motor Configuration screen). 3. Recalibrate motor field if necessary.	
Invalid Configuration BALRQ, INVALID CNFG BALRQ	
Description: Bottom Access Landing Rear Qualifier. The safety system has detected the improper use of BALRQ option on the iView safety configuration screen.	
Car Reaction: Safety OK status remains off.	
Troubleshooting:	
1. Check that the Safety Configuration, Bottom Access Landing Rear option is properly set.	
Invalid Configuration Input, INVALID CNFG INPUT	
Description: An invalid input was discovered when cross checking safety inputs against safety configuration.	
Car Reaction: Emergency stop: Motor contactor and brake contactor immediately dropped.	
Troubleshooting:	
1. Check car setup/wiring against Safety Screen configuration. 2. Press Fault Reset to clear. 3. Re-learn Safety Configuration.	
Invalid Configuration Input Off (See: Invalid Configuration Input)	
Invalid Configuration Input CTEX, INVLD CNFG INPUT CTEX	
Description: Cartop Emergency Exit. The safety system detected an input/safety setting difference when cross checking inputs against configuration.	
Car Reaction: Emergency stop: Motor contactor and brake contactor immediately dropped.	
Troubleshooting:	
1. Verify car setup/wiring matches the Safety screen setting for the option. 2. Press Fault Reset to clear. 3. Re-learn the Safety Configuration.	
Invalid Configuration Input DCAB, INVLD CNFG INPUT DCAB	
Description: Door Close Access Bottom. The safety system detected an input/safety setting difference when cross checking inputs against configuration.	
Car Reaction: Emergency stop: Motor contactor and brake contactor immediately dropped.	
Troubleshooting:	
1. Verify car setup/wiring matches the Safety screen setting for the option. 2. Press Fault Reset to clear. 3. Re-learn the Safety Configuration.	
Invalid Configuration Input DCAT, INVLD CNFG INPUT DCAT	
Description: Door Close Access Top. The safety system detected an input/safety setting difference when cross checking inputs against configuration.	
Car Reaction: Emergency stop: Motor contactor and brake contactor immediately dropped.	
Troubleshooting:	
1. Verify car setup/wiring matches the Safety screen setting for the option. 2. Press Fault Reset to clear. 3. Re-learn the Safety Configuration.	

Troubleshooting

Table 6.3 iControl Messages

iControl Messages	
Invalid Configuration Input DCMS, INVLD CNFG INPUT DCMS	
Description: Door Close Main String. The safety system detected an input/safety setting difference when cross checking inputs against configuration.	
Car Reaction: Emergency stop: Motor contactor and brake contactor immediately dropped.	
Troubleshooting:	
1. Verify car setup/wiring matches the Safety screen setting for the option. 2. Press Fault Reset to clear. 3. Re-learn the Safety Configuration.	
Invalid Configuration Input DCMS R, INV CNFG INPUT DCMS R	
Description: Door Close Main String Rear. The safety system detected an input/safety setting difference when cross checking inputs against configuration.	
Car Reaction: Emergency stop: Motor contactor and brake contactor immediately dropped.	
Troubleshooting:	
1. Verify car setup/wiring matches the Safety screen setting for the option. 2. Press Fault Reset to clear. 3. Re-learn the Safety Configuration.	
Invalid Configuration Input DLAB, INVLD CNFG INPUT DLAB	
Description: Door Lock Access Bottom. The safety system detected an input/safety setting difference when cross checking inputs against configuration.	
Car Reaction: Emergency stop: Motor contactor and brake contactor immediately dropped.	
Troubleshooting:	
1. Verify car setup/wiring matches the Safety screen setting for the option. 2. Press Fault Reset to clear. 3. Re-learn the Safety Configuration.	
Invalid Configuration Input DLAT, INVLD CNFG INPUT DLAT	
Description: Door Lock Access Top. The safety system detected an input/safety setting difference when cross checking inputs against configuration.	
Car Reaction: Emergency stop: Motor contactor and brake contactor immediately dropped.	
Troubleshooting:	
1. Verify car setup/wiring matches the Safety screen setting for the option. 2. Press Fault Reset to clear. 3. Re-learn the Safety Configuration.	
Invalid Configuration Input DLMS, INVLD CNFG INPUT DLMS	
Description: Door Lock Main String. The safety system detected an input/safety setting difference when cross checking inputs against configuration.	
Car Reaction: Emergency stop: Motor contactor and brake contactor immediately dropped.	
Troubleshooting:	
1. Verify car setup/wiring matches the Safety screen setting for the option. 2. Press Fault Reset to clear. 3. Re-learn the Safety Configuration.	
Invalid Configuration Input DLMS R, INV CNFG INPUT DLMS R	
Description: Door Lock Main String Rear. The safety system detected an input/safety setting difference when cross checking inputs against configuration.	
Car Reaction: Emergency stop: Motor contactor and brake contactor immediately dropped.	
Troubleshooting:	
1. Verify car setup/wiring matches the Safety screen setting for the option. 2. Press Fault Reset to clear. 3. Re-learn the Safety Configuration.	

Table 6.3 iControl Messages

iControl Messages	
Invalid Configuration Input DPM, INVLD CNFG INPUT DPM	
Description: Door Position Monitoring. The safety system detected an input/safety setting difference when cross checking inputs against configuration.	
Car Reaction: Emergency stop: Motor contactor and brake contactor immediately dropped.	
Troubleshooting:	
1. Verify car setup/wiring matches the Safety screen setting for the option. 2. Press Fault Reset to clear. 3. Re-learn the Safety Configuration.	
Invalid Configuration Input DPM R, INV CNFG INPUT DPM_R	
Description: Door Position Monitoring Rear. The safety system detected an input/safety setting difference when cross checking inputs against configuration.	
Car Reaction: Emergency stop: Motor contactor and brake contactor immediately dropped.	
Troubleshooting:	
1. Verify car setup/wiring matches the Safety screen setting for the option. 2. Press Fault Reset to clear. 3. Re-learn the Safety Configuration.	
Invalid Configuration TALRQ, INVALID CNFG TALRQ	
Description: Top Access Landing Rear Qualifier. The safety system detected an input/safety setting difference when cross checking inputs against configuration.	
Car Reaction: Safety OK remains off.	
Troubleshooting:	
1. Verify car setup/wiring matches the Safety screen setting for the option. 2. Press Fault Reset to clear. 3. Re-learn the Safety Configuration.	
Invalid Configuration Inventory Cross Check BALRQ INV INVTRY XCHK BALRQ	
Description: Bottom Access Landing Rear Qualifier. The safety system detected a configuration/inventory (board complement) difference when cross checking board complement against system configuration.	
Car Reaction: Safety OK remains off.	
Troubleshooting:	
1. Verify that the Configuration settings on the Setup > Safety > Configuration tab match the car options/wiring. Any rear door options require a rear door board be attached to the safety expansion bus. Likewise, a rear door board attached to the safety expansion bus requires at least one rear door option be selected on the Safety Configuration (Setup > Safety > Configuration tab). 2. If the safety configuration is incorrect, make appropriate changes and re-learn the new configuration using the Learn operation on the Setup > Safety > Configuration tab. 3. Re-learn inventory of boards using Inventory Learn procedure on the Setup > Safety > Inventory tab. 4. Reset the fault (press the iBox FAULT RESET button).	
Invalid Configuration Inventory Cross Check DCCOR, INV INVTRY XCHK DCCOR	
Description: Door Close Contact Rear. The safety system detected a configuration/inventory (board complement) difference when cross checking board complement against system configuration.	
Car Reaction: Safety OK remains off.	
Troubleshooting:	
1. Verify that the Configuration settings on the Setup > Safety > Configuration tab match the car options/wiring. Any rear door options require a rear door board be attached to the safety expansion bus. Likewise, a rear door board attached to the safety expansion bus requires at least one rear door option be selected on the Safety Configuration (Setup > Safety > Configuration tab). 2. If the safety configuration is incorrect, make appropriate changes and re-learn the new configuration using the Learn operation on the Setup > Safety > Configuration tab. 3. Re-learn inventory of boards using Inventory Learn procedure on the Setup > Safety > Inventory tab. 4. Reset the fault (press the iBox FAULT RESET button).	

Troubleshooting

Table 6.3 iControl Messages

iControl Messages	
Invalid Configuration Inventory Cross Check NMS R, INV INVENTORY XCHK NMS R	
Description: No Main String Rear. The safety system detected a configuration/inventory (board complement) difference when cross checking board complement against system configuration.	
Car Reaction: Safety OK remains off.	
Troubleshooting:	
1. Verify that the Configuration settings on the Setup > Safety > Configuration tab match the car options/wiring. Any rear door options require a rear door board be attached to the safety expansion bus. Likewise, a rear door board attached to the safety expansion bus requires at least one rear door option be selected on the Safety Configuration (Setup > Safety > Configuration tab). 2. If the safety configuration is incorrect, make appropriate changes and re-learn the new configuration using the Learn operation on the Setup > Safety > Configuration tab. 3. Re-learn the inventory of boards using the Inventory Learn procedure on the Setup > Safety > Inventory tab. 4. Reset the fault (press the iBox FAULT RESET button).	
Invalid Configuration Inventory Cross Check RD Board, INV INVENTORY XCHK RD BD	
Description: Rear Door board. Safety system detected a configuration/inventory (board complement) difference when cross checking board complement against system configuration.	
Car Reaction: Safety OK remains off.	
Troubleshooting:	
1. Verify Configuration settings on Setup > Safety > Configuration tab match car options/wiring. Any rear door options require a rear door board. Likewise, a rear door board requires at least one rear door option be selected on Safety Configuration (Setup > Safety > Configuration tab). 2. If safety configuration is incorrect, make changes, re-learn configuration using Learn operation on Setup > Safety > Configuration tab. 3. Re-learn inventory of boards using Inventory Learn procedure on Setup > Safety > Inventory tab. 4. Reset the fault (press the iBox FAULT RESET button).	
Invalid Configuration Inventory Cross Check RDOPT, INV INVENTORY XCHK RDOPT	
Description: Rear Door Option. The safety system detected a configuration/inventory (board complement) difference when cross checking board complement against system configuration.	
Car Reaction: Safety OK remains off.	
Troubleshooting:	
1. Verify Configuration settings on Setup > Safety > Configuration tab match car options/wiring. Any rear door options require a rear door board. Likewise, a rear door board requires at least one rear door option be selected on Safety Configuration (Setup > Safety > Configuration tab). 2. If safety configuration is incorrect, make changes and re-learn configuration using Learn operation on Setup > Safety > Configuration tab. 3. Re-learn board inventory using Inventory Learn procedure on Setup > Safety > Inventory tab. 4. Reset the fault (press the iBox FAULT RESET button).	
Invalid Configuration Inventory Cross Check RG Board, INV INVENTORY XCHK RG BD	
Description: Rope Gripper board. Safety system detected a configuration/inventory (board complement) difference when cross checking board complement against system configuration.	
Car Reaction: Safety OK remains off.	
Troubleshooting:	
1. Verify Configuration settings on Setup > Safety > Configuration tab match car options/wiring. Any emergency brake options require an emergency brake. Likewise, an emergency brake board requires at least one emergency brake option be selected on Safety Configuration (Setup > Safety > Configuration tab). 2. If safety configuration is incorrect, make changes and re-learn configuration using Learn operation on Setup > Safety > Configuration tab. 3. Re-learn board inventory using Inventory Learn procedure on the Setup > Safety > Inventory tab. 4. Reset the fault (press the iBox FAULT RESET button).	

Table 6.3 iControl Messages

iControl Messages	
Invalid Configuration Inventory Cross Check RGOPT, INV INVTRY XCHK RGOPT	
Description: Rope Gripper Option. Safety system detected a configuration/inventory (board complement) difference when cross checking board complement against system configuration.	
Car Reaction: Safety OK remains off.	
Troubleshooting:	
1. Verify Configuration settings on Setup > Safety > Configuration tab match car options/wiring. Any emergency brake options require an emergency brake board. Likewise, an emergency brake board requires at least one emergency brake option selected on Safety Configuration (Setup > Safety > Configuration). 2. If safety configuration is incorrect, make changes and re-learn configuration using Learn operation on Setup > Safety > Configuration tab. 3. Re-learn board inventory using Inventory Learn procedure on Setup > Safety > Inventory tab. 4. Reset fault (press iBox FAULT RESET button).	
Invalid Configuration Inventory Cross Check TALRQ, INV INVTRY XCHK TALRQ	
Description: Top Access Landing Rear Qualifier. The safety system detected a configuration/inventory (board complement) difference when cross checking board complement against system configuration.	
Car Reaction: Safety OK remains off.	
Troubleshooting:	
1. Verify Configuration settings on Setup > Safety > Configuration tab match car options/wiring. Any rear door options require a rear door board. Likewise, a rear door board requires at least one rear door option selected on Safety Configuration (Setup > Safety > Configuration tab). 2. If safety configuration is incorrect, make changes and re-learn new configuration using Learn operation on Setup > Safety > Configuration tab. 3. Re-learn board inventory using Inventory Learn procedure on Setup > Safety > Inventory tab. 4. Reset fault (press iBox FAULT RESET button).	
Invalid Destination, INVALID DESTINATION	
Description: The car has been assigned to a destination floor that does not have an opening.	
Car Reaction: Car ignores the demand.	
Troubleshooting: Check the current mode of operation and check the corresponding recall floor and verify that the floor is set to a floor with an opening.	
Invalid Front Door Position, INVLD FRONT DOOR PSTN	
Description: The front door inputs are in an invalid state (i.e.: doors open and closed at the same time).	
Car Reaction: Car is taken out of service and doors will stall.	
Troubleshooting:	
1. Check all the front door inputs and wiring. 2. Related inputs: - FrontDoorCloseLimit: Low when the doors are fully closed - FrontDoorPositionMonitoring: High when the doors are fully closed - FrontDoorOpenLimit: Low when doors are fully open - FrontCarGate: High when doors are fully closed	
Invalid Input (See: Invalid Configuration Input)	
Invalid Rear Door Position, INVLD REAR DOOR PSTN	
Description: The rear door inputs are in an invalid state (i.e., doors open and closed at the same time).	
Car Reaction: Car is taken out of service and doors will stall.	
Troubleshooting:	
1. Check all the rear door inputs and wiring. 2. Related inputs: - RearDoorCloseLimit: Low when the doors are fully closed - RearDoorPositionMonitoring: High when the doors are fully closed - RearDoorOpenLimit: Low when doors are fully open - RearCarGate: High when doors are fully closed	

Troubleshooting

Table 6.3 iControl Messages

iControl Messages	
IO Map Compare Fault, IO MAP COMPARE FAULT	
Description: Safety A IO Map did not match Safety B IO Map.	
Car Reaction: If running, car makes an emergency stop. Car is not allowed to run.	
Troubleshooting:	
1. Before the fault has been cleared, you can access additional information about this fault by clicking the <i>Generate IO Map Fault Report</i> button on the iView > Controller > View > Diagnostics > Data Trap tab. 2. Press the Fault Reset button to clear the fault. 3. If problem persists it is an indication that the iBox may need to be replaced. Consult MCE Technical Support for instructions.	
IO Map Compare Fault Off (See: IO Map Compare Fault)	
IO Map Compare Long Term Fault, IO MAP COMPARE LT FLT	
Description: Safety A long term products did not match Safety B long term products for 1.2 seconds.	
Car Reaction: If running, car makes an emergency stop. Car is not allowed to run.	
Troubleshooting:	
1. Press the Fault Reset button to clear the fault. 2. If problem persists it is an indication that the iBox may need to be replaced. Consult MCE Technical Support for instructions.	
IO Map Toggle Compare Fault, IO MAP TOGGLE COMP FLT	
Description: The failure of a safety input was detected during the "input toggle test" (performed at the end of each run). This test verifies the proper operation of safety system inputs that normally remain unchanged during the course of elevator operation.	
Car Reaction: Emergency stop: Motor contactor and brake contactor immediately dropped.	
Troubleshooting:	
1. Before the fault has been cleared, you can access additional information about this fault by clicking the <i>Generate IO Map Fault Report</i> button on the iView > Controller > View > Diagnostics > Data Trap tab. 2. Press the Fault Reset button to clear the fault. 3. If problem persists it is an indication that the iBox may need to be replaced. Consult MCE Technical Support for instructions.	
IO Map Toggle Compare Fault Off (See: IO Map Toggle Compare Fault)	
iView Logged Off. Passenger operation. A previously active iView connection to the controller has logged off.	
iView Logged On. Passenger operation. An iView user has logged on to the controller.	
iView Lost Connection. An iView connection has been dropped.	
iView Timed Out. An iView connection was inactive for a period of time beyond the idle time out and has been disconnected.	
Jail Master Mode	
Description: The car has been placed in Jail Master Mode via the Jail Master Mode Input or via the Jail Operation PC application.	
Car Reaction: The car operates as configured via the Jail > Master mode parameters.	
Jail Secure Mode	
Description: Car placed in Jail Secure Mode via Jail Secure Mode Input or Jail Operation PC application.	
Car Reaction: The car operates as configured via the Jail > Secure mode parameters.	
KTR Machine Brake Pressure Switch Fault (Custom Event)	
Description: A pressure switch fault was detected on the KTR brake controller (machine brake).	
Car Reaction: Car performs an emergency stop.	
Troubleshooting: Refer to the KTR brake controller manual for troubleshooting information.	
KTR Machine Brake Oil Level Fault (Custom Event)	
Description: A low oil level was detected on the KTR brake controller (machine brake).	
Car Reaction: Car stops at next call destination.	

Table 6.3 iControl Messages

iControl Messages	
Troubleshooting:	
1. Refer to the KTR brake controller manual for troubleshooting information.	
KTR Machine Brake Oil Temperature Fault (Custom Event)	
Description: A high oil temperature was detected on the KTR brake controller (machine brake).	
Car Reaction: Car stops at next call destination.	
Troubleshooting:	
1. Refer to the KTR brake controller manual for troubleshooting information.	
KTR Machine Brake Motor Protection Fault (Custom Event)	
Description: A motor protection fault was detected on the KTR brake controller (machine brake).	
Car Reaction: Car performs an emergency stop.	
Troubleshooting:	
1. Refer to the KTR brake controller manual for troubleshooting information.	
KTR Machine Brake Pad Wear Fault (Custom Event)	
Description: The KTR brake controller has detected excessive brake pad wear (machine brake).	
Car Reaction: This is an informational event.	
Troubleshooting:	
1. Refer to the KTR brake controller manual for troubleshooting information.	
KTR Emergency Brake Pressure Switch Fault (Custom Event)	
Description: A pressure switch fault was detected on the KTR brake controller (emergency brake).	
Car Reaction: Car performs an emergency stop.	
Troubleshooting:	
1. Refer to the KTR brake controller manual for troubleshooting information.	
KTR Emergency Brake Oil Level Fault (Custom Event)	
Description: A low oil level was detected on the KTR brake controller (emergency brake).	
Car Reaction: Car stops at next call destination.	
Troubleshooting:	
1. Refer to the KTR brake controller manual for troubleshooting information.	
KTR Emergency Brake Oil Temperature Fault (Custom Event)	
Description: A high oil temperature was detected on the KTR brake controller (emergency brake).	
Car Reaction: Car stops at next call destination.	
Troubleshooting:	
1. Refer to the KTR brake controller manual for troubleshooting information.	
KTR Emergency Brake Motor Protection Fault (Custom Event)	
Description: A motor protection fault was detected on the KTR brake controller (emergency brake).	
Car Reaction: Car performs an emergency stop.	
Troubleshooting:	
1. Refer to the KTR brake controller manual for troubleshooting information.	
KTR Emergency Brake Pad Wear Fault (Custom Event)	
Description: The KTR brake controller has detected excessive brake pad wear (emergency brake).	
Car Reaction: This is an informational event.	
Troubleshooting:	
1. Refer to the KTR brake controller manual for troubleshooting information.	

Troubleshooting

Table 6.3 iControl Messages

iControl Messages	
Landing System Sensor Fault, LAND SYS SENSOR FAULT	
Description: Generated if ULM or DLM sensor activated while car running and away from floor. May be generated if M contactor ON (car commanded to run) and safety system sees a door zone magnet for more than 16 inches of single direction travel.	
Car Reaction: Emergency Stop. Motor and brake contactors immediately dropped.	
Troubleshooting:	
1. Press Fault Reset to clear. 2. If allowed, set Contactor Drop Delay Time to 0.9 seconds. 3. Check for stuck door zone sensor input (front or rear).	
LCD Fault	
Description: Generated if controller gets a "not ready" state from LCD. This can happen if iBox LCD is not connected properly or, with some LCD models, if contrast is set to far to an extreme.	
Car Reaction: None. The fault is simply an indication to adjust or replace the iBox LCD.	
Troubleshooting:	
1. Check the iBox Onboard Display LCD. If the LCD is blank or frozen, adjust the contrast dial to midpoint. 2. If the display looks corrupted, press the iBox Computer Reset button.	
Learn Switch Timed Out Fault, LEARN SW TIMED OUT	
Description: When the Learn Switch is ON for more than 15 minutes, the car will shut down.	
Car Reaction: The car is not allowed to restart after the current run is completed.	
Troubleshooting:	
1. Turn OFF the iBox Learn switch. 2. If more time is needed in Learn mode, turn the Learn switch back ON to reset the fifteen minute timer.	
Learn U/DNT1-5 and U/DETS Positions, LEARN U/DTS POSITIONS	
Description: The positions for the normal and emergency terminal limit switches have not been learned.	
Car Reaction: The elevator can only be run on Inspection or Test modes.	
Troubleshooting: Perform normal and emergency terminal limit switches learn (Learn tab on iView Terminal Switches Configuration screen)	
Learn U/DNT1-5 and U/DETS Speeds, LEARN U/DTS SPEEDS	
Description: The speeds for the normal and emergency terminal limit switches have not been learned.	
Car Reaction: The elevator can only be run on Inspection or Test modes.	
Troubleshooting: Perform normal and emergency terminal limit switches learn operation (Learn tab on the iView Terminal Switches Configuration screen)	
Learning Empty Load Values, LEARNING EMPTY LOAD	
Description: Empty car load learn calibration has been initiated.	
Car Reaction: Car will start load learn process.	
Learning Full Load Values, LEARNING FULL LOAD	
Description: Full car load learn calibration has been initiated.	
Car Reaction: Car will start load learn process.	
Light Load Anti-nuisance	
Description: Light load anti-nuisance operation. Load in car is less than programmed Light Load Threshold.	
Car Reaction: Anti-nuisance feature limits number of car calls registered. If exceeded, all car calls canceled.	
Troubleshooting:	
1. If in error, verify "Light Load Threshold" value. (Adjust on Load Weigher Configuration screen.) 2. Verify user-defined number of car calls allowed if car load less than Light Load Threshold. 3. Check if load in car is less than the Light Load Threshold value. Calibrate the load weigher if necessary. 4. For discrete input load weighers, check the Light Load input shown on the job prints.	

Table 6.3 iControl Messages

iControl Messages	
Limit Switches Checksum Fault, LIMIT SW CHKSUM FAULT	
Description:	Learned ETS and NTS limit switch speed values have Invalid Checksum in nonvolatile memory. An invalid checksum means that the data stored may not be reliable.
Car Reaction:	Emergency stop: Motor contactor and brake contactor immediately dropped.
Troubleshooting:	1. Relearn Hoistway limit switches. Use the Default option on the Terminal Switch learning screen.
Limit Switches Learn Fault, LIMIT SW LEARN FAULT	
Description:	Safety Processor A experienced a failure when storing learned limit switch speed values to non-volatile memory.
Car Reaction:	Emergency stop: Motor contactor and brake contactor immediately dropped.
Troubleshooting:	1. Press the Fault Reset button to clear the fault. 2. If problem persists, consult MCE Technical Support.
Load Calibration On, LOAD CALIBRATION ON	
Description:	Load learn calibration has been initiated.
Car Reaction:	Car will start load learn process.
Load Learn Process Activated. See Load Calibration On.	
Load Learn Process Deactivated	
Load Weigher Zero Calibration: Complete	
Description:	Load weigher zero calibration has completed.
Load Weigher Zero Calibration: Manual	
Description:	Load weigher zero calibration manually initiated.
Load Weigher Zero Calibration: Periodic	
Description:	Load weigher periodic zero calibration initiated.
Load Weigher Zero Calibration: Recall	
Description:	Load weigher zero calibration recall initiated.
Load Weigher Zero Calibration: Recall Aborted/Pending	
Description:	Load weigher zero calibration recall waiting to execute or aborted after beginning execution.
Lobby Peak Mode, LOBBY PEAK MODE	
Description:	The elevator is operating in lobby peak mode, favoring traffic coming from the lobby.
Local / Dispatcher Activated, LOCAL DISPATCHER	
Description:	Communication with the central or local dispatcher has been lost or not established. This car controller is acting as the Local / Dispatcher.
Car Reaction:	Car establishes communication with other cars in group and assumes dispatching.
Troubleshooting:	Check the system communication related connections and parameters.
Local / Dispatcher Deactivated	
Description:	This car is no longer performing the dispatching functions.
LOGF Enhanced Diagnostics ON	
Description:	The enhanced diagnostics to log some troubleshooting info to the controller's log files (LOGF, LOGF2, LOGF3) has been enabled via the (Diagnostics > Enhanced Diagnostics)
LOGF Enhanced Diagnostic OFF	
Description:	The enhanced diagnostics to log some troubleshooting info to the controller's log files (LOGF, LOGF2, LOGF3) has been disable via the (Diagnostics > Enhanced Diagnostics)

Troubleshooting

Table 6.3 iControl Messages

iControl Messages	
Loss of Position or Speed Indicators, LOSS OF POS/SPD IND	
Description: A discrepancy was detected between the feedback signal from motor encoder and the velocity feedback signal from the car top, indicating a loss of traction.	
Car Reaction: Emergency Stop. Latched fault must be manually reset.	
Troubleshooting:	
1. Examine ropes and sheaves for slippage, wear or damage. 2. On iView oscilloscope or DVM connected between STP1 and STP2, compare Pattern Command and Speed Feedback. They must match within 0.050 VDC while car is running at steady speed. If not, adjust TACH ADJ trimpot. Please refer to "Following Error Margin" on page 2-43. 3. Use hand-held tach to verify car speed. If actual speed does not match commanded speed, adjust motor parameter LF.22. Please refer to "Set the Following Error" on page 2-43. 4. Run the car on inspection and check the speed displayed on the iBox display.	
Mac Address Error, MAC ADDRESS ERROR	
Description: The iBox has detected that one of its three MAC addresses has been defaulted or set to zero. This could lead to multiple cars having the same MAC address, which will cause network problems.	
Car Reaction: None.	
Troubleshooting: Remove iBox front cover. On iBox OBD select Car > View Factory Data > MAC Addresses. Verify MAC addresses displayed on LCD match addresses on barcodes on ICE-IMP board. Correct if needed.	
Machine Room Heat Detectors Activated, MR HEAT DETECTORS	
Description: The machine room heat detector input is activated. The fire warning light will flash until all heat detectors have been reset. The fire-warning buzzer will sound until the car is shutdown at a floor.	
Car Reaction: A car parked at a floor will open its doors and shut down. A car in motion will proceed in current direction to next available floor where heat detector is not tripped. If all heat detectors in current direction are tripped, car will reverse direction and proceed to first floor where heat detector is not tripped. If again all heat detectors are tripped, car will proceed to main fire recall floor unless the car is also on Fire Service, in which case the car will proceed to the appropriate fire recall floor. Once the car is stopped at a floor it will automatically open its doors and shut down. Then, if the machine room or hoistway heat detectors are active, a signal is provided to disconnect the main power line and/or activate the sprinklers where available.	
Machine Room Heat Detectors Deactivated	
Description: The machine room heat detector input is deactivated.	
Car Reaction: The car is allowed to run.	
Machine Room Inspection Disabled, MR INSP. DISABLED	
Description: Machine room inspection operation has been disabled.	
Car Reaction: The car cannot be run on machine room inspection operation.	
Troubleshooting:	
1. Check for any car status that might prevent machine room inspection operation, e.g. earthquake. 2. Check for the Stuck Inspection Input Fault. 3. Check all inspection buttons (Enable, Up, Down) and verify that none are stuck in the ON position.	
Machine Room Inspection Enabled	
Description: Machine room inspection operation which was previously disabled is now enabled.	
Machine Room Inspection Operation, Machine Rm Inspection, Mach Rm Insp	
Description: Car placed in Machine Room Inspection operation using the iBox Inspection switch.	
Car Reaction: Car begins operating in Inspection mode. If running, the car will make an emergency stop and is taken out of normal service. Under this mode of operation, car can only be moved manually using the iBox Inspection Up and Down switches.	
Troubleshooting:	
1. Related inputs: MachineRoomInspection: Normally high	

Table 6.3 iControl Messages

iControl Messages	
Machine Room Stop Switch Open, MR STOP SWITCH OPEN	
Description: The machine room stop switch input has dropped.	
Car Reaction: Emergency stop if running. The car is not allowed to run until the problem is corrected.	
Troubleshooting:	
1. Check the Machine Room stop switch on the front panel of the iBox.	
Main Floor Smoke Sensor Recall, MAIN FLOOR SMOKE	
Description: Recall to the alternate fire floor due to active or latched smoke detector inputs from the main floor.	
Car Reaction: Car proceeds to the user-defined alternate fire recall floor. Once at the recall floor, door operation is according to the user-defined door operation under fire recall operation.	
Troubleshooting:	
1. If in error, inspect the sensor input and connections.	
2. Related Inputs: Main floor smoke and fire sensors as indicated on job print drawing(s) -1.	
Motion Start Fault, MOTION START FAULT	
Description: Car initiated movement but was unable to start for more than ten seconds.	
Car Reaction: Emergency stop: Motor contactor and brake contactor immediately dropped.	
Troubleshooting:	
1. Determine mechanical or other reason car is unable to start.	
Motion Stopped Due to IO Toggle Test, MOTION STOPPED-IO TST	
Description: iBox requested start of motion while a toggle test was being performed.	
Car Reaction: None. iBox will resend request.	
Troubleshooting: NA	
Motor Contactor Driver Proofing Fault, MOTR CNTR DRV PRF FLT	
Description: Fault signal for motor contactor driver proofing circuits.	
Car Reaction: None	
Troubleshooting:	
1. Verify motor contactor driver proofing circuits.	
2. Check the coil of the motor contactor.	
Motor Contactor Proofing Fault, MOTOR CNTR PROOF FLT	
Description: Fault signal for motor contactor proofing circuits.	
Car Reaction: None	
Troubleshooting:	
1. Verify motor contactor proofing circuits.	
Motor Field Forcing Timed Out, MF FORCING TIMED OUT	
Description: DC motors only. The motor field was being forced for over 1 minute.	
Car Reaction: Stop the run. Restart.	
Troubleshooting:	
1. The motor field starts forcing if there is a demand and the doors are closing. Check that the doors are not obstructed and/or that passengers are not holding the doors open past the 1 minute limit.	
Motor Limit Protection Timer Elapsed, MOTOR LMT TIMED OUT 2	
Description: A fault is generated is the system requests movement for more than ten minutes but no movement is detected.	
Car Reaction: Currently for informational purposes only.	

Troubleshooting

Table 6.3 iControl Messages

iControl Messages	
Motor Limit Timed Out, MOTOR LIMIT TIMED OUT	
Description: Generated if no other fault has been generated and the system has attempted to move the car for three minutes with no movement detected or has detected only minimum movement for ten minutes.	
Car Reaction: Emergency stop: Motor contactor and brake contactor immediately dropped. Cancel all calls.	
Troubleshooting:	
1. Check that Pattern Scaling is not set to 0.0.	
2. Check Contract Speed is correctly set.	
3. Check pattern voltage to drive (0 - 10V) with meter.	
Nudging Front, NUDGING FRONT	
Description: This event is logged when front door nudging operation is invoked.	
Car Reaction: Front doors start closing at reduced speed and torque.	
Nudging Operation	
Description: The doors are operating in Nudging mode. (Passenger operation).	
Nudging Rear, NUDGING REAR	
Description: This event is logged when rear door nudging operation is invoked.	
Car Reaction: Rear doors start closing at reduced speed and torque.	
Other Cars Alternate Fire Sensor Recall, OTHER CARS ALT FIRE	
Description: Alternate fire recall due to active or latched smoke detector input(s) from the hoistway or machine room of other cars in the system.	
Car Reaction: Car proceeds to the user-defined alternate fire recall floor. Once at the recall floor, door operation is according to the user-defined door operation under fire recall operation.	
Troubleshooting:	
1. If in error, inspect the sensors, inputs, and connections.	
2. Related Inputs: Other Cars Alt Recall sensor inputs as indicated on job prints.	
Other Cars Main Fire Sensor Recall, OTHER CARS MAIN FIRE	
Description: Main fire recall due to active or latched smoke detector input(s) from the hoistway or machine room of other cars in the system.	
Car Reaction: Car proceeds to the user-defined main fire recall floor. Once at the recall floor, door operation is according to the user-defined door operation under fire recall operation.	
Troubleshooting:	
1. If in error, inspect the sensors, inputs, and connections.	
2. Related Inputs: Other Cars Main Recall sensor inputs as indicated on job prints.	
PARAM CHNG-RESET CAR, see Global Parameter Update, Reset Controller	
Passenger Operation, Passenger. Normal operation status message.	
Description: This event is logged when the car enters normal passenger service.	
Photo Eye Anti-nuisance	
Description: This event is logged when car calls are canceled due to a user-defined number of car calls being registered without interruption of the photo eye device.	
Car Reaction: All car calls are cancelled.	
Troubleshooting:	
1. Check the user defined options related to the operation. (iView/Car Operation/Passenger/Anti Nuisance.)	
2. Check the photo eye device and related inputs.	
Position Cartop Offset Fault, POSTN CARTP OFFST FLT	
Description: Each time the car stops, it obtains position information from the cartop position encoder. If the reported position varies from the position last reported at this location by more than two feet, this fault is generated.	
Car Reaction: Emergency stop. Motor and brake contactors immediately dropped.	
Troubleshooting: Perform a Terminal Synchronization (Pattern Configuration screen>Common tab>Position Synchronization.	

Table 6.3 iControl Messages

iControl Messages	
Position Location Error Fault, POSTN LCTN ERROR FLT	
Description: If the difference between the learned position of a floor (magnet) and the currently indicated position of that floor (magnet) is greater than 2 feet, this fault is generated.	
Car Reaction: Car will perform a terminal synchronization.	
Troubleshooting:	
1. Check that the iLand landing system is properly installed and adjusted. (Refer to Section 3 of this guide.)	
Position Quadrature Fault, POSITION QUAD FAULT	
Description: iLand quadrature signal not detected (one or both streams). At above 30 fpm, system expects proper transitions on both quadrature signals. Fault may be bypassed on Diagnostics > Fault Bypass tab.	
Car Reaction: Emergency stop.	
Troubleshooting:	
1. Verify that both quadrature channels are arriving at the iBox.	
2. Hoistway screen: Verify absolute position increments when moving up and decrements when moving down (on inspection). If absolute position does not change, there may be a problem with the iBox.	
Position Quadrature Reversed Fault, POSITN QUAD RVRSD FLT	
Description: Arrival sequence of quadrature streams indicates travel in opposite direction of commanded.	
Car Reaction: None.	
Troubleshooting:	
1. Verify that the elevator moves in the requested direction.	
2. On the Hoistway screen, verify that the cartop position increments when moving up and decrements when moving down (on inspection).	
3. On the Hoistway screen, verify that the absolute position increments when moving up and decrements when moving down (on inspection).	
4. Check JP1 jumper on iLAND-c. Position A is for normal mounting orientation; position b is for upside down mounting position.	
Position Speed Deviation Fault, POSITN SPEED DVTN FLT	
Description: Safety processor compares distance travelled reported by position quadrature with distance travelled according to motor rotation. If quadrature reports 48" travelled but motor reports less than 32", this fault is generated. This fault may be bypassed on the Diagnostics > Fault Bypass tab.	
Car Reaction: Emergency stop: Motor contactor and brake contactor immediately dropped.	
Troubleshooting:	
1. Check velocity feedback from drive.	
2. Check that Pattern Configuration/General tab Position Encoder Resolution is set to 256.	
3. Check calibration of speed feedback signal.	

Troubleshooting

Table 6.3 iControl Messages

iControl Messages	
Position Speed Threshold Fault, POSTN SPD THRSOLD FLT	
Description: The quadrature synthesized speed exceeds 115% of contract speed. This fault may be bypassed on the Diagnostics > Fault Bypass tab.	
Car Reaction: Emergency stop: Motor contactor and brake contactor immediately dropped.	
Troubleshooting:	
1. On the iView oscilloscope, compare Pattern Command and Speed Feedback to see that they match. 2. Use a hand-held tachometer to verify car speed. 3. Run the car on inspection and check the speed displayed on the iBox display. 4. For SCR drives, verify that programmed running motor field is close to actual motor field value running at contract speed. If value is higher, system will have to weaken motor field as elevator reaches contract speed. If motor field is very inductive, this may cause overshoot. If value is too low, excessive current may flow through armature. Note that load will affect this value. Running in up direction with full load in car will yield worst-case scenario. For an empty elevator, running in down direction produces worst-case scenario (value will be higher than for fully loaded car.) 5. For highly inductive motor fields, begin motor field weakening earlier and end motor field weakening earlier. If begin weakening percentage is too low, poor control will result when elevator is approaching destination floor (spotting). If so, reduce end weaken percentage without modifying (by much) the begin weakening percentage. Generally, begin is recommended around 50% while end is recommended around 90% for normal motor fields. 6. Reduce high roll jerk.	
Position Synchronization Fault	
Description: The system was not able to read the position correction value stored in battery backed RAM when the controller powered up. This fault usually results in a floor sensor fault or a position location fault.	
Car Reaction: None.	
Troubleshooting:	
1. Verify iBox battery connection and charge (lower left side of ICE-IMP board - iBox cover removed). Battery type: 1/2 AA, 3.6V Lithium. Manufacturer: SAFT, part # LS14250. MCE part # 30-05-0001.	
Position Synchronization Required at Floor, POSITION SYNC-FLOOR	
Description: The elevator needs to verify position by crossing a door zone sensor.	
Car Reaction: Cancel all existing calls, synchronize to floor.	
Position Synchronization Required at Terminal, POSITION SYNC-TERMINAL	
Description: Elevator is lost and needs to locate a terminal door zone sensor to establish position.	
Car Reaction: Cancel all existing calls, synchronize to terminal.	
Position Synchronized at Floor	
Description: Elevator completed synchronizing position using a door zone sensor. See Position Synchronization Required at Floor.	
Car Reaction: Return to normal service.	
Position Synchronized at Terminal	
Description: The elevator has completed synchronizing its position using a terminal door zone sensor. See Position Synchronization Required at Terminal.	
Car Reaction: Return to normal operation.	
Power Transfer Input Activated, Power Transfer, POWER TRANSFER	
Description: Power transfer input activated. Power transferring from emergency to commercial service.	
Car Reaction: Cancel existing calls. Stop at next floor and open doors.	
Troubleshooting: Check the Power Transfer input.	
Power Transfer Input Deactivated	

Table 6.3 iControl Messages

iControl Messages	
Power Up Position Synchronization Required at Terminal	
Description: Position synchronization at terminal landing required after power-up/reset. Terminal synchronization after power-up will occur if the elevator was required to synchronize before power was lost or the controller was reset, or if synchronization information in battery backed SRAM is invalid.	
Car Reaction: The elevator will synchronize at a terminal landing.	
Troubleshooting:	
1. Battery may need to be changed. 2. Check for faulty SRAM. 3. Check for SRAM not correctly inserted in socket. 4. Check for faulty iBox.	
Pre-start Door Lock Fault	
Description: Once the decision to move the elevator has been made, three acknowledgments (motion start, door lock and drive start) must be received before physical movement is allowed. However, if the system is so configured, pre-start sequencing will begin while the doors are closing. If the door lock acknowledgement is not received within 15 seconds (after the pre-start sequence is begun), this fault is generated.	
Car Reaction: The pre-start sequence will stop and the sequence will repeat. If the fault persists, an excessive restarts fault will occur.	
Troubleshooting:	
1. Verify that the doors (front and/or rear) become locked within the prescribed time. 2. Verify, iView Diagnostics - Motion tab, that system sees doors closing and locked within prescribed time. The information reflects front and rear door status combined. 3. Verify, via the Diagnostics - Car Operation - Front/Rear tabs, that the system sees the front/rear doors closing and becoming locked within the prescribed time.	
Primary Fire Switch Bypass, PRI FIRE SWITCH BYP	
Description: The primary fire switch is in the Bypass position.	
Car Reaction: According to selected Fire Code.	
Troubleshooting:	
1. Check the primary fire recall switch inputs.	
Primary Fire Switch On, PRI FIRE SWITCH ON	
Description: The primary fire switch is in the On position.	
Car Reaction: Car will recall to Main fire recall floor, position its doors as directed on Car Operation/Fire/Modify/Fire Recall screen, and wait for activation of the in-car firefighter switch.	
Troubleshooting: If in error, check the Primary Fire Recall Switch input.	
QPRAM Device Error, QPRAM DEVICE ERROR	
Description: Safety Processor A problem writing to QPRAM device.	
Car Reaction: Emergency stop: Motor contactor and brake contactor immediately dropped.	
Troubleshooting:	
1. Replace QPRAM on Safety Processor A. Contact MCE.	
Rear Auxiliary Door Open Button Bypassed, REAR AUX DOB BYP	
Description: Rear auxiliary door open button continuously activated for user-defined time and is now bypassed according to user defined setting (iView Controller > Configuration > Car Operation > Doors).	
Car Reaction: The rear auxiliary door open button is rendered inoperative.	
Troubleshooting:	
1. Check corresponding input: Rear Auxiliary Door - Open Button (Normally low). 2. Operation of door open button can also be restored by setting Door open button bypass option to off (unchecked) (iView Controller > Configuration > Car Operation > Doors).	

Troubleshooting

Table 6.3 iControl Messages

iControl Messages	
Rear Door Close Fault, REAR DOOR CLOSE FAULT	
Description: One or more rear door failures to close detected. Controller will attempt to close doors as defined by user parameters (door close protection timer and number of attempts) before declaring fault. (iView Controller > Configuration > Car Operation > Doors).	
Car Reaction: Doors will reopen fully. All car calls canceled and car removes itself from hall call service (hall calls assigned to car canceled or reassigned). Close doors using constant pressure on rear door close button.	
Troubleshooting:	
1. Door closed status is determined by rear door close limit and rear door position monitor contact. 2. Check the wiring of these signals. 3. Check the door close protection timer and number of closing attempts on the Operation/Doors tab.	
Rear Door Close Fault Recovery Failure, R DR CLS FLT REC FAIL	
Description: Door Close Fault Recovery timer starts when Door Close Fault generated. When timer expires, Door Close Fault cleared to allow doors to again attempt to close (see Rear Door Close Fault). Repeats the number of times specified by Door Close Fault Recovery Attempts parameter. If doors have failed to close when number of attempts equals recovery attempts, Rear Door Close Fault Recovery Failure generated.	
Car Reaction: Car is not allowed to run until a mode change is detected or doors are successfully closed via constant pressure on Door Close Button.	
Troubleshooting:	
1. Door closed status is determined by rear door close limit and rear door position monitor contact. Check wiring of these signals. 2. Check door close protection timer and number of closing attempts on the Car Operation - Doors tab.	
Rear Door Close Time-out	
Description: Rear door failure to close detected. Controller will attempt to close doors for period of time defined by Closing protection timer (Door Motor Protection Timers). If timer elapses prior to doors closing fully, this event is generated.	
Car Reaction: Doors reopen fully and again attempt to close.	
Troubleshooting:	
1. Door closed status determined by rear door close limit and rear door position monitor contact 2. Check the wiring of these signals. 3. Check the Closing protection timer (iView Controller > Configuration > Car Operation > Doors).	
Rear Door Contact Fault, REAR DOOR CONTACT FLT	
Description: Faulty rear door contact (gate switch, door lock) detected. This is detected when the doors are in their fully open position and either the gate switch contact is closed or the doors appear to be locked.	
Car Reaction: All car calls are canceled and the car removes itself from hall call service. The rear doors are not allowed to close and the car is not allowed to run.	
Troubleshooting:	
1. Check the rear door gate switch and door lock contact at the floor at which the car is located. 2. Check associated wiring for these signals.	
Rear Door Open Button Bypassed, REAR DOB BYPASSED	
Description: The rear door open button has been continuously activated for a user-defined time and is now bypassed according to the user defined setting. (iView Controller > Configuration > Car Operation > Doors).	
Car Reaction: The rear door open button is rendered inoperative.	
Troubleshooting:	
1. Check the corresponding input: Rear Door - Open Button (Normally low). 2. The operation of the door open button can also be restored by setting the Door open button bypass option to off (unchecked) (iView Controller > Configuration > Car Operation > Doors).	

Table 6.3 iControl Messages

iControl Messages	
Rear Door Open Fault, REAR DOOR OPEN FAULT	
Description: One or more rear door failures to open fully detected. After repeated attempts to open door (as specified by user parameters), door open failure declared. Amount of time allowed for door to open and number of attempts made are user parameters.(iView Controller > Configuration > Car Operation > Doors).	
Car Reaction: The door stalls at its last position. Car calls are canceled and the car removes itself from hall call service (hall calls assigned to this car are canceled or reassigned to other cars if available). Doors may be moved via constant pressure on the door open and door close buttons.	
Troubleshooting:	
1. The door open status is determined by the rear door open limit status. 2. Check the wiring of this signal. 3. Check the door open protection timer and number of open attempts (iView Controller > Configuration > Car Operation > Doors).	
Rear Door Open Time-out	
Description: A failure of the rear door to open has been detected. The controller will attempt to open the doors for a period of time defined by the Opening protection timer parameter (Door Motor Protection Timers). If the timer elapses prior to the doors opening fully, this event is generated.	
Car Reaction: The door open cycle is halted and the door is allowed to reclose. If so configured, repeated attempts will be made to open the door. Otherwise, the car is allowed to leave the landing once the doors are closed.	
Troubleshooting:	
1. Door open status is determined by the rear door open limit and by the rear door position monitor contact if applicable. 2. Check the wiring of these signals. 3. Check the Opening protection timer (iView Controller > Configuration > Car Operation > Doors).	
Rear Doors Stopped, REAR DOORS STOPPED	
Description: The Door Stop button or Emergency Stop switch was activated causing the doors to be prevented from moving.	
Car Reaction: The car is not allowed to move unless the doors are fully closed.	
Troubleshooting: This condition can be cleared by activation of the Door Open button, Door Close button or if the car goes into Inspection or Fire Service mode, provided that the Door Stop input is off.	
Rear DPM Open-GS Closed, R DPM OPEN-GS CLOSED	
Description: The rear door position monitoring contact is open while the gate switch is closed.	
Car Reaction: None.	
Troubleshooting: Check the rear door position monitoring contact, gate switch and all related circuitry.	
Rear Hall Door Open Button Bypassed, REAR HALL DOB BYP	
Description: The rear hall door open button has been continuously activated for a user-defined time (Door open bypass timer) and is now bypassed in accordance with the user-defined setting (iView Controller > Configuration > Car Operation > Doors).	
Car Reaction: The rear hall door open button is rendered inoperative.	
Troubleshooting:	
1. Check the corresponding input, Rear Door - Hall Door Open Button: Normally low. 2. The operation of the hall door open button can also be restored by setting the Door open button bypass option to off (unchecked) (iView Controller > Configuration > Car Operation > Doors).	
Rear Photo Eye Bypassed, REAR PHOTO EYE BYP	
Description: The rear photo eye device has been continuously activated for a user-defined time and is now bypassed in accordance to the user-defined setting. (iView/Car Operation/Passenger/Anti Nuisance.)	
Car Reaction: The rear photo eye device is rendered inoperative.	
Troubleshooting:	
1. To restore the operation of the photo eye device, check the corresponding input. 2. Related inputs: PhotoEyeRear: Normally low.	

Troubleshooting

Table 6.3 iControl Messages

iControl Messages	
Rear Photo Eye 2 Bypassed, REAR PHOTO EYE2 BYP	
Description: The auxiliary rear photo-eye device (required for Peele doors for PHE integrity tests) has been continuously activated for a user-defined time and is now bypassed in accordance to the user-defined settings (Configuration > Car Operation > Doors > Door Device > Photo Eye).	
Car Reaction: The auxiliary rear photo eye device is rendered inoperative.	
Troubleshooting:	
1. To restore the operation of the photo eye device, check the corresponding input. 2. The operation of the photo eye device can also be restored by changing the Photo Eye Bypass option to NO on iView. 3. Related Inputs: PHE2 Rear - Normally low	
Rear Photo Eye Failure, REAR PHOTO EYE FAIL	
Description: This event is logged when the photo eye is continuously activated for a predetermined time (4 seconds) while the rear doors are fully closed.	
Car Reaction: The rear photo eye is rendered inoperative.	
Troubleshooting:	
1. Check for abnormal blockage or failure of the rear optical device. 2. Related inputs: RearPhotoEye: Normally low.	
Rear Photo Eye 2 Failure, REAR PHOTO EYE2 FAIL	
Description: The auxiliary rear photo eye device (required for Peele doors for PHE integrity tests) was continuously activated for a predetermined time (four seconds) while the rear doors are fully closed.	
Car Reaction: The auxiliary rear photo eye is rendered inoperative.	
Troubleshooting:	
1. Check for abnormal blockage or failure of the auxiliary rear optical device. 2. Related Inputs: PHE2 Rear - Normally low	
Rear Photo Eye Test Fail, REAR PHOTO TEST FAIL	
Description: The rear photo eye devices integrity test (required under section 2.13.3.4.9 of the A17.1a-2008/CSA B44a-08 elevator safety code) has failed. Indicating that one or both the main and auxiliary rear photo eye devices are not functioning properly and unable to detect an object.	
Car Reaction: Car remains in service. Rear doors are prevented from closing. The rear photo eye devices integrity test is repeated until it is determined that both the main and auxiliary rear photo eye devices are able to detect an object.	
Troubleshooting:	
1. Check that both the main auxiliary rear photo eye devices are functioning properly and able to detect an object. 2. Related Inputs: Rear photo eye and PHE2 Rear – Both Normally low	
Rear Safe Edge Bypassed, REAR SAFE EDGE BYP	
Description: The rear door safe edge has been continuously activated for a user-defined time and is now bypassed according to the user-defined setting. (iView Controller > Configuration > Car Operation > Doors).	
Car Reaction: The rear safe edge is rendered inoperative.	
Troubleshooting:	
1. Check the state of the rear safe edge input. 2. Related input - SafeEdgeRear: Normally low.	
Rear Safe Edge Failure, REAR SAFE EDGE FAIL	
Description: This event is logged when the rear door safe edge is continuously activated for a predetermined time (4 seconds) while the rear doors are fully closed.	
Car Reaction: The rear door safe edge is rendered inoperative.	
Troubleshooting:	
1. Check for abnormal blockage or failure of the rear door mechanical reopening device. 2. Related inputs: RearSafeEdge: Normally low.	

Table 6.3 iControl Messages

iControl Messages	
Receive Sys Params	
Description: Indicates that this controller is receiving system parameters from the Central or Local / Dispatcher. (DO NOT RESET THE CONTROLLER).	
Restricted, RESTRICTED	
Description: Indicates that this controller has been shipped with Restricted Mode enabled. The controller will run in all modes of operation, but will not accept hall call assignments. Restricted mode can be terminated at any time by entering the Restricted Mode Key as described in document 42-IS-0144, <i>Restricted Mode Instruction for iControl Users</i> . Obtain the Restricted Mode Key by calling MCE's Credit Department at (916) 463-9582. When calling, please provide the controller's job number and car identifier.	
R DR CLS FLT REC FAIL. See Rear Door Close Fault Recovery Failure	
Retiring Cam Door Lock Fault Activated, Retiring Cam Door Lock Fault, RETIRING CAM DLK FLT	
Description: The door locks have failed to make up within a pre-determined user-adjustable time after a user adjustable number of attempts to lock the doors. This fault is detected on cars equipped with a retiring cam door lock mechanism.	
Car Reaction: Car is taken out of service and doors re-open fully. The doors can be closed with constant pressure on the door close button.	
Troubleshooting:	
1. Check the door locks and the retiring cam circuitry.	
2. Verify that the related user-defined parameters are correct.	
3. Cleared by mode of operation change or if doors closed with constant pressure on door closed button.	
Retiring Cam Door Lock Fault Deactivated. See Retiring Cam Door Lock Fault Activated	
Retiring Cam Protection Fault Activated, Retiring Cam Protection Fault, RET CAM PROTECTIN FLT	
Description: The retiring cam output has been activated for a pre-determined user-adjustable time after the doors have successfully been locked. This fault is monitored in the event the car fails to reach its destination.	
Car Reaction: Emergency stop if traveling when fault detected. Car taken out of service. If car is at a landing, doors re-open fully.	
Troubleshooting:	
1. Check the door locks and the retiring cam circuitry.	
2. Verify that the related parameters are correct.	
3. This fault is cleared by any mode of operation change or by the iBox Fault Reset button.	
Retiring Cam Protection Fault Deactivated. See Retiring Cam Protection Fault Activated	
Sabbath Operation Activated, Sabbath Operation, SABBATH OPERATION. Car operating in Sabbath mode initiated by software command, switched input or timer. Mode allows car to operate without buttons pressed for hall calls or car calls. See parameters located on Car Operation Configuration > Sabbath tab.	
Sabbath Operation Deactivated. See Sabbath Operation Activated.	
Safety A Contract Overspeed Fault, SPA COS FAULT	
Description: Car exceeded Contract Overspeed (iView, Safety Configuration). May be bypassed on Diagnostics > Fault Bypass tab.	
Car Reaction: Emergency Stop: Motor contactor and brake contactor immediately dropped.	
Troubleshooting:	
1. The fault will automatically clear 5 seconds after the car stops. The car is then allowed to run again.	
2. Check the contract overspeed parameter for proper setting (iView/Safety Configuration/General).	
Safety A DETS Level 2 Speed Fault, SPA DETS L2 SPEED FLT	
Description: The car contacted the Down Emergency Terminal Switch while traveling at over 95% of contract speed. This fault may be bypassed on the Diagnostics > Fault Bypass tab.	
Car Reaction: Emergency stop: Motor contactor and brake contactor immediately dropped.	
Troubleshooting:	
1. The fault will automatically clear 5 seconds after the car stops. The car is then allowed to run again.	
2. Check for the proper positioning of the DETS switch in the hoistway.	

Troubleshooting

Table 6.3 iControl Messages

iControl Messages	
Safety A IMP Configuration Mismatch	
Description: Safety system saved parameters do not match values saved in main processor. When Safety screen parameters are changed, this message appears after the Send button is pressed. Complete a Safety learn operation as directed on the iView Safety Configuration screen to learn the new safety configuration.	
Car Reaction: Car will not run.	
Troubleshooting:	
1. Using iView, check values programmed under Safety Configuration screen. Verify that they are correct. 2. Download correct values to the Safety system by executing the learn process from the Safety screen.	
Safety A Inspection Leveling Overspeed Fault, SPA LOS FAULT	
Description: The car exceeded the leveling overspeed limit (detected by safety processor A). This fault may be bypassed on the Diagnostics > Fault Bypass tab.	
Car Reaction: Emergency stop: Motor contactor and brake contactor immediately dropped.	
Troubleshooting:	
1. The fault will automatically clear 5 seconds after the car stops. The car is then allowed to move again. 2. Check the leveling overspeed parameter for proper setting (iView/Safety Config/General).	
Safety A Inspection Overspeed Fault, SPA IOS FAULT	
Description: The car has exceeded the inspection overspeed limit of 150 fpm (detected by safety processor A). This fault may be bypassed on the Diagnostics > Fault Bypass tab.	
Car Reaction: Emergency stop: Motor contactor and brake contactor immediately dropped.	
Troubleshooting:	
1. The fault will automatically clear 5 seconds after the car stops. The car is then allowed to move again.	
Safety A SIB Device Fault, SPA SIB DEVICE FAULT	
Description: Safety Processor A has a problem writing Safety Ice Bus.	
Car Reaction: Emergency stop: Motor contactor and brake contactor immediately dropped.	
Troubleshooting:	
1. Replace iBox. SAF Board damaged. Contact MCE.	
Safety A SIB Device Fault Off (See: Safety A SIB Device Fault)	
Safety A UETS Level 2 Speed Fault, SPA UETS L2 SPD FLT	
Description: The car contacted the Up Emergency Terminal Switch while traveling at over 95% of contract speed. This fault may be bypassed on the Diagnostics > Fault Bypass tab.	
Car Reaction: Emergency stop: Motor contactor and brake contactor immediately dropped.	
Troubleshooting:	
1. The fault will automatically clear 5 seconds after the car stops. The car is then allowed to run again. 2. Check for the proper positioning of the UETS switch in the hoistway.	
Safety A Unintended Motion Fault, SPA UNTD MOTION FLT	
Description: Safety processor A has detected that both hoistway doors and car gate doors were open as the car moved away from the floor without a command from the iControl main processor (IMP board) to move.	
Car Reaction: Emergency stop: Motor contactor and brake contactor immediately dropped. If applicable, the rope brake drops.	
Troubleshooting:	
1. Check for proper door operation and control. 2. Close the hoistway doors and close the car gate. 3. Press the Fault Reset button. Test.	
Safety B Contract Overspeed Fault, SPB COS FAULT	
Description: The car has exceeded the Contract Overspeed setting. This fault may be bypassed on the Diagnostics > Fault Bypass tab.	
Car Reaction: Emergency stop: Motor contactor and brake contactor immediately dropped.	
Troubleshooting:	
1. The fault will automatically clear 5 seconds after the car stops. The car is then allowed to run again. 2. Check the contract overspeed parameter for proper setting. (iView/Safety Config/General)	

Table 6.3 iControl Messages

iControl Messages	
Safety B DETS Level 2 Speed Fault, SPB DETS L2 SPEED FLT	
Description: The car contacted the Down Emergency Terminal Switch while traveling at over 95% of contract speed. This fault may be bypassed on the Diagnostics > Fault Bypass tab.	
Car Reaction: Emergency stop: Motor contactor and brake contactor immediately dropped.	
Troubleshooting:	
1. The fault will automatically clear 5 seconds after the car stops. The car is then allowed to run again.	
2. Check for the proper positioning of the DETS switch in the hoistway.	
Safety B Fault Activated, SAFETY B FAULT	
Description: This event is logged and related car status messages displayed on the OBD and iView if a fault is detected by safety processor B but not by safety processor A.	
Car Reaction: Emergency stop: Motor contactor and brake contactor immediately dropped. If the fault persists, after a delay all calls are cancelled.	
Troubleshooting:	
1. Check the Event Log for other faults and information related to this fault.	
Safety B Fault Deactivated (See: Safety B Fault Activated)	
Safety B Fault Bypass Switch Timed Out	
Description: Indicates that a fault bypass has timed out. (Bypasses are allowed for 15 minutes with the iBox Fault/Function Bypass switch in the ON position.) On Inspection mode, this fault is bypassed indefinitely.	
Car Reaction: Emergency stop: Motor contactor and brake contactor immediately dropped.	
Troubleshooting:	
1. To clear this fault, place the Fault/Function Bypass switch to the OFF position.	
Safety B Inspection Leveling Overspeed Fault, SPB LOS FAULT	
Description: The car exceeded the leveling overspeed limit (detected by safety processor B). This fault may be bypassed on the Diagnostics > Fault Bypass tab.	
Car Reaction: Emergency stop: Motor contactor and brake contactor immediately dropped.	
Troubleshooting:	
1. The fault will automatically clear 5 seconds after the car stops. The car is then allowed to move again.	
2. Check the leveling overspeed parameter for proper setting (iView/Safety Config/General).	
Safety B Inspection Overspeed Fault, SPB IOS FAULT	
Description: The car has exceeded the inspection overspeed limit of 150 fpm (detected by safety processor B).	
Car Reaction: Emergency stop: Motor contactor and brake contactor immediately dropped.	
Troubleshooting:	
1. The fault will automatically clear 5 seconds after the car stops. The car is then allowed to move again.	
Safety B SIB Device Fault, SPB SIB DEVICE FAULT	
Description: Safety Processor B has a problem writing Safety Ice Bus.	
Car Reaction: Emergency stop: Motor contactor and brake contactor immediately dropped.	
Troubleshooting:	
1. Replace iBox. SAF Board damaged. Contact MCE.	
Safety B SIB Device Fault Off (See: Safety B SIB Device Fault)	
Safety B Safety Bypass Jumper Timed Out	
Description: Safety Processor B has detected that the Safety Bypass Jumper has been on for more than 15 minutes.	
Car Reaction: The car will not be allowed to restart after the end of the current run.	
Troubleshooting:	
1. Remove the iBox Safety Bypass Jumper.	
2. If more time is needed in the Safety Bypass mode, then reinstall Safety Bypass Jumper and the 15 minute timer will restart.	

Troubleshooting

Table 6.3 iControl Messages

iControl Messages	
Safety B UETS Level 2 Speed Fault, SPB UETS L2 SPD FLT	
Description: The car contacted the Up Emergency Terminal Switch while traveling at over 95% of contract speed. This fault may be bypassed on the Diagnostics > Fault Bypass tab.	
Car Reaction: Emergency stop: Motor contactor and brake contactor immediately dropped.	
Troubleshooting:	
1. The fault will automatically clear 5 seconds after the car stops. The car is then allowed to run again. 2. Check for the proper positioning of the UETS switch in the hoistway.	
Safety B Unintended Motion Fault, SPB UNTD MOTION FLT	
Description: Safety processor B has detected that both hoistway doors and car gate doors were open as the car moved away from the floor without a command from the iControl main processor (IMP board) to move.	
Car Reaction: Emergency stop: Motor contactor and brake contactor immediately dropped. If applicable, the rope brake drops.	
Troubleshooting:	
1. Check for proper door operation and control. 2. Close the hoistway doors and close the car gate. 3. Press the Fault Reset button. Test.	
Safety Bypass Jumper On	
Description: Indicates that the Safety Bypass Jumper is in place.	
Safety Bypass Jumper Timed Out, SFTY BYP JMPR TMD OUT	
Description: Safety Processor A has detected that the Safety Bypass Jumper has been on for more than 15 minutes.	
Car Reaction: The car will not be allowed to restart after the end of the current run.	
Troubleshooting:	
1. Remove the iBox Safety Bypass Jumper. 2. If more time is needed in the Safety Bypass mode, then reinstall Safety Bypass Jumper and the 15 minute timer will restart.	
Safety C String Open, SAFETY C STRING OPEN	
Description: The input has dropped. Input does not come on when bypassed, but the bypass will allow it to run on Test and Machine Room Inspection.	
Car Reaction: Emergency stop if running. The car is not allowed to run until the problem is corrected.	
Troubleshooting:	
1. Check the car safety string elements and finally the actual input to the iBox.	
Safety C String Open Off (See: Safety C String Open)	
Safety Configuration Checksum Fault, SFTY CONFIG CHKSM FLT	
Description: Safety configuration parameters stored in nonvolatile memory are corrupt or missing.	
Car Reaction: The car is not allowed to move.	
Troubleshooting:	
1. Learn the Safety Configuration.	
Safety Configuration Learn Fault, SFTY CONFIG LEARN FLT	
Description: Safety Processor A had a failure when storing configuration values to nonvolatile memory.	
Car Reaction: Car will not run until fault is cleared.	
Troubleshooting:	
1. Make sure the car is on Machine Room Inspection before learning the safety configuration. 2. Check that the installed safety configuration matches the selections on the Safety Configuration screen and that no bypasses are in place. 3. Repeat the learn process. 4. If unsuccessful, contact MCE Technical Support. (Possible iBox failure.)	

Table 6.3 iControl Messages

iControl Messages	
Safety Configuration Mismatch, SFTY CONFIG MISMATCH	
Description: The parameters saved in the Safety system do not match the values saved in the main processor.	
Car Reaction: Car will not run.	
Troubleshooting:	
1. Using iView, check the values programmed under the Safety Configuration screen. Verify that they are correct.	
2. Download correct values to the Safety system by executing the learn process from the Safety screen.	
Safety Configuration Inventory Cross Check Fault, SFTY VCTR XCHK FLT	
Description: The safety-related boards in the controller do not match the learned configuration.	
Car Reaction: The car is not allowed to move.	
Troubleshooting:	
1. Verify safety bus inventory against the safety configuration. If changes are made, re-learn the safety configuration.	
2. Re-learn the board complement (inventory).	
Safety H String Open, SAFETY H STRING OPEN	
Description: The input has dropped. Input does not come on when bypassed, but the bypass will allow it to run on Test and Machine Room Inspection.	
Car Reaction: Emergency stop if running. The car is not allowed to run until the problem is corrected.	
Troubleshooting:	
1. Check the car safety string elements and finally the actual input to the iBox.	
Safety H String Open Off (See: Safety H String Open)	
Safety Inventory Checksum Fault, SFTY INVTRY CHKSUM FLT	
Description: The Safety Ice bus board inventory stored in nonvolatile memory is corrupt or missing.	
Car Reaction: The car will not run.	
Troubleshooting:	
1. Relearn the inventory of boards using the Learn operation on the Setup > Safety > Inventory tab.	
2. Reset the fault (press the iBox FAULT RESET button).	
Safety Inventory Comparison Fault, SFTY INVTRY COMPARE FLT	
Description: iBox safety boards do not match safety board inventory kept in safety system.	
Car Reaction: The car will not run.	
Troubleshooting:	
1. Relearn the inventory of boards using the Learn operation on the Setup > Safety > Inventory tab.	
2. Reset the fault (press the iBox FAULT RESET button).	
Safety Inventory Creation Fault, SFTY INVTRY CREATION FLT	
Description: Relearn of Safety board inventory could not be stored in non-volatile storage.	
Car Reaction: Car will not run.	
Troubleshooting:	
1. Relearn the inventory of boards using the Learn operation on the Setup > Safety > Inventory tab.	
2. Reset the fault (press the iBox FAULT RESET button).	
3. If the fault does not clear, cycle power to the controller. Repeat the first two steps if the fault reoccurs.	
4. If the previous steps are unsuccessful, iBox replacement may be indicated.	
Safety Inventory Learn Fault, SFTY INVTRY LEARN FLT	
Description: Safety Processor A failed to store inventory values to nonvolatile memory.	
Car Reaction: None	
Troubleshooting:	
1. Relearn the inventory of boards using the Learn operation on the Setup > Safety > Inventory tab.	
2. Reset the fault (press the iBox FAULT RESET button).	
3. If the fault does not clear, cycle power to the controller. Repeat the first two steps if the fault reoccurs.	
4. If the previous steps are unsuccessful, iBox replacement may be indicated.	

Troubleshooting

Table 6.3 iControl Messages

iControl Messages	
Safety String Open	
Description: Contact in safety circuit is open.	
Car Reaction: Emergency stop: Motor contactor and brake contactor immediately dropped.	
Troubleshooting:	
1. Refer to the job prints. Verify all safety string switches and wiring. 2. Verify the following have power: SAFC, SAFH, GOV, ESM, and ESC (if the car stop switch bypass is off). Note that SAFC and SAFH can be bypassed by installing the Safety Bypass Jumper on the IRB board if the car needs to be moved off the final limits for example). 3. If a rope gripper is installed and the rope gripper option is selected, check RGOK is equal to 1. 4. If a cartop exit is present and the cartop exit option is selected, check that CTEX input is equal to 1. 5. If Unintended Motion was tripped, clear the Unintended Motion fault. 6. Clear any faults left on the iBox display. 7. When the problem is fixed, the fault will automatically clear after 5 seconds.	
Safety String Closed (See: Safety String Open)	
SCR AC Phase Fault, SCR AC PHASE FAULT	
Description: Fault indicates the 6 feed wires to M-contactor at bottom of System 12 Drive incorrectly connected. If so, 30-degree phase angle between X and Y inputs is lost. DC controls only.	
Car Reaction: Emergency Stop.	
Troubleshooting:	
1. Check for a defective or disconnected 32-pin ribbon cable between SCR_LGA board and iBox. 2. Check if the SCR Drive Diagnostic indicators WYE PR, DELTA PR, or 30-Degree PR are ON.	
SCR Armature Voltage On, SCR ARM VOLTAGE ON	
Description: Indicates presence of a DC voltage between armature terminals A1 and A2 in excess of 0.7VDC before RE relay is enabled. DC controls only.	
Car Reaction: Failure prevents a normal run.	
Troubleshooting:	
1. Verify test point TP1 on SCR-LGA board (See "SCR-LGA Board Layout" on page 6-129.) is 0.0mv when no direction is commanded. Adjust R2 if needed. 2. Check for defective cable between the iBox AC/DC Drive jack and the SCR drive. 3. Check SCR-LGA board (see Section 6).	
SCR Contactor Fuse Fault, SCR CNTACTR FUSE FLT	
Description: Indicates that either the semiconductor fuse has blown or one or more of the 6 contacts within the two contactors has failed. DC controls only.	
Car Reaction: Emergency Stop.	
Troubleshooting:	
1. Check secondary wires of drive isolation transformer. 2. Check primary voltage on each of the primary terminals of the drive isolation transformer. 3. Check for harsh motor control, vibration, or humming. 4. Check for motor mechanical defect such as interpole (partially shorted). 5. Set an oscilloscope to 2msec/div, 500mv/div, AC coupling. Verify that the 12 drive pulses have equal amplitudes and periods. 6. Check M1 and M2 contacts. 7. Check semiconductor fuses. (See "Semiconductor Fuses" on page 6-131.)	
SCR Drive Ready Fault, SCR DRIVE READY FAULT	
Description: Ready signal from the System 12 SCR Drive is inactive. This signal is inactive when the System 12 Drive detects a fault or is being reset (about 5 seconds). DC controls only.	
Car Reaction: The elevator is prevented from moving while this signal is inactive.	
Troubleshooting: Check the Event Calendar, Hoistway display or iBox display for active SCR drive faults and follow the recommended troubleshooting for those faults.	

Table 6.3 iControl Messages

iControl Messages	
SCR Dynamic Brake Fault, SCR DYN BRAKE FAULT	
Description: This fault indicates that there is either more than 18-volts across the dynamic braking resistor or the dynamic brake input from the SCR drive is active. DC controls only.	
Car Reaction: Emergency Stop.	
Troubleshooting:	
1. If this fault occurs with no other SCR Drive faults in the Event Log, it is likely that a different failure such as an AC Phase Failure has occurred. However, that failure occurred too quickly to be captured. 2. If other SCR drive faults are present, indicates a possible defective dynamic brake SCR or SCR-LGA) board (See "System 12 SCR Drive" on page 6-127.).	
SCR Excessive Armature Current, SCR EXS ARM CURRENT	
Description: Armature feedback current exceeded 200% of rated armature current within 250 milliseconds after run enabled. Triggers a Drive Forced fault if encountered 4 times within 7 run attempts. DC controls only.	
Car Reaction: Car will not run.	
Troubleshooting:	
1. Run the car on inspection while monitoring armature current versus command current. Verify both values are approximately equal. 2. Check interpole feedback, filter capacitors (SCR page of job prints), any component in the loop feedback from the SCR drive out to the motor and back to the drive. 3. Verify drive header current and voltage. Please refer to "Calibrating Actual Car Speed (System 12 SCR Drive)" on page 2-38. 4. Check serial cable between iBox and drive. 5. Check SCR-LGA board (See "System 12 SCR Drive" on page 6-127.).	
SCR Excessive Current Command, Drive Disabled, SCR EXS CURRENT CMD DD	
Description: Current command output greater than 200mV before run enable. DC controls only.	
Car Reaction: Car will not run.	
Troubleshooting:	
1. Verify standard control gains (proportional, integral) on drive screens.	
SCR Excessive Current Command, Drive Enabled, SCR EXS CURRENT CMD DE	
Description: Current command output greater than 7VDC within 300mS after enabling the run enable relay, drive enabled. DC controls only.	
Car Reaction: Car will not run.	
Troubleshooting:	
1. Check serial cable between iBox and drive. 2. Check SCR-LGA board (See "System 12 SCR Drive" on page 6-127.).	
SCR High Temperature Fault, SCR HIGH TEMP FAULT	
Description: Ambient temperature inside System 12 drive exceeded 170 degrees F or bad or failing SCR. iControl will attempt to bring the car to the nearest floor before shutting down. The fault clears when the temperature drops below tripping threshold. DC controls only.	
Car Reaction: Stop at nearest floor. Car out of service until fault cleared.	
Troubleshooting:	
1. Check for excessive ambient temperature. 2. Insufficient air flow through drive, especially if fault generated when car is running and clears when car is stopped. Verify that the fan is operating properly. Check the fan fuse. 3. Check for bad or failing SCR. 4. Check for defective fault-generating thermostat. There are two heat sensors, one on each heat sink. Check the integrity of the heat sensor's normally closed contacts. 5. Check the drive rated armature current to determine if it is operating close to the limit threshold. Please refer to "Current Limit Adjustments (System 12 SCR Drive)" on page 2-39.	

Troubleshooting

Table 6.3 iControl Messages

iControl Messages	
SCR Instantaneous Over Current, SCR INST OVER CURRENT	
Description: Indicates System 12 SCR Drive detected excessive armature current. DC controls only.	
Car Reaction: Emergency Stop.	
Troubleshooting:	
1. Check that the main supply is being shut off during regeneration. 2. Check for a clipped door lock. 3. Check for a motor connection problem. 4. Possible failure of an SCR in the System 12 Drive.	
SCR Insufficient Armature Current, SCR INSF ARM CURRENT	
Description: Insufficient armature feedback current detected. Generated if requested current is at least 20% of rated armature current yet detected feedback remains below 10% of rated armature current. Automatically reset if detected four or fewer times in seven consecutive runs. DC controls only.	
Car Reaction: Emergency Stop.	
Troubleshooting:	
1. Check Armature Voltage Limit and Armature Current Limit settings on iView/Drive/Safety. Please refer to "Armature Voltage (System 12 SCR Drive)" on page 4-9. 2. If fault occurs when car is running at speed, adjust Motor Field so that armature voltage is within rated motor armature voltage. 3. Verify current sensor connection on SCR-LGA board (See "System 12 SCR Drive" on page 6-127.). Check SCR-LGA board. 4. Check serial cable from drive to iBox. 5. Monitor Up and Down direction inputs on SCR-LGA board (bottom of R14 down, bottom of R22 up). If there is a momentary drop in direction signal before run is complete, use jumpers to determine if a section of safety string failing. WARNING: Car must be on Independent Service before performing this test. 6. If the failure persists from the beginning of the run, make sure the current signal on SCR-LGA board test point TP3 is not dropping out.	
SCR Loop Over Current, SCR LOOP OVER CURRENT	
Description: DC loop current has grossly exceeded the reference value. DC controls only.	
Car Reaction: Emergency Stop.	
Troubleshooting:	
1. Verify that the brake is completely lifting. 2. Check that the load in the car is not in excess of full load.	
SCR Low Line Caution Activated, SCR Low Line Caution, SCR LOW LINE CAUTION	
Description: The iBox has determined that the line voltage to the System 12 Drive is between 80% and 95% of rated armature voltage. The line voltage test occurs every time the elevator stops. The detected percentage is based on the Rated Armature Voltage parameter setting on the iView Drive Configuration screen>General tab. DC controls only.	
Car Reaction: None. Elevator speed is limited to the detected line voltage percentage.	
Troubleshooting:	
1. Verify that the Rated Armature Voltage parameter value is correct. The RMS value (AC phase measurement on a voltmeter) at TP4 on the System 12 SCR-LGA board reflects the line voltage divided by one hundred (The RMS values of the line-to-line voltages at the wye and delta connections of the drive or secondary isolation transformer). 2. Verify the voltage into the primary of the Drive Isolation Transformer is not sagging. 3. Check the drive header rating against the voltage on the isolation transformer secondary. Please refer to "Current Limit Adjustments (System 12 SCR Drive)" on page 2-39.	
SCR Low Line Caution Deactivated	
Description: The iBox has determined that the line voltage to the System 12 Drive is above 90% of rated armature voltage (see SCR Low Line Caution (Activated)). DC controls only.	

Table 6.3 iControl Messages

iControl Messages	
SCR Low Line Fault, SCR LOW LINE FAULT	
Description: Indicates that AC line voltage to the System 12 Drive has dropped below 95% of the SCR-LGA header value. DC controls only.	
Car Reaction: Car will not move.	
Troubleshooting:	
1. Verify that the Rated Armature Voltage parameter value is correct. The RMS value (AC phase measurement on a voltmeter) at TP4 on the System 12 SCR-LGA board reflects the line voltage divided by one hundred (The RMS values of the line-to-line voltages at the wye and delta connections of the drive or secondary isolation transformer). 2. Verify the voltage into the primary of the Drive Isolation Transformer is not sagging. 3. Check the drive header rating against the voltage on the isolation transformer secondary. Please refer to "Current Limit Adjustments (System 12 SCR Drive)" on page 2-39.	
SCR Low Line Test Fault	
Description: The test to determine the line voltage to the System 12 drive has failed to determine the line voltage (see SCR Low Line Caution Activated). DC controls only.	
Car Reaction: None. Previous line voltage test values are used.	
Troubleshooting: Possible internal hardware error on iBox trying to update System 12 drive's MDAC.	
SCR Phase Lock Loop Fault, SCR PHASE LCK LP FLT	
Description: This fault indicates that the phase lock loop circuit PLL LED is ON in the SCR-LGA and that the System 12 SCR Drive was unable to lock onto the incoming line frequency. The PLL LED is normally on for a few seconds during power up. DC controls only.	
Car Reaction: Car will not move.	
Troubleshooting:	
1. Contact MCE technical support.	
SCR Phase Lock Loop Warning	
Description: Phase lock loop circuit PLL LED is ON in SCR-LGA and that System 12 SCR Drive was unable to lock onto incoming line frequency. PLL LED is normally on for a few seconds during power up. Detected while the car is not moving. DC controls only.	
Car Reaction: Car will not move.	
Troubleshooting:	
1. Verify PLL indicator is active on SCR-LGA board. 2. Verify iBox is not resetting SCR drive. If so, PLL indicator will be active for a short interval. For a recurring drive fault, iBox should reset SCR drive every 15 seconds. If so, there is probably an underlying fault the iBox is trying to clear. 3. Contact MCE technical support.	
SCR Power Supply Fault, SCR POWER SUPPLY FLT	
Description: Indicates that power supplied to the System 12 SCR Drive is insufficient. DC controls only.	
Car Reaction: Car will not run.	
Troubleshooting:	
1. Check all supply voltages on SCR-PS board (See "System 12 SCR Drive" on page 6-127.). 2. Check F2D fuse. Verify voltages in drive within 1%. Please refer to "Calibrating Actual Car Speed (System 12 SCR Drive)" on page 2-38. 3. If voltages are correct, check drive cable from the iBox to the drive. Check the SCR-LGA board (See "System 12 SCR Drive" on page 6-127.).	
Secondary Fire Switch On, SEC FIRE SWITCH ON	
Description: The Secondary Fire Recall Switch is in the ON position.	
Car Reaction: Car will recall to Main fire recall floor, position doors as indicated on Car Operation > Fire Service > Fire Code > Fire Recall tab, and await activation of in-car firefighter switch.	
Troubleshooting: If in error, check the Secondary Fire Recall switch input.	
Security On	
Description: Indicates that system security is On.	

Troubleshooting

Table 6.3 iControl Messages

iControl Messages	
Security Config 'n' (n = 1 - 8)	
Description: Indicates the security configuration that is being used.	
Send Sys Params to 'n' (n = 1 - 15)	
Description: Indicates that this controller (iCentral or Local/Dispatcher) is sending system parameters to car 'n' (n = 1 - 15). (DO NOT RESET CAR 'n').	
Serial COP Bus 'n' Comm Fault, SCOP BUS 'n' COMM FAULT (n = 1 - 4)	
Description: Indicates lost communication between the ICE-CTP (cartop processor) board and the ICE-COP (serial COP) board for at least 1.5 seconds.	
Car Reaction: none	
Troubleshooting:	
1. Check for a bad cable between the ICE-CTP and ICE-COP boards. 2. Check for a bad ICE-COP board. 3. Check electrical noise interference and proper shielding of cables (board to board, board to controller).	
Serial COP Bus 'n' Inventory Fault, SCOP BUS 'n' INVENTORY FLT (n = 1 - 4)	
Description: Can indicate lost communication between ICE-COP board and one or more expansion boards or that an ICE-COP board was connected or disconnected after system powered up (I/O inventory changed).	
Car Reaction: none	
Troubleshooting:	
1. Check for bad cable(s) between the ICE-COP and ICE-COP-x boards. 2. Check for a bad ICE-COP-x board. 3. Press the RESET button on the ICE-COP board (takes a new inventory).	
Sheave Brake Drop Fault, SHEAVE BRAKE DROP FLT	
Description: Sheave brake disabled via Sheave Brake Enable output but Sheave Brake Monitor input high. There is a five second delay before fault is generated.	
Car Reaction: Emergency stop: Motor contactor and brake contactor immediately dropped. All calls are cancelled. The doors will cycle.	
Troubleshooting:	
1. Verify Sheave Brake Monitor input and Sheave Brake Enable output are programmed (Configuration > I/O Boards > Configuration tab). 2. Check voltage at Sheave Brake Monitor input and internal representation via <i>View</i> button on Configuration > I/O Boards > Configuration tab. 3. Check voltage at Sheave Brake Enable output and internal representation via <i>View</i> button on Configuration > I/O Boards > Configuration tab. 4. Check the sheave brake mechanism and circuitry.	
Sheave Brake Pick Fault, SHEAVE BRAKE PICK FLT	
Description: Sheave brake enabled via Sheave Brake Enable output, but Sheave Brake Monitor input low. There is a five second delay before a fault is generated.	
Car Reaction: Emergency stop: Motor and brake contactor immediately dropped. All calls cancelled. The doors will cycle.	
Troubleshooting:	
1. Verify Sheave Brake Monitor input and Sheave Brake Enable output have been programmed (Configuration > I/O Boards > Configuration tab). 2. Check the voltage at the Sheave Brake Monitor input and the internal representation via the <i>View</i> button on the Configuration > I/O Boards > Configuration tab. 3. Check the voltage at the Sheave Brake Enable output and the internal representation via the <i>View</i> button on the Configuration > I/O Boards > Configuration tab. 4. Check the sheave brake mechanism and circuitry.	
Shuttle Service Activated, SHUTTLE SERVICE ON	
Description: Shuttle service has been activated via key-switch/input, software command or timer.	
Shuttle Service Deactivated, SHUTTLE SERVICE OFF (see Shuttle Service Activated).	

Table 6.3 iControl Messages

iControl Messages	
Silent Mode Activated	
Description: Silent mode activated via Activate button (Controller > View > Configuration > Car Operation > Devices tab), timer (System > Configuration tabs > Timer Tables) or iMonitor.	
Silent Mode Deactivated (see Silent Mode Activated).	
Single Channel QUAD Fault, SNG CHANNEL QUAD FLT	
Description: Failure of one of the two landing system quadrature signals (DP1 or DP2).	
Car Reaction: Emergency stop: Motor contactor and brake contactor immediately dropped.	
Troubleshooting:	
1. Check DP1 and DP2 wiring from the landing system to the iBox.	
SOBO Did not boot correctly (Custom Event)	
Description: The Svendborg SOBO iQ brake controller has not powered up properly.	
Car Reaction: Car performs an emergency stop.	
Troubleshooting:	
1. Refer to the Svendborg SOBO iQ brake controller manual for troubleshooting information.	
SOBO Out of Band Warning (Custom Event)	
Description: The Svendborg SOBO iQ brake controller has detected an out of band condition.	
Car Reaction: This is an informational event.	
Troubleshooting:	
1. Refer to the Svendborg SOBO iQ brake controller manual for troubleshooting information.	
SOBO Overspeed Level One Fault (Custom Event)	
Description: The Svendborg SOBO iQ brake controller has detected a motor overspeed condition.	
Car Reaction: Car performs an emergency stop.	
Troubleshooting:	
1. Refer to the Svendborg SOBO iQ brake controller manual for troubleshooting information.	
SOBO Speed Sensor Failure (Custom Event)	
Description: The Svendborg SOBO iQ brake controller has detected a motor speed feedback failure.	
Car Reaction: Car stops at next call destination.	
Troubleshooting:	
1. Refer to the Svendborg SOBO iQ brake controller manual for troubleshooting information.	
SOBO Pressure Unit Failure (Custom Event)	
Description: The Svendborg SOBO iQ brake controller has detected a pressure unit failure.	
Car Reaction: Car performs an emergency stop.	
Troubleshooting:	
1. Refer to the Svendborg SOBO iQ brake controller manual for troubleshooting information.	
Software Recall Switch Activated, SOFTWARE RECALL ON	
Description: The software recall command has been activated via iMonitor.	
Car Reaction: Car recalls to specified floor. Car calls and doors operate per recall command parameters.	
Troubleshooting: Check the status of the recall command and related parameters.	
SPA Firmware Updated	
Description: The Safety A firmware was successfully updated.	
SPA Spare Event 'n' (n = 1 to 8)	
Description: SPA Spare Events 1 through 8 are used for testing.	
SPB Firmware Updated	
Description: The Safety B firmware was successfully updated.	
SPC Firmware Updated	
Description: The Safety C firmware was successfully updated.	

Troubleshooting

Table 6.3 iControl Messages

iControl Messages	
Speed Limit, MF Forcing, SPD LMT MF FORCING	
Description: System detected armature current without armature current command. (The motor field is forced to help dynamic braking slow the car.) DC controls only.	
Car Reaction:	
Troubleshooting:	
1. Check that the brake is setting properly.	
Stuck Cartop Inspection Input, STUCK CT INSP. INPUT	
Description: Stuck inspection monitoring is enabled by the <i>Monitor cartop and car panel inspection inputs</i> option (Setup > Safety > Configuration tab). During passenger (automatic) operation, this message is generated if any of the cartop inspection inputs (CTEN, ICTU, ICTD) remain high for more than 250msec. During inspection operation, this message is generated if any combination of cartop inspection inputs remain high for more than five seconds, except for the following two, Enable plus Up (CTEN + ICTU) and Enable plus Down (CTEN + ICTD).	
Car Reaction: None	
Troubleshooting: Check and fix the car panel inspection buttons and related circuitry (Enable, Up, Down).	
Stuck Car Panel Inspection Input, STUCK CP INSP. INPUT	
Description: Stuck inspection monitoring is enabled by the <i>Monitor cartop and car panel inspection inputs</i> option (Setup > Safety > Configuration tab). During passenger (automatic) operation, this message is generated if any of the car panel inspection inputs (ICEN, ICPU, ICPD) remain high for more than 250msec. During inspection operation, this message is generated if any combination of car panel inspection inputs remain high for more than five seconds, except for the following two, Enable plus Up (ICEN + ICPU) and Enable plus Down (ICEN + ICPD).	
Car Reaction: None	
Troubleshooting: Check and fix the cartop inspection buttons and related circuitry (Enable, Up, Down).	
Stuck Inspection Input Fault, STUCK IN. INPUT FLT	
Description: This fault is generated when a stuck inspection input is detected during passenger (automatic) operation (see Stuck Cartop / Car Panel Inspection Input message). The fault is not generated if the car was on inspection operation. To avoid entrapment, the fault is not generated until the car has reached a floor.	
Car Reaction: All hall calls are reassigned or canceled. The car will complete its run. When the car is at a floor, doors are cycled to let the passengers out and all car calls are canceled. The car is shut down and remains out-of-service until the fault is cleared.	
Troubleshooting: Check and fix all inspection inputs/buttons. Then press the iBox Fault reset button.	
Suspension Members Shutdown ON, SUSP. MEMBERS SHUTDOWN	
Description: When provided, displacement of one or more suspension members from their normal operating position has been detected (as required by section 8.4.3.1.5 of the A17.1-2016 elevator safety code).	
Car Reaction: All calls are cancelled. The car stops at the next available floor and open both doors. The car remains shut down until the detection means is manually reset and the fault reset via the iBox Fault Reset button.	
Troubleshooting:	
1. Check all suspension members and related detection means input.	
2. Related input: Suspension Members Monitor – Normally ON	
Suspension Members Shutdown OFF	
Description: The suspension members displacement detection means, and fault have been manually reset.	
Car Reaction: Car returns to normal service.	
Swing Operation Activated, Swing Operation, SWING OPERATION	
Description: Indicates that the car is in swing car operation, independent of the Group Controller. The car should be servicing a riser of hall calls dedicated to the car. The car will use settings from the Simplex Hall Call and Parking related settings from the car Simplex supervisor screens.	
Swing Operation Deactivated. See Swing Operation Activated.	
System Comm Disabled	

Table 6.3 iControl Messages

iControl Messages	
Description: The system communication has been disabled via the user command found in (System Configuration > Building > System comm command)	
Car Reaction: The controller will no longer communicate with the rest of the system (iCue, Local Dispatcher, Hall Calls drivers, ...) until the System Communication is manually re-enabled via the same command (this is similar to pulling the orange System Comm cable from the iBox).	
Car Reaction:	
System Comm Enabled	
Description: The system communication has been re-enabled via the user command found in (System Configuration > Building > System comm command)	
Car Reaction: The controller will now communicate with the rest of the system (iCue, Local Dispatcher, Hall Calls drivers, etc.)	
SYSTEM SYNC	
Description: The iBox is establishing communication with the cartop and acquiring position data.	
Tach Error Fault, TACH ERROR FAULT	
Description: Indicates that the difference between the intended speed and the speed feedback signal has exceeded the Following Error parameter.	
Car Reaction: Emergency stop: Motor contactor and brake contactor immediately dropped. Followed by normal run.	
Troubleshooting:	
1. Please refer to "Tach Error Tripping Threshold Adjustment" on page 4-49.	
Tach Failure, TACH FAILURE	
Description: Difference between synthetic tach signal and external speed feedback signal exceeds tolerance.	
Car Reaction: Emergency stop: Motor contactor and brake contactor immediately dropped. Cancel all calls.	
Troubleshooting:	
1. Check velocity encoder and recalibrate tach failure and synthetic speed. Please refer to "Tach Failure Calibration (System 12 SCR Drive)" on page 2-45 and See "Synthetic Speed Calibration (System 12 SCR Drive)" on page 4-14.	
TERMINAL LEARN ON	
Description: This status message, on the iBox display, indicates that the system is prepared to learn the speed and position values for the normal (UNT1-5/DNT1-5) and emergency (UETS/DETS) terminal switches.	
Terminal Synchronization Fault, TERMINAL SYNC FAULT	
Description: The system either did not receive edge position data from the cartop or the system did not detect a floor position magnet where expected.	
Car Reaction: Car stops after crossing floor magnet at top or bottom terminal and is not allowed to move.	
Troubleshooting:	
1. Verify car was not moved after power shut off.	
2. Verify up/down normal terminal switch #5 opens at appropriate location. When up/down switch opens, no LU or LD sensor should be active. Also, only one floor magnet should be encountered in direction of travel after up/down switch opens.	
3. Move car past floors around vicinity of fault and verify proper activation of LU and LD sensors.	
4. Verify that the system is communicating with the cartop (no Cartop Communication Fault).	
5. Verify absolute and cartop positions change by same amount and same direction while moving the car.	
6. Verify that the terminal magnet has not fallen off.	
7. Check the clearance between the floor sensor board and the magnets. Sometimes this clearance will be off just enough to make some magnets fail to register properly. Adjust the clearance if necessary.	
8. Re-learn the floor heights.	
9. The iLink, iLand or iBox may be faulty.	
Test Developer Data Trap	
Description: A mechanism to manually trigger the custom data trap.	

Troubleshooting

Table 6.3 iControl Messages

iControl Messages	
Test Mode, Test	
Description: Indicates that the elevator is in the Test mode of operation. iBox Test switch in Test position.	
Car Reaction: Door operation is disabled. This setting is used to adjust or test the elevator.	
This Car Alternate Fire Sensor Recall, THIS CAR ALT FIRE	
Description: Recall to the alternate fire floor due to active or latched smoke detector input(s) from the cars hoistway or machine room.	
Car Reaction: Car proceeds to the user-defined alternate fire recall floor. Once at the recall floor, door operation is according to the user-defined door operation under fire recall operation. The fire warning indicator light will flash.	
Troubleshooting:	
1. If in error, inspect the sensors, inputs, and connections.	
2. Related Inputs: This Car Alt Recall sensor inputs as shown on the job prints.	
This Car Main Fire Sensor Recall, THIS CAR MAIN FIRE	
Description: Recall to the main fire floor due to active or latched smoke detector input(s) from the cars hoistway or machine room.	
Car Reaction: Car proceeds to the user-defined main fire recall floor. Once at the recall floor, door operation is according to the user-defined door operation under fire recall operation. The fire warning indicator light will flash.	
Troubleshooting:	
1. If in error, inspect the sensors, inputs, and connections.	
2. Related Inputs: This Car Main Recall sensor inputs as shown on the job prints.	
Unintended Motion Fault (see Safety A Unintended Motion Fault)	
Up Direction Limit Open, UP DIR LIMIT OPEN	
Description: The up normal terminal direction switch is open	
Car Reaction: Immediate stop if moving. Further up direction movement is prevented.	
Troubleshooting:	
1. Verify that the switch is operating properly.	
2. Verify correct state of the iBox UNTD input.	
3. Verify UNTD switch activating/deactivating at the appropriate location (normally 2" below the bottom terminal landing - see prints).	
Up Emergency Terminal Switch Position Fault, UP ETS POSITION FAULT	
Description: Reported position encountering Terminal Switch differed from learned switch position by more than set position margin. This fault may be bypassed on the Diagnostics > Fault Bypass tab.	
Car Reaction: Emergency Stop: Motor and brake contactor immediately dropped. All hall and car calls canceled. After car is stopped, it will run at Correction speed to next available floor and cycle door. Door Open button will remain operational. If generated when car moving, fault will stay latched and Fault Reset button must be pushed to clear. If generated when car stopped, fault will self clear when condition ends.	
Troubleshooting:	
1. Check integrity of switch and wiring. Check iBox input for switch.	
2. On Diagnostics > Terminal Switches Status tab, compare Last pass position to Learned position for switch. Verify Position Margin within reasonable range (Configuration > Terminal Switches tab). If appropriate, move switch closer to the terminal landing.	
3. Relearn the NTS and ETS switches. Please refer to "Learning Normal & Emergency Terminal Limit Switches" on page 4-12.	

Table 6.3 iControl Messages

iControl Messages	
Up Emergency Terminal Switch Shutdown, UP ETS SHUTDOWN	
Description: Up Emergency Terminal Switch opened at speed or position exceeding specified threshold. Fault stays latched and Fault Reset button must be pushed to clear. If generated when car stopped, fault will self clear when condition ends.	
Car Reaction: Emergency stop: Motor contactor and brake contactor immediately dropped.	
Troubleshooting:	
1. Fault logged in conjunction with a speed or position fault at UETS. Check Event Log and follow troubleshooting for Up Emergency Terminal Switch Position Fault or Safety A (or B) UETS Level 2 Speed Fault. 2. Press iBox Fault Reset to clear the fault.	
Up Normal Terminal Switch 'n' Level 1 Speed Fault, UP NTS'n' L1 SPEED FLT (n = 1 to 5)	
Description: Level 1 Overspeed detected at Up Normal Terminal switch 'n' (1 to 5). When switch opened, car was traveling faster than Level 1 overspeed settings (sum of learned speed plus Overspeed 1 Margin percentage setting on Configuration > Terminal Switches tab) but not fast enough to trigger Level 2 overspeed. May be bypassed on Diagnostics > Fault Bypass tab.	
Car Reaction: Controlled stop using Emergency Slowdown pattern parameters.	
Troubleshooting:	
1. On Diagnostics > Terminal Switches Status tab, compare Last pass and Learned speeds for switch. If appropriate, increase Overspeed 1 Margin on the Configuration > Terminal Switches tab. 2. May be caused by pattern parameter change. Re-learn terminal switches if Pattern parameters change. 3. One or two floor runs can come in "hotter" than multi-floor runs.(switches are learned making full hatch runs). If short runs are the problem, increase Overspeed 1 Margin (Configuration > Terminal Switches tab) or lower the Standard profile - High Roll Jerk parameter (Configuration > Pattern > Modes tab. 4. May be caused by car following pattern poorly (heavy load or poor speed loop performance). If so, adjust speed loop to follow pattern; alter pattern parameters for gentler deceleration and approach to floor (then re-learn switches). Please refer to "Terminal Switch Overspeed and Position Faults" on page 4-61.	
Up Normal Terminal Switch 'n' Level 2 Speed Fault, UP NTS'n' L2 SPEED FLT (n = 1 to 5)	
Description: Level 2 Overspeed detected at Up Normal Terminal switch 'n' (1 to 5). Car traveling faster than Level 2 overspeed settings (105% of sum of learned speed plus Overspeed 1 Margin percentage setting on Configuration > Terminal Switches tab). May be bypassed on the Diagnostics > Fault Bypass tab.	
Car Reaction: Emergency stop: Motor contactor and brake contactor immediately dropped.	
Troubleshooting:	
1. Check Diagnostics > Terminal Switches Status. Compare last pass and learned speed. If appropriate, increase Overspeed 1 Margin on Configuration > Terminal Switches tab. 2. May be caused by Pattern parameters changes. Always re-learn switches after changes to Pattern. 3. One or two floor runs may be "hotter" than multi-floor runs. (Switches learned making full hatch runs.) If short runs are causing this, increase Overspeed 1 Margin or lower Standard profile - High Roll Jerk. 4. May be caused by car following pattern poorly (heavy load or poor speed loop performance). Adjust speed loop to follow pattern; alter pattern parameters for gentler deceleration and approach to floor (then re-learn switches). Please refer to "Terminal Switch Overspeed and Position Faults" on page 4-61.	

Troubleshooting

Table 6.3 iControl Messages

iControl Messages	
Up Normal Terminal Switch 'n' Position Fault, UP NTS'n' POSITION FLT (n = 1 to 6)	
Description: When switch opened or closed, car reported position different from learned position by value exceeding margin set on Configuration > Terminal Switches. Switch may have opened early, late or not at all on approach to terminal. Switch may have closed early, late, or not at all on departure from terminal. Switch can go open while at a floor where learned position is closed, or go closed at floor where learned position is open. This fault may be bypassed on the Diagnostics > Fault Bypass tab.	
Car Reaction: If traveling up, car executes emergency slowdown, continues at low speed until floor encounter. Car stops at floor, opens doors, performs floor sync. If fault persists, car goes out of service. If traveling down, car continues to first stop, opens doors, performs floor sync. If fault persists, car goes out of service. If stopped at floor, car opens doors, does a floor sync, and, if fault persists, goes out of service.	
Troubleshooting:	
1. On Diagnostics > Terminal Switches Status, compare Last pass position to Learned position for switch.	
2. If mechanical (switch movement/magnet movement, bad traveler), will tend to repeat at same position.	
3. A stuck switch is easy to spot by running the car on inspection and observing the input LEDs on the iBox.	
4. Perform a Terminal Sync operation (Terminal button on the Configuration > Pattern > Common tab).	
User Code Accessing an Invalid Logical Indicator (internal event)	
User Event 'n' Off (n = 1- 10) (see User Defined Event 'n' On)	
User Event 'n' On (n = 1 - 10),	
Description: Indicates that User Event 'x' (1 - 10) has been activated via User Input 'n' (1 - 10)	
Car Reaction: Determined by user programming (Configuration > Advanced > User Inputs tab)	
Troubleshooting: Determined by user programming (Configuration > Advanced > User Inputs tab)	
Vector Checksum Fault (see Safety Inventory Checksum Fault)	
Vector Comparison Fault (see Safety Inventory Comparison Fault)	
Vector Creation Fault (see Safety Inventory Creation Fault)	
Vector Learn Fault (see Safety Inventory Learn Fault)	
Watchdog Ordered Control Stop Before Reset	
Description: A critical component in the system has locked up.	
Car Reaction: The car will come to a controlled stop and the system will reboot automatically.	
Watchdog Ordered Emergency Stop Before Reset	
Description: A critical component in the system has locked up.	
Car Reaction: The car will perform an emergency stop and the system will reboot automatically.	

iBox Troubleshooting

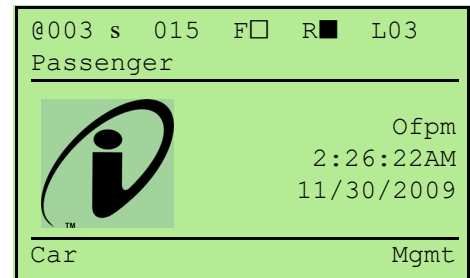
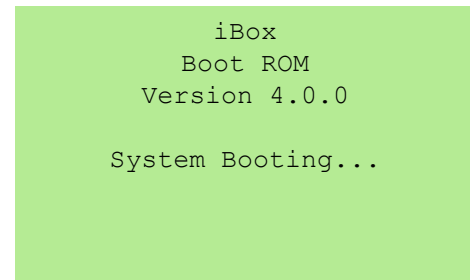
In this section we describe the following:

- iBox boot-up sequence
- Upgrading iBox firmware
- iBox removal and replacement

iBox boot-up sequence

Beginning with the April 09 release of iControl (IMP Boot ROM version 4.0.0) the iBox firm-ware includes visual feedback as the boot-up process progresses. The time at the beginning of each step is the approximate number of seconds from the beginning. The sequence is as follows:

1. **:00** All of the status LEDs on the iBox turn on momentarily.
2. **:02** The Drive On LED turns on indicating that the root task has started. The Safety OK, Computer, Safety A and Safety B LEDs turn on as the safeties are checked.
3. **:05** The message shown on the right appears on the LCD.
4. **:06** The Down LED turns on indicating that the EEPROMS have been read.
5. **:07** The Run LED turns on indicating that the application has loaded.
6. **:10** The Relevel LED turns on indicating that the application is running.
7. **:20** All of the center column of LEDs turn off.
8. **:40** The LCD message turns off.
9. **:50** The Standard LCD display appears and iControl begins normal operation.



If the iBox fails to boot-up as described above, contact MCE Technical Support.

Troubleshooting

Updating iBox Firmware

The iBox program files are stored in flash memory. These program files can be updated in the field using the iView PC. [Please refer to “Updating Controller Firmware” on page 8-42.](#)

iBox Removal and Replacement

The iBox is designed for relatively simple removal and replacement. The configuration file for the original iBox can be uploaded from a computer to the replacement iBox so that many operational settings will be in place. Some information, like floor heights and brake calibration, etc., may need to be “re-learned” when an iBox is replaced. This section contains:

- iBox Configuration > Save
- iBox Removal
- [iBox Installation](#)
- [iBox Configuration > Load](#)

iBox Configuration > Save

As described in Section 8, you can save the configuration parameters for the iBox to a computer hard drive (See [“Saving Current Parameters to a Configuration File” on page 8-21.](#)). Some or all of the information in the file can then be “loaded” to the same or another iBox, simplifying configuration.

1. Locate the Configuration file for the iBox you need to replace (default location is My Documents > Motion Control Engineering> iView > Configurations). If no Configuration file exists, depending on the nature of the malfunction, you may be able to create a Configuration file now:
 - Connect to the iBox through its #3 PC Ethernet connector.
 - Select *Save* from the *File > Configuration* menu.

A typical Windows save dialog will appear. The default name suggested for the file will be the controller connection name and date.cfg, e.g., if the connection name was Car A, the suggested file name would be CarA_mm_dd_yyyy.cfg. The default file suggested (My Documents > Motion Control Engineering> iView > Configurations) will be the file folder that contains the connection icon for the controller. You may change either or both of the default suggestions and store the file wherever you wish under any name you wish. As with any Windows file, if you change or delete the file extension (.cfg) it will lose its association with the application that created it. It is best to leave the file extension as-is.

2. Save the file to the desired location.

iBox Removal

1. Shut off power at the main disconnect.
2. Open the iControl cabinet.
3. Loosen the iBox cover retaining screws and remove the cover.
4. Unplug all connections to the body of the iBox. You can leave the connections to the rail-mounted circuit boards above and below the iBox connected.
5. Slightly loosen the retaining screws for the rail-mounted circuit boards and slide them away from the iBox (disconnecting the pluggable central bus).
6. Loosen the four captive, retaining screws that secure the iBox to the circuit board rails.
7. Remove the iBox.

iBox Installation

1. Verify that power is off at the main disconnect.
2. Open the iControl cabinet.
3. Remove the cover (bezel) from the new iBox.
4. Secure the new iBox in position between the rail-mounted circuit boards.
5. Slide the rail-mounted circuit boards above and below the iBox back into position so that the central bus is plugged back in.
6. Tighten the retaining screws for the iBox and all of the circuit boards.
7. Reinstall the iBox cover.
8. Reconnect all cabling to the body of the iBox.

6**iBox Configuration > Load**

While online (connected to a controller, you may select a Configuration (.cfg) file and send all or selected data from that file to the controller. [Please refer to “Loading Parameters from a Configuration File” on page 8-22.](#)

Troubleshooting

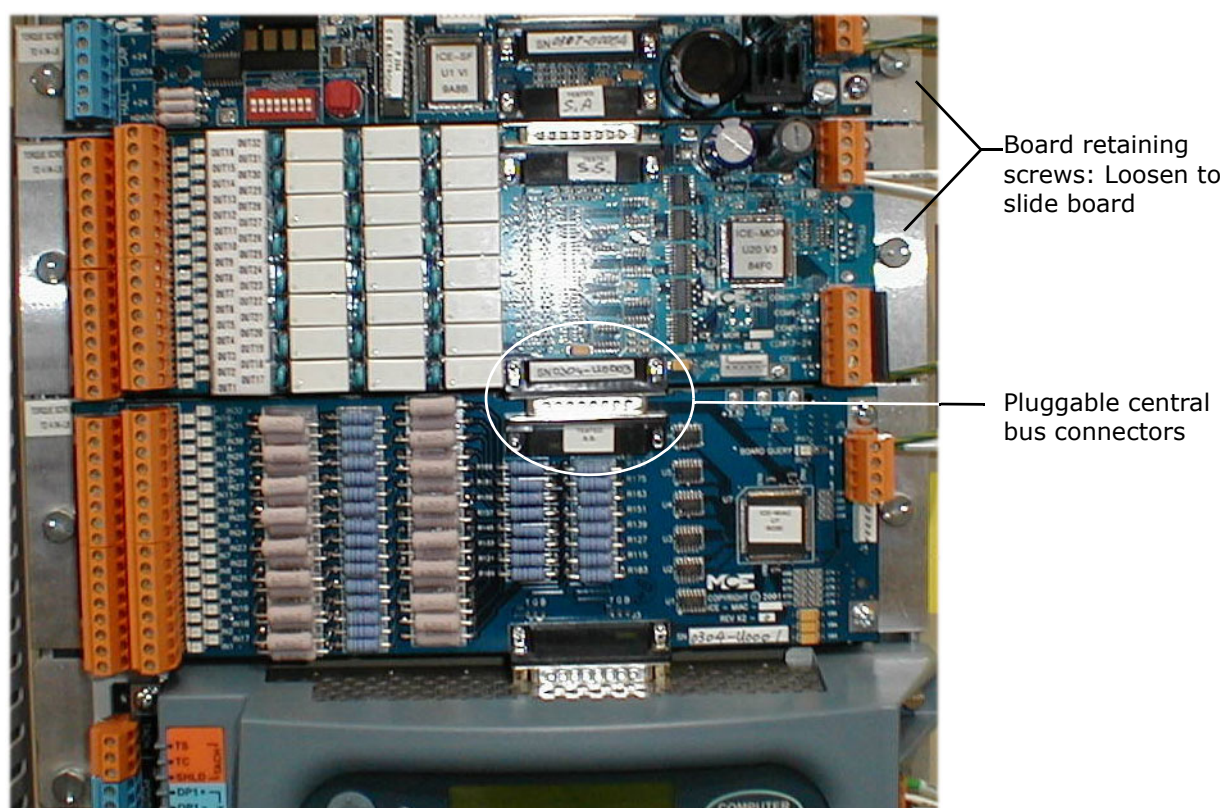
Replacing Circuit Boards

In the event of a circuit board failure it will be necessary to remove the defective board and replace it.

Circuit Board Removal and Replacement

Peripheral circuit boards in iControl and in the iLink cartop box are connected along a central, pluggable bus. The boards are mounted on slide-tracks so that, if you need to replace a board you can loosen the mounting bolts of the boards above or below it, slide them away, then loosen, slide, and remove the board you need to replace. In iControl, the central bus extends both above and below the iBox.

Figure 6.1 Circuit Board Removal and Replacement



Note

Before using iView to assign or reassign inputs or outputs to I/O boards, consult MCE so that your job prints can be corrected. Remember that reassigning an input or output will also require appropriate re-routing of the wiring.

iControl Circuit Board Quick References

This section contains information about iControl circuit boards and assemblies, including photographs with informational call outs, input/outputs, indicators, jumpers, test points and other information pertinent to troubleshooting.

The circuit boards are listed in the table below. If you are viewing this file on a computer, click the page number to jump to the appropriate section.

Table 6.4 iControl Circuit Boards

Board	Name	Where Used	See
ICE-COP-2	Serial Car Operating Panel Board	Car Operating Panels	page 6-90
ICE-CTP-2	Car Top Processor Board	iLink Car Top Interconnect	page 6-93
ICE-EB	Emergency Brake Board	iControl AC and DC	page 6-97
ICE-FML	Field Module Logic Board	iControl AD, DC	page 6-98
ICE-IEQ	Earthquake Board	iControl AC, DC	page 6-101
ICE-IMP	Main Processor Board	iControl AC, DC	page 6-104
ICE-IRB	Relay Board	iControl AC, DC	page 6-106
ICE-IRD	Rear Door Board	iControl AC, DC	page 6-109
ICE-LCB	Low Current Brake Board	iControl AC, DC	page 6-110
ICE-MIAC ICE-MIAC-24V	Multiple Input (120V) AC Board Multiple Input (24V) AC or DC Board	iControl AC, DC, iCentral Group, iLink	page 6-111
ICE-MOR	Multiple Output Relay Board	iControl AC, DC, iCentral Group, iLink	page 6-113
ICE-RG-2	Rope Gripper Board	iControl AC, DC	page 6-115
ICE-SAF	Safety Board	iControl AC, DC	page 6-117
ICE-SF	Serial Fixture Board	iControl AC, DC	page 6-122
SC-HCDA-ISO	Serial Hall Call Driver Isolation Board	iControl AC, DC Simplex / Swing Car	page 5-23
SC-HCE-2	Serial Hall Call Ethernet - Digi board	iCentral Group	page 5-23
SC-HCE-ME	Serial Hall Call Ethernet - Digi Board	iCentral Group	page 6-124
SC-HCNT	Serial Hall Call Node Board	Hall Call Fixture Enclosures	page 6-124
SC-ION	Serial Control I/O Node Board	iCentral Group	page 6-125
SCR-LGA	SCR Drive Logic Board	System 12 SCR Drive	page 6-127

Troubleshooting

ICE-COP-2 Serial Car Operating Panel Board

The ICE-COP-2 board interfaces between analog devices in the elevator car and serial devices in the elevator controller. Multiple ICE-COP-2 boards may be “daisy-chained” together to accommodate high-rise installations.

Board connection is described in detail on the prints for the specific job.

Normal Operation

During normal operation, I/O LEDs will be lighted when the associated I/O is active (dimmer when the output is active; brighter when the input is active). The SPA processor LED will be continuously lighted. If I/O LEDs remain in a static condition or the SPA processor LED is not continuously on:

- Press the RST button on the board. The I/O LEDs will all cycle and the board will resume operation.
- **Select RS485 communication:** DIP switch S2, rocker 8 to the **OFF** position.
- **Input Threshold Level:**
 - DIP switch S2, rocker 5 OFF = 900mV
 - DIP switch S2, rocker 5 ON = 700mV
- Other DIP switch S2 rockers: 1, 2, 3, 4, 6, 7 - OFF (Default).

Board Diagnostics

DIP switches and the I/O status LEDs also provide diagnostic information. When diagnosing the board, you may:

- Set the two bottom DIP switches (1 and 2) to the ON position.
 - I/O 1 and 2 LEDs will flash if RS485 with the cartop is good. LED1 monitors received data; LED 2 monitors transmitted data. If an LED is not flashing, that phase of communication has failed.
 - I/O 4 and 5 LEDs will flash if ICE-EXP-IN port communication with the preceding board in the chain is good. LED 4 monitors received data; LED 5 monitors transmitted data. If an LED is not flashing, that phase of communication has failed.
 - I/O 7 and 8 LEDs will flash very rapidly (appearing to remain on) if ICE-EXP-OUT port communication with the next board in the chain is good. LED 7 monitors received data; LED 8 monitors transmitted data. If an LED is not flashing, that phase of communication has failed.
- Over voltage detection:
 - Set all DIP switches OFF:
 - LEDs will “scroll” upwards if 33 VDC or greater is detected between V+ and COM.
- Under voltage detection:
 - Set all DIP switches OFF:
 - LEDs will “scroll” downwards if 18 VDC or less is detected between V+ and COM.

Software Version Query

Used by themselves (not in conjunction with another DIP switch as in Diagnostics), switches 1, 2, and 3 will separately display the board software version level (iControl only):

- Switch 1 ON will display the low version number on the first 8 LEDs (IO1 - IO8).
- Switch 2 ON will display the middle version number on the first 8 LEDs (IO1 - IO8).
- Switch 3 ON will display the high version number on the first 8 LEDs (IO1 - IO8).

The number is expressed in binary format with IO1 the least significant and IO8 the most significant value.

6

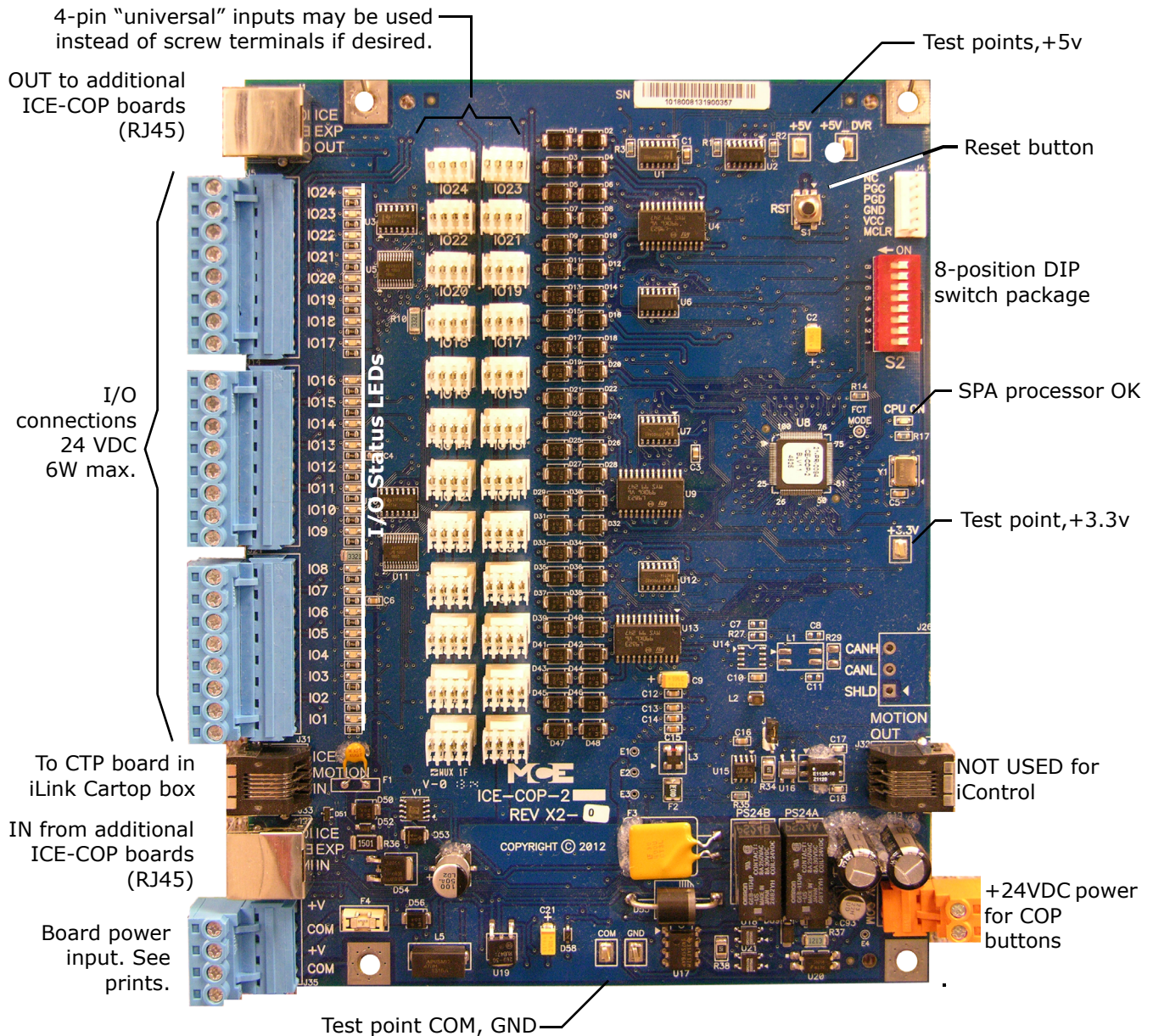
Table 7. iControl Software Version Number Example

	IO8=128	IO7=64	IO6=32	IO5=16	IO4=8	IO3=4	IO2=2	IO1=1	Value
S1	OFF	OFF	OFF	ON	OFF	OFF	OFF	OFF	16
S2	OFF	OFF	OFF	OFF	ON	OFF	OFF	OFF	8
S3	OFF	OFF	OFF	OFF	OFF	OFF	ON	ON	3
Example software version: 3.8.16									

If you do a software version query, BE SURE to set the DIP switch rockers (1, 2, 3,4, 6, 7 back to OFF afterwards. OFF is their default.

Troubleshooting

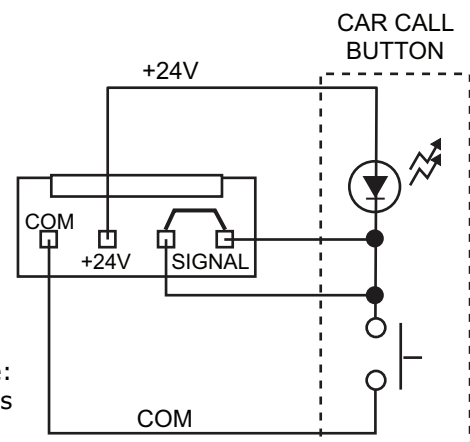
Figure 6.2 ICE-COP-2 Serial Car Operating Panel Board



Caution

This system is designed for 24 VDC circuits only. Connecting 120VAC or DC will open the input fuses and may damage the board.

Connection Example:
Universal 4-pin inputs

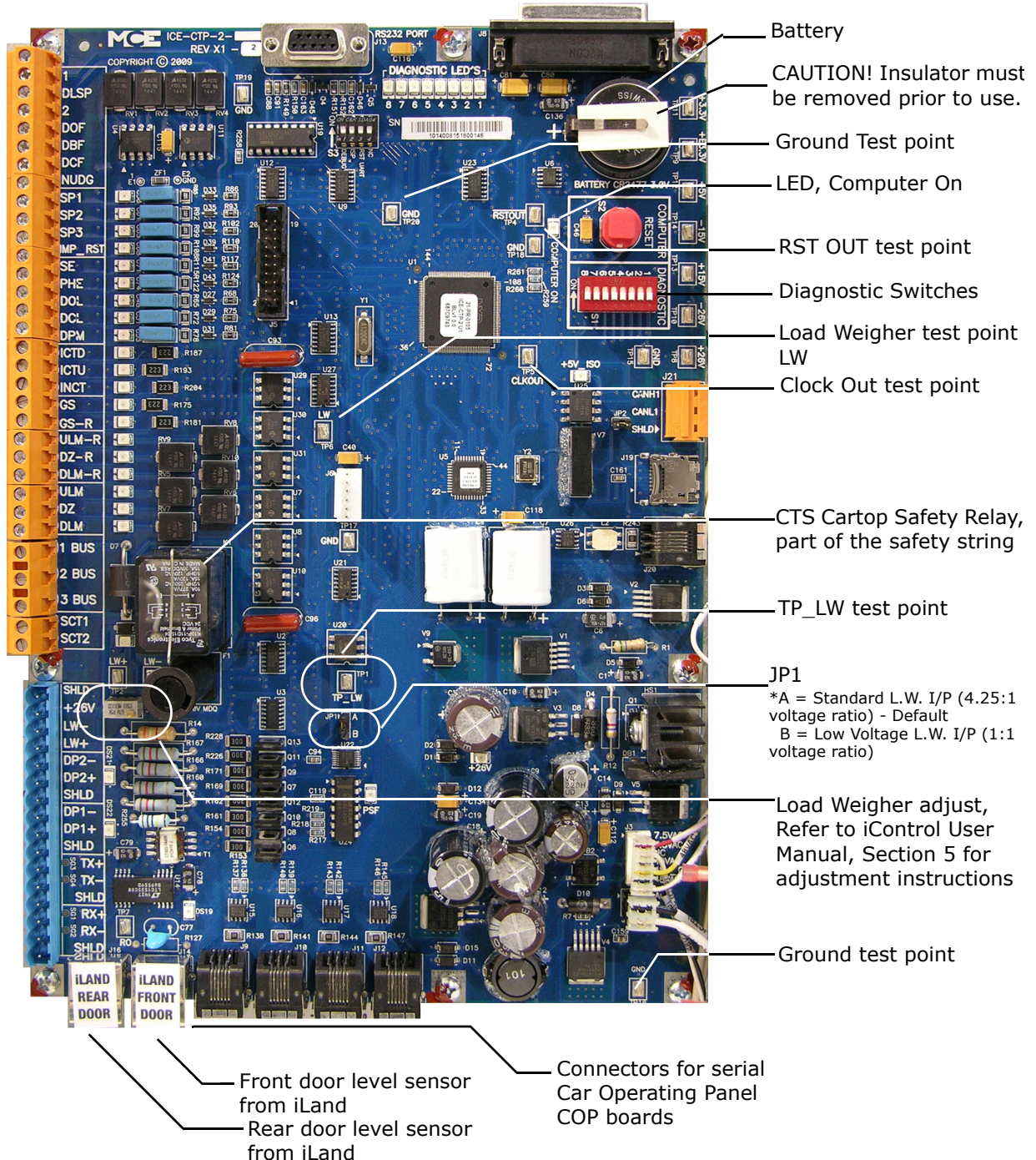


ICE-CTP Cartop Processor Board

The Cartop Processor board handles local control and communications for the iLink cartop interconnect. Like the iBox, the Cartop Processor usually has track-mounted expansion boards for extra inputs and outputs.

Figure 6.3 ICE-CTP-2 Cartop Processor Board

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Troubleshooting

Table 6.1 ICE-CTP-2 Board Connections

Terminal	Description
1	Common
DLSP	Door Logic Supply (See job prints for source level)
2	120VAC
DOF	Door Open Function output (active level =DLSP)
DBF	Door Boost Function output (active level =DLSP)
DCF	Door Close Function output (active level =DLSP)
NUDG	Door Nudge output (active level =DLSP)
SP1	Spare Input (120VAC signal level)
SP2	Spare Input (120VAC signal level)
SP3	Spare Input (120VAC signal level)
IMP_RST	Reset from ICE-IMP board
SE	(Door) Safe Edge Input (120VAC signal level)
PHE	Photo Eye input (120VAC signal level)
DOL	Door Open Limit input (120VAC signal level)
DCL	Door Close Limit input (120VAC signal level)
DPM	Door Position Monitor input (120VAC signal level)
ICTD	Cartop inspection down button (110VDC= switch closed)
ICTU	Cartop inspection up button (110VDC= switch closed)
INCT	Cartop inspection switch active (110VDC= switch closed)
GS	Gate Switch input (110VDC= switch closed)
GS-R	Gate Switch Rear (110VDC= switch closed)
ULM-R	Up Level Marker Rear output (110VDC= output active)
DZ-R	Door Zone Rear (110VDC= output active)
DLM-R	Down Level Marker Rear (110VDC= output active)
ULM	Up Level Marker (110VDC= output active)
DZ	Door Zone (110VDC= output active)
DLM	Down Level Marker (110VDC= output active)
1	Common
2	120VAC
3	110VDC
SCT1	Cartop Safety Contact 1 (110VDC= contact closed)
SCT2	Cartop Safety Contact 2 (110VDC= contact closed)

Table 6.2 ICE-CTP-2 Board Connections

Terminal	Description
SHLD	Shield: Common
+26V	26V output to load weigher
LW-	Input from Load Weigher (analog voltage)
LW+	Input from Load Weigher (analog voltage)
DP2-	Position input from iLand (balanced pair with DP2+)
DP2+	Position input from iLand (balanced pair with DP2-)
SHLD	Shield: Common. Wire from shield associated with DP2.
DP1-	Position input from iLand (balanced pair with DP1+)
DP1+	Position input from iLand (balanced pair with DP1-)
SHLD	Shield: Common. Wire from shield associated with DP1
TX+	Transmit to iBox (connect to iBox terminal RX+)
TX-	Transmit to iBox (connect to iBox terminal RX-)
SHLD	Shield: Common. Wire from shield associated with TX.
RX+	Receive from iBox (connect to iBox terminal TX+)
RX-	Receive from iBox (connect to iBox terminal TX-)
SHLD	Shield: Common. Wire from shield associated with RX.

Table 6.3 ICE-CTP-2 Board Testpoints

Test point	State
GND (x4)	Ground test points
Volt (x8)	+3.3, +E3.3, +5, -15, +15, -26, +26V
LW	Measured from LW to TP_LW, 0.3 — 1.0 VDC = Empty car.
LW-	Measured from LW- to TP_L@, -0.3 — -1.0 VDC = Empty car.
TP_LW	Measured from TP_LW to GND, 4 — 8 VDC = Full car.
RSTOUT	0V= computer reset
CLKOUT	Microprocessor clock

ICE-CTP-2 Cartop Diagnostics

There are eight diagnostic LEDs on the CTP-2 board. On power up or reset, these LEDs will light sequentially, first in one direction, then the other, after which they will briefly clear.

Diagnostic LED 1 Regardless of the switch settings, LED 8 is ON when an interrupt is being serviced. In normal operation it turns on and off quickly enough that it is almost as bright as a fully illuminated LED. If LED 8 stays OFF, it indicates that the board is not functioning normally and should be reset (press the RESET button).

Note

If there is a problem with communication between the iBox and the CTP-2 board after initial installation, verify that the iBox TX+ and TX- terminals are connected to the CTP-2 board RX+ and RX- terminals, and the iBox RX+ and RX- terminals are connected to the CTP-2 board TX+ and TX- terminals (See “ICE-CTP-2 Board Connections” on page 6-95.).

Troubleshooting

Manual Reset Regardless of switch settings, the LEDs have the same meaning during reset and startup.

- When the reset button is release, the LEDs will light up one at a time in the following sequence - (1, 2, 3, 4, 5, 6, 7, 8, 7, 6, 5, 4, 3, 2, 1). Normal operation should commence immediately following the reset sequence.

If the reset sequence consists of three iterations of all LEDs on at the same time followed by all LEDs off, the board has been programmed with a non-production version of firmware. The board should be reprogrammed.

Diagnostic Switches The Diagnostic Switches should all be in the fully OFF position in normal operation. Be sure to push the switches firmly in the appropriate direction when setting the switches. The use of a small screwdriver or ballpoint pen is recommended.

Normal Operation The normal operating condition is with all DIP switches OFF.

Table 6.4 Diagnostic Indicators (Normal Operation - All DIP Switches OFF)

LED	Description
1	Message input from iBox to iLink. With normal communication, toggles every 80mS. Goes OFF and stays OFF if input is lost.
2	Indicates cartop detected unintended motion safety fault. With the car on Passenger operation, after the car had reached a landing, the car moved at a speed greater than 150 feet-per-minute.
3	Indicates that the cartop detected an unintended motion safety fault. With the car on Inspection, after the car had reached a landing, the car moved with doors open.
4	Message output from iLink to iBox. With proper communication, toggles approximately every 80mS. Goes OFF and stays OFF if output is lost.
5	This is the "alive" indicator. It toggles every 80mS during normal operation.
6	Lights when the car is on Inspection mode.
7	Unused.
8	Indicates that an interrupt is being serviced. If it goes off and stays off, the board is not functioning normally and should be reset (press the RESET button).

When the iBox is not active, only LED 5 will toggle. When the iBox is active and normal operations are in progress, LEDs 1, 4 and 5 will toggle regularly.

Firmware Download Firmware updates can be downloaded via iView. Normally, no manual intervention is needed at the cartop. However, if a problem does develop, the following may be of use in recovering:

1. Set the S1 DIP switches 1, 6 and 8 = ON.
2. Press the manual Reset button on the ICE-CTP-2 board. This tells the cartop firmware to wait for a firmware download without attempting to run the normal cartop application first.
3. Perform the firmware update using iView (File > Firmware Update).

Battery If the elevator performs a terminal sync when power is restored, check the ICE-CT-2 battery with a volt meter. If the top of the battery measures below 2.8 Vdc with respect to GND, replace the battery with a CR2477 or equivalent battery.

ICE-EB Emergency Brake Board

The Emergency Brake board is used in iControl AC and DC elevator controllers to control a hoist motor-mounted emergency brake. The emergency brake is typically a separate friction brake mounted on an extended or secondary sheave.

Figure 6.4 ICE-EB Emergency Brake Board

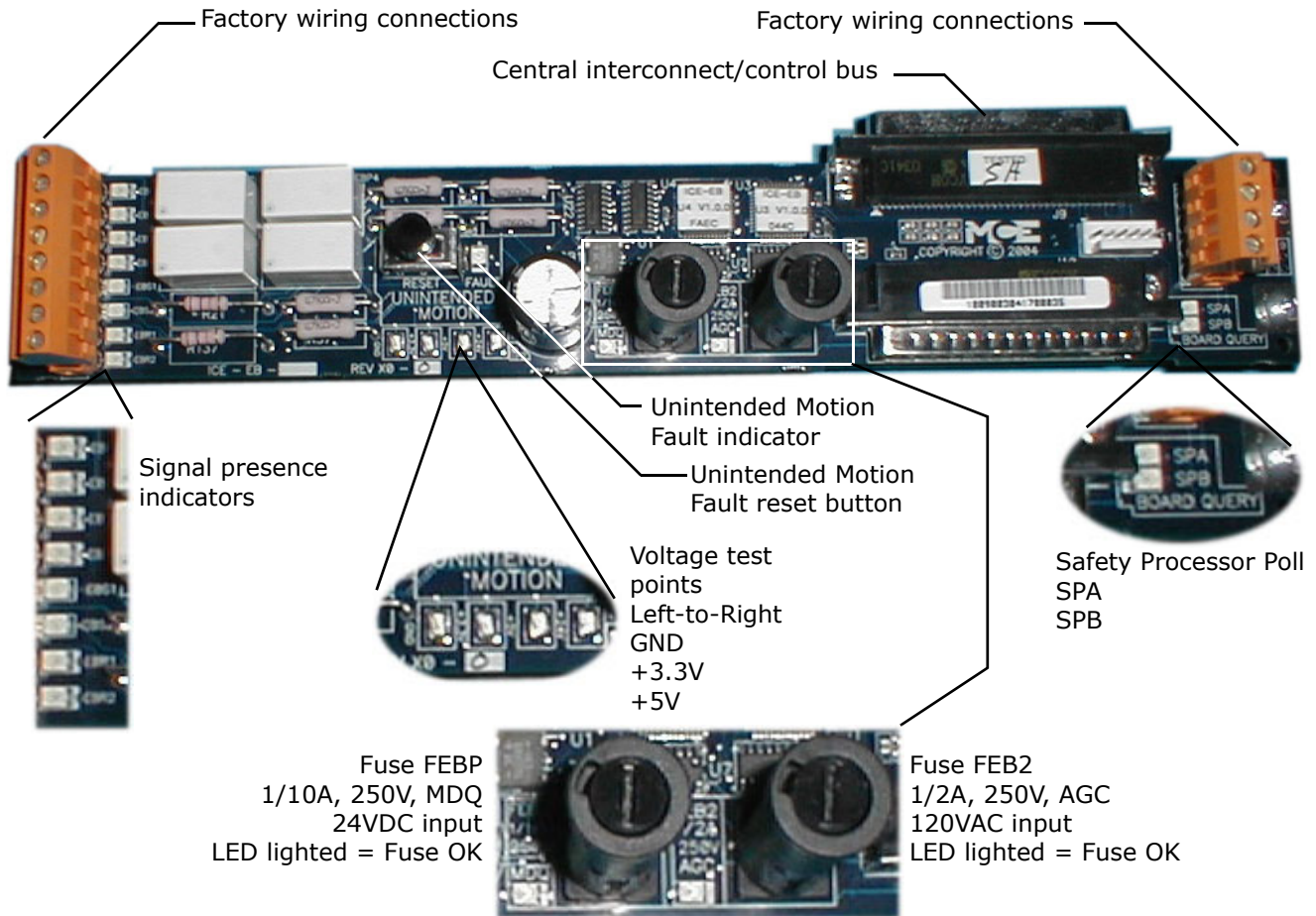


Table 6.5 ICE-EB Board Inputs and Outputs

Connector	Signal	Connector	Signal
	EBP1: 0VAC= Brk picked, 120VAC= Brk engaged		1: Common
	EBP2: 0VAC= Brk picked, 120VAC= Brk engaged		24X2: 24VDC input
	EBP3: 0VAC= Brk picked, 120VAC= Brk engaged		24: 24VDC input
	EBP4: 0VAC= Brk picked, 120VAC= Brk engaged		2: 120VAC input
	EBS1: 120VAC= Brk OK (picked)		
	EBS2: 120VAC= Brk OK (picked)		
	EBR1: 120VAC= Brk picked, 0VAC= Brk engaged		
	EBR2: 120VAC= Brk picked, 0VAC= Brk engaged		

The user makes no direct connections to this board. Refer to job prints for circuit information.

Troubleshooting

ICE-FML Field Module Logic Board

iField Modules are used to supply power to the brake on iControl AC and DC systems and to the motor field on iControl with DC drive. The iField Modules used for both purposes are the same, with the exception of the wiring to terminal J7 on the ICE-FMP, Field Module Power Board.

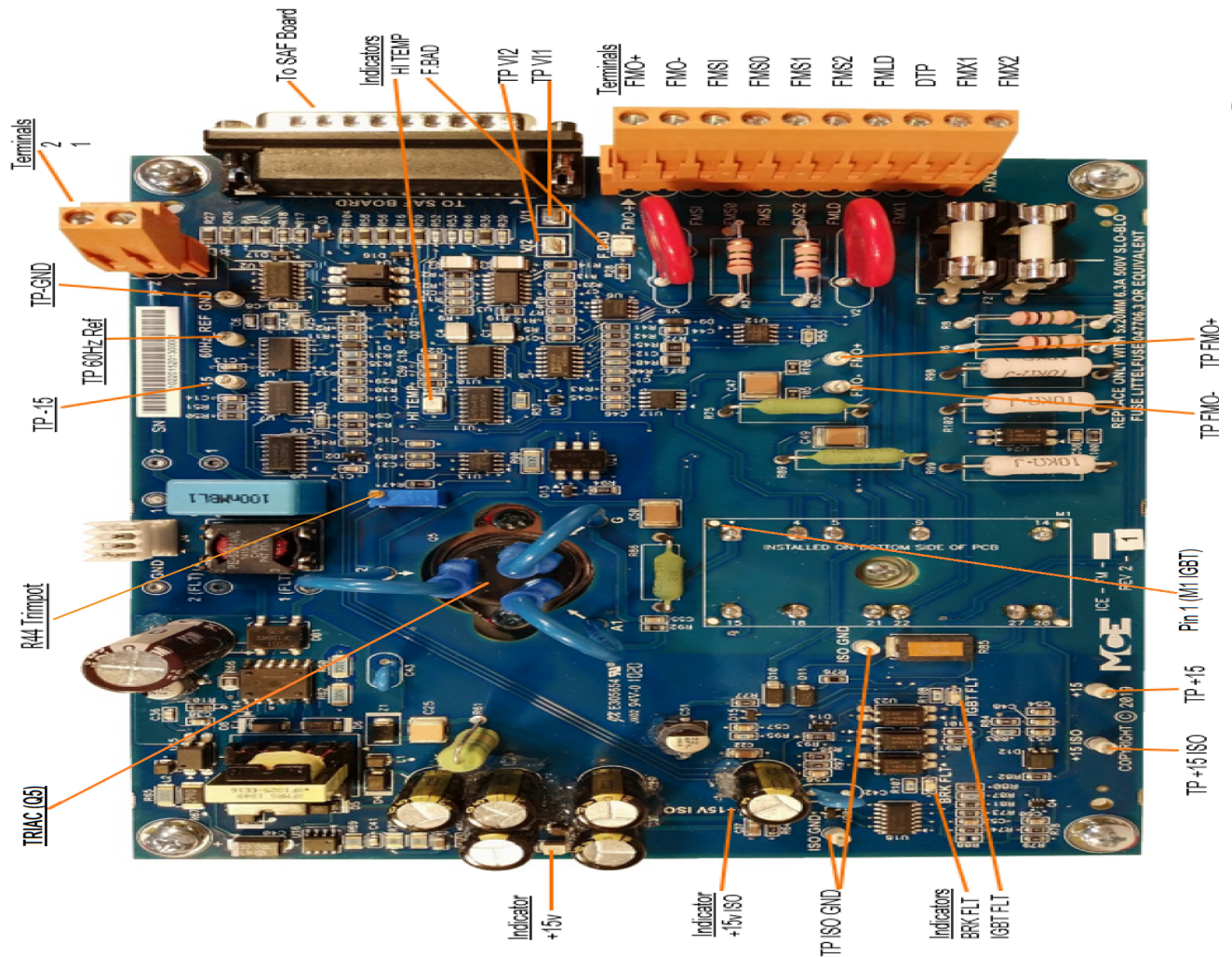
IFIELD-MODULE Specifications
Inputs: 70 VAC min, 300 VAC max, 1 Phase, 50/60Hz, 42 AMPS Maximum
Outputs: 0 VDC minimum, 265 VDC maximum, 45 AMPS Maximum
OVER-CURRENT PROTECTION REQUIRED ON INPUT - For loads up to 30A - use Bussman type FNQ or LittleFuse type FLQ - For loads over 30A - use Ferraz Shawmut type A50QS80-4 or LittleFuse type L50S80

ICE-FM Field Module Board

iField-Module-L is used to supply power to the brake on iControl AC and DC systems.

IFIELD-MODULE-L Specifications
Inputs: 70 VAC Min, 300 VAC Max, 1 Phase, 50/60Hz, 8 AMPS Maximum Continuous
Outputs: 0 VDC Minimum, 300 VDC Maximum, 6 AMPS Maximum Continuous
OVER-CURRENT PROTECTION REQUIRED ON INPUT - Replace with 5x10 mm 6.3A 500v SL0-BL0 - LittleFuse 047706.3 or equivalent

Figure 6.5 ICE-FM Field Module-L Logic Board



Troubleshooting

Table 6.6 IFIELD-MODULE-L Indicators on the ICE-FM Board

Indicators	Description
+15v ISO	LED indicator for isolated +15V power supply, measured with respect to isolated Ground, GND-ISO. Normally ON. Turns OFF when module loses +15 ISO voltage.
F. BAD	LED indicator for AC input on FMX1 and FMX2 terminals (on ICE-FM board). Normally OFF. Turns ON when any input side AC fuse opens.
+15v	LED indicator for +15V power supply, measured with respect to Ground. Normally ON. Turns OFF when module loses +15V.
HI TEMP	LED turns ON to indicate high temperature on the heat sink. Normally OFF. Turns ON when the temperature of the board raises above 85°C (185°F).
IGBT FLT	LED turns ON to indicate that the AUX IGBT has shorted.
BRK FLT	LED turns ON to indicate that the TRIAC is shorted or an over-current situation exists.

Table 6.7 IFIELD-MODULE-L Terminals on the ICE-FM Board (Brake Module)

Terminal	Description
1	1 BUS: AC input supply to the ICE-FML Board.
2	2B BUS: AC input supply to the ICE-FML Board.
FMO+	Field Module Output, positive, to brake coil.
FMO-	Field Module Output, negative, to brake coil.
FMSI	Field Module Safety Input: Jumpered to FMSO. FMSI and FMSO are always jumpered together unless there is a requirement for a mechanical safety contact to break between the load and the field module.
FMSO	Field Module Safety Output: Jumpered to FMSI. (see FMSI)
FMS1	Field Module Snubber 1: When used as a Brake Module, a shunt RC parallel network (RB & CB) is connected between FMS1 and FMLD.
FMS2	Field Module Snubber 2: N/C
FMLD	Field Module Load Diode: FMLD is connected to the cathode of a diode on the ICE-FM board. FMLD is also connected to RC network RB & CB (see FMS1).
DTP	Factory Use Only
FMX1	AC power input to Field Module from brake contacts (70 VAC min, 300 VAC max)
FMX2	AC power input to Field Module from brake contacts (70 VAC min, 300 VAC max)

ICE-IEQ Earthquake Board

The Earthquake board provides an interface between motion sensing devices and the iControl elevator controller.

Troubleshooting

Figure 6.6 ICE-IEQ Earthquake Board

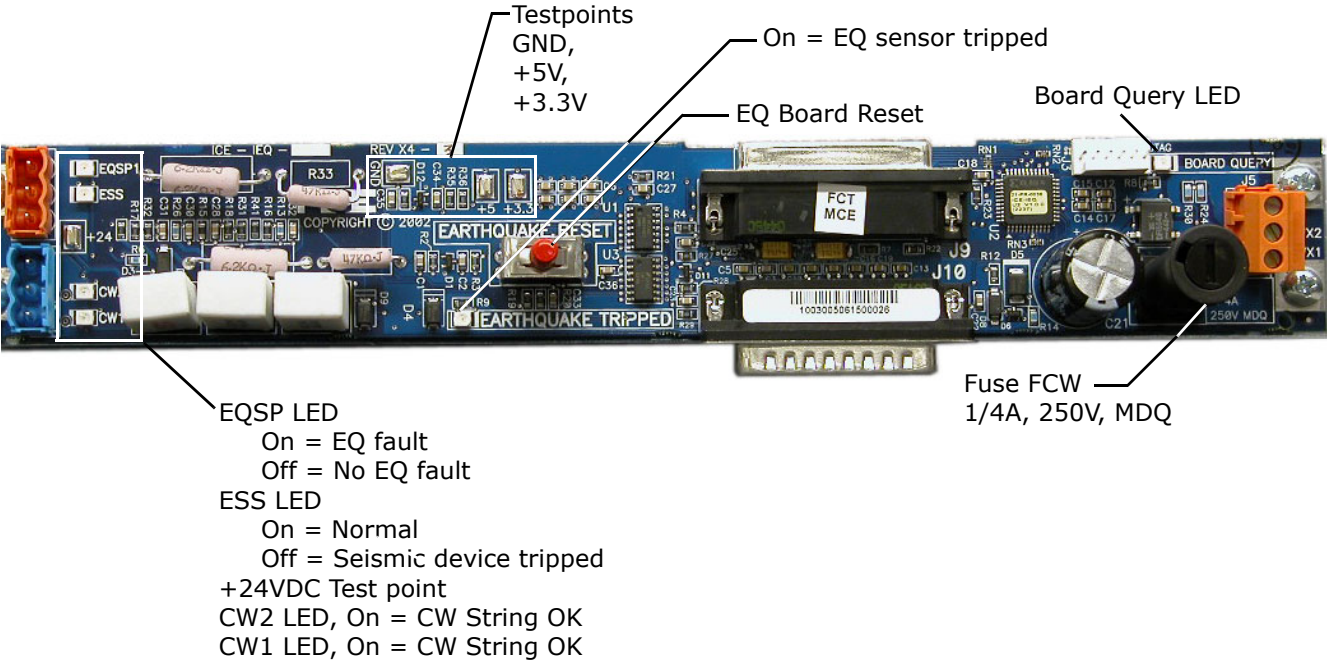
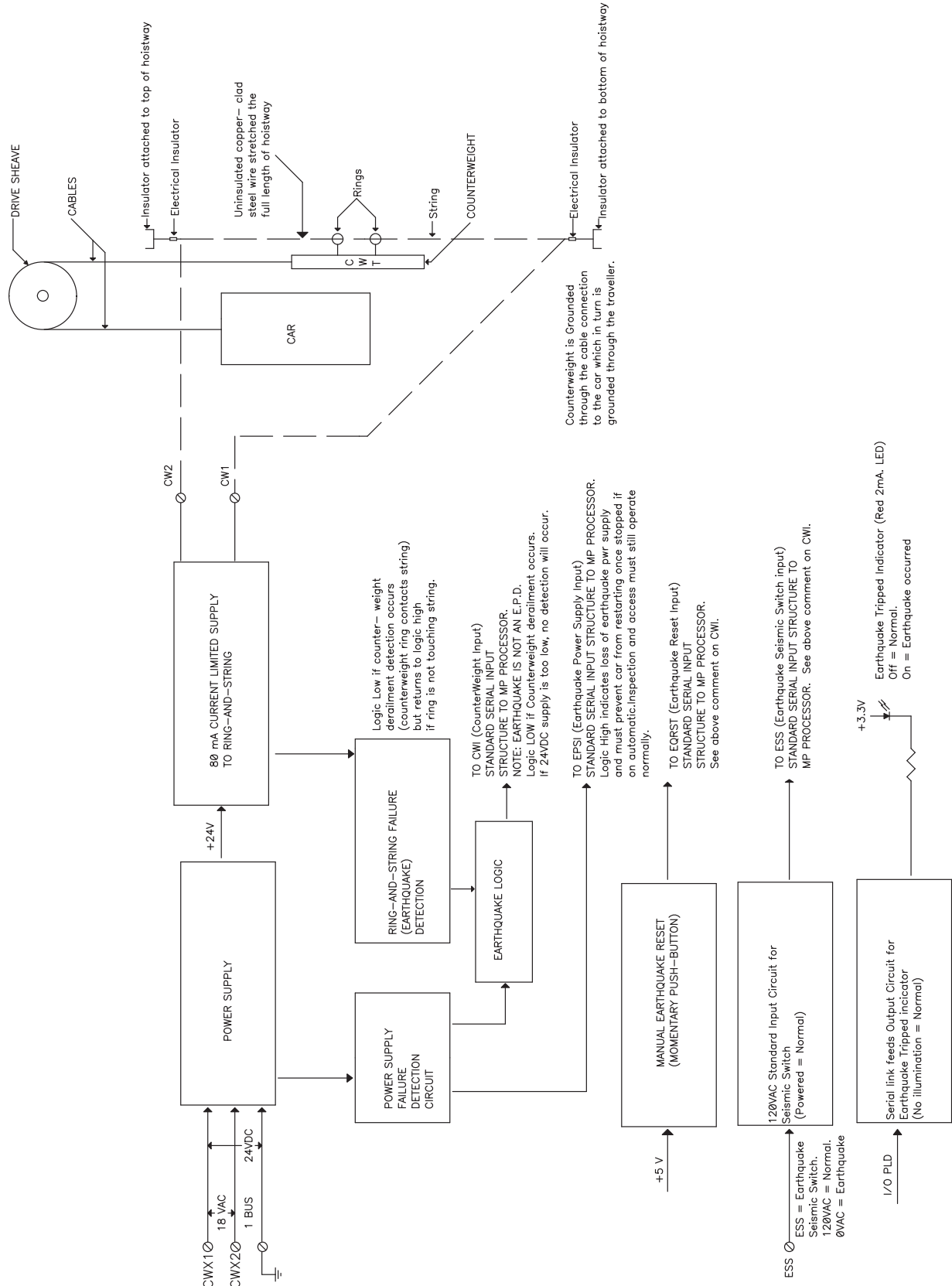


Table 6.8 Earthquake Board Connections

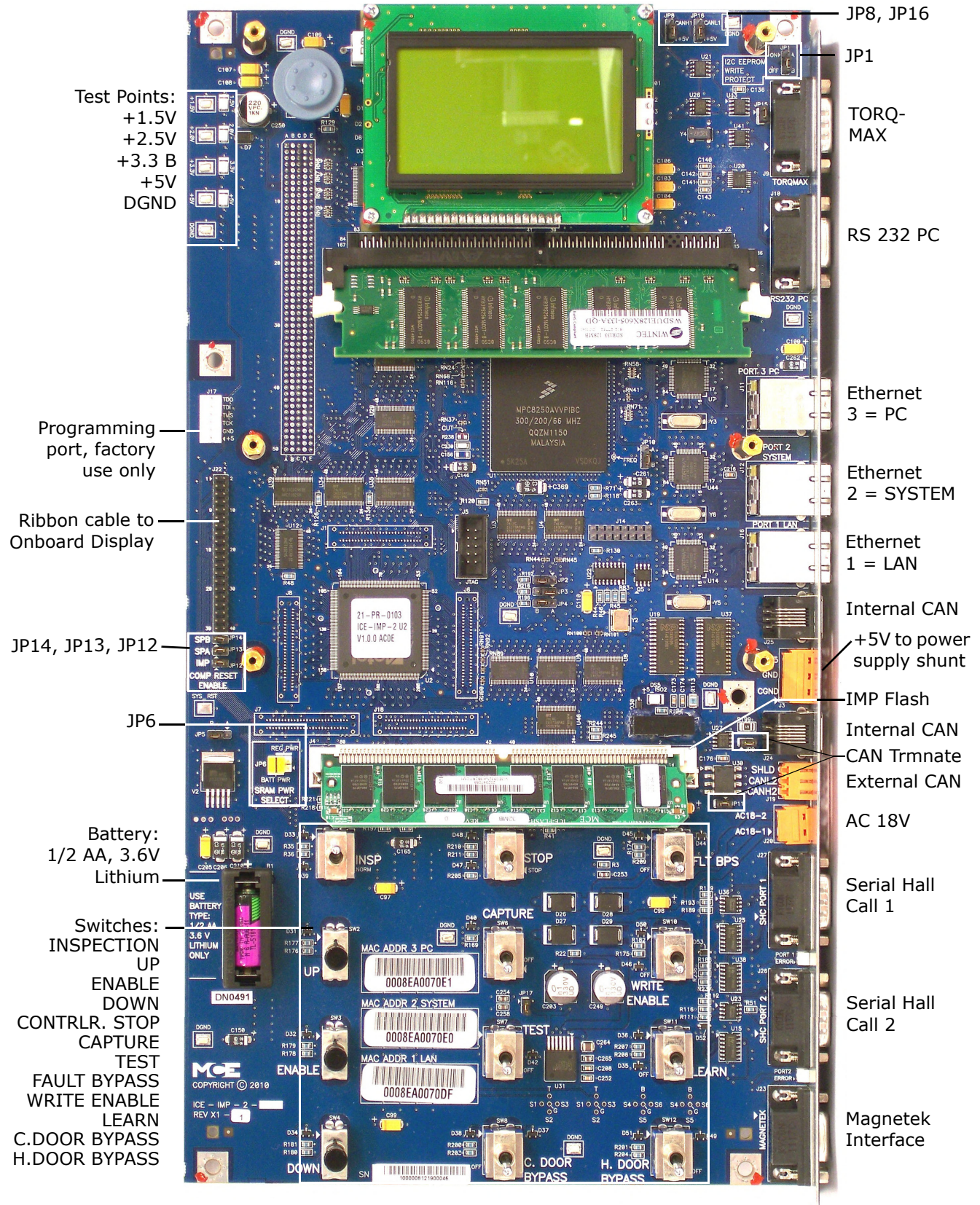
Connector	Signal	Connector	Signal
	EQSP 1:Spare. 0V=Normal. 120VAC=Tripped		1: Common
	ESS: 120VAC= Normal, 0V= Tripped (120VAC from #2 bus, through sensor to ESS)		CWX2: 18VAC
			CWX1: 18VAC
	CW2: 24VDC= Normal, 0V= String shorted		
	CW1: 24VDC= Normal, 0V= String shorted		

Figure 6.7 Earthquake Board, Supporting Information



Troubleshooting

ICE-IMP Main Processor Board



The ICE-IMP Main Processor Board provides central processing, data storage, control switches and communication. The Onboard display and ICE-SAF boards plug into the ICE-IMP board.

Table 6.9 ICE-IMP Jumper Table

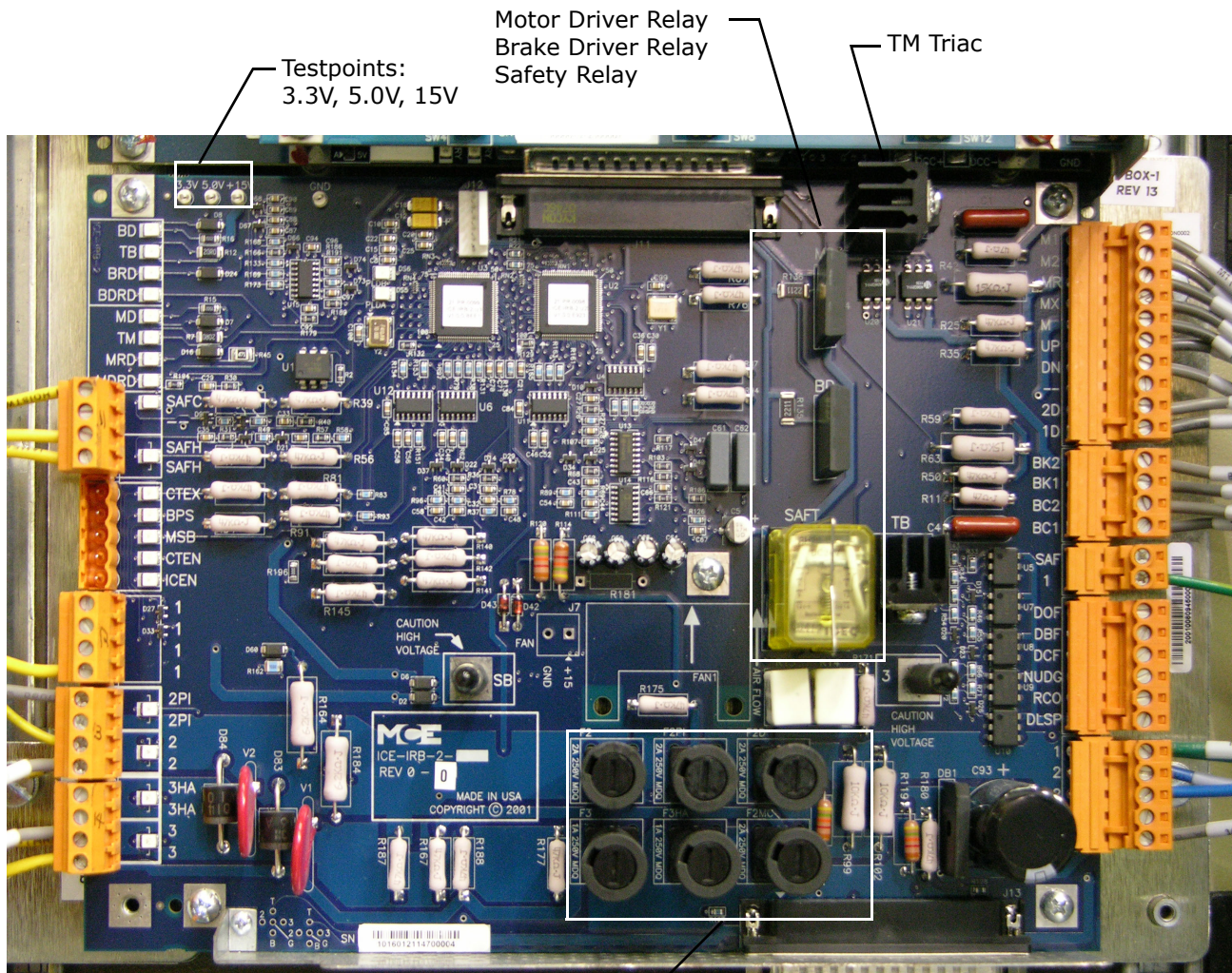
Jumper	Setting	Description
JP1	B	I ² C EEPROM Write Protect, A = ON, B = OFF
JP2	B	MODCK1, processor speed setting
JP3	A	MODCK2, processor speed setting
JP4	B	MODCK3, processor speed setting
JP5	B	Processor HRESET configuration
JP6	Battery	SRAM power select (Battery/Regular)
JP7	B	Socket 1 setting, A = Flash, B = SRAM
JP8	A	CANH configuration to expansion boards (future)
JP9	ON	CAN1 Termination
JP10	B	RSTCONF, A = used for debugging, B = normal setting
JP11	ON	CAN2 Termination
JP12	ON*	IMP (iControl Main Processor): ON = enables iBox COMPUTER RESET button to reset this processor. *iBox Rev. 7 thru 10 have a wire from this jumper to the ICE-SAF board which allows resetting if any power supply voltages are out of tolerance. iBox Rev. 11 and above use an internal circuit for this purpose.
JP13	ON	SPA (Safety Processor A): ON = enables iBox COMPUTER RESET button to reset this processor.
JP14	ON	SPB (Safety Processor B): ON = enables iBox COMPUTER RESET button to reset this processor.
JP15	ON	Serial interface transmit configuration
JP16	A	CANL configuration to expansion boards (future)

Troubleshooting

ICE-IRB-2 Relay Board

The Relay Board is an integral part of the iBox. Three system relays are mounted on the board. The SAFT relay is socketed (replaceable). There are also six fuses protecting the 110VDC and 120VAC iBox output buses that may be replaced. Electrically, the Relay Board is between the iBox processor and the motor and brake field modules inside the iPower Box. The SB and 3 terminals are accessible through the front of the iBox and bypass the safety string when “jumpered” together. If a jumper is placed, it “times out” automatically after 15 minutes. In TSSA jurisdictions, SB and 3 terminals are capped with insulators and are not front panel accessible.

Figure 6.8 ICE-IRB-2 Relay Board



Power Bus Fuses
250VAC,
Bussman MDQ or
Littelfuse Type 313

Table 6.10 ICE-IRB Relay Board

Signal (Left Edge)	Signal (Right Edge)
BD: Brake Driver relay indicator. When the BD relay on the Relay board is closed to pick the brake, this LED will light. Monitored by Safety Processor A.	M1: Drive contactor coil connection.
TB: Brake Triac active indicator. When the brake triac on the Relay board is active (completes circuit for BD relay), this LED will light. Monitored by Safety Processor B.	M2: Drive contactor coil connection.
BRD: Brake Redundancy. This LED lights when the main brake contactor drops out.	MR: Connects to drive contactor auxiliary contact for redundancy input.
BDRD: Brake Drive Redundancy. This LED lights when the BD relay drops out.	MX: Connects to drive contactor auxiliary contact for brake qualification.
MD: Motor Drive relay indicator. When the MD relay on the Relay board is closed to enable the motor, this LED will light. Monitored by Safety Processor A.	M: Part of MX circuit.
TM: Motor Triac active indicator. When the motor triac on the Relay board is active (completes circuit for MD relay), this LED will light. Monitored by Safety Processor B.	UP: Up direction output to MCE System 12 SCR Drive.
MRD: Motor Redundancy. This LED lights when the main motor contactor drops out.	DN: Down direction output to MCE System 12 SCR Drive.
MDRD: Motor Drive Redundancy. This LED lights when the MD relay drops out.	_ _: Not connected.
SAFC: Safety Cartop input. Cartop safety relays and switches are wired in series between SAFH (Safety Hoistway) and SAFC. If any contact in the safety string opens, there will be 0VDC on this input and the car will not run. If all safety contacts in the string are closed, there will be 110VDC on this input.	2D: 120VAC power to the drive. Fused on IRB board (fuse F2D).
SAFH: Safety Hoistway input. Hoistway safety relays and switches are wired in series between the #3 bus and SAFH. The patch also includes the Governor switch, with the GOV connection providing access to the #3 bus via the governor switch. (#3 to GOV through governor switch, GOV to SAFH through hoistway safety relays and switches). The job prints for the job provide specific wiring instructions. If any contact in the safety string opens, there will be 0VDC on this input and the car will not run. If all safety contacts in the string are closed, there will be 110VDC on this input.	1D: System common to the drive - source is the 1 bus.
SP1 D: Optional input. See job prints.	BK2: Connects to the brake contactor for redundancy checking. The source of power for this circuit comes from fuse F2 on the IRB board.
SP2 D: Optional input. See job prints. (When used as a brake pick switch input: Set brake = 110VDC. Picked brake = 0VDC.	BK1: Connects to the brake contactor for redundancy checking. The source of power for this circuit comes from fuse F2 on the IRB board.
SP2: Optional input. See job prints.	BC1: Connects to the brake contactor coil (see job prints for connection).
SP3: Optional input. See job prints.	BC2: Connects to the brake contactor coil (see job prints for connection).

Troubleshooting

Signal (Left Edge)	Signal (Right Edge)
SP4: Optional input. See job prints.	SAF: When used, provides an additional SAF relay.
1: (4x) Common bus connections. 0VDC	1: Common bus.
2PI: (2x) 120VAC outputs for position indicator. LED ON = bus powered.	DOF: Door Open output.
2: (2x) #2 bus outputs. 120VAC. 2 LED lighted when bus is powered.	DBF: Door Boost Output.
3HA: (2x) #3 bus outputs for hoistway. 110VDC. 3HA LED lighted when bus is powered.	DCF: Door Close Output.
3: (2x) #3 bus outputs. 110VDC. 3 LED lighted when bus is powered.	NUDG: Door Nudging Output.
	RCO: Retiring Cam Output.
	DLSP: Door Logic Supply Voltage. Selectable (by wiring) power input to door control relays. See job prints.
	1: Common bus.
	2: (2x) 120VAC bus.
	3D: (2x): 110VDC bus.

Checking TM Triac on ICE-IRB Board

If the PM or M contactors are not picking, you might see the following fault messages:

- Motor Contactor Driver Proofing Fault
- Drive Ready On Fault
- Drive Enable Feedback Fault
- SCR Insufficient Armature Current

Note

These faults do not necessarily mean that the problem is with the TM Triac. It is recommended to first consult the iControl Messages table in the Troubleshooting section and follow the troubleshooting tips for the message(s) displayed.

To check the TM triac:

1. With controller power off remove the cover on the iBox.
2. The TM triac is in the upper right hand corner of the ICE-IRB board, which is the lowest board under the iBox cover and has three relays on it.
3. Measure the resistance across the outside legs of the TM triac. The legs can be hard to get to depending on the probe leads used. You can get to the upper leg from the left and the lower leg from below.
4. If the resistance is 60-70 ohms then the triac is good and continue troubleshooting the fault. If the resistance is 15 ohms or less the ICE-IRB board needs to be replaced.

ICE-IRD Rear Door Board

The Rear Door board provides additional door zone inputs.

Figure 6.9 ICE-IRD Rear Door Board

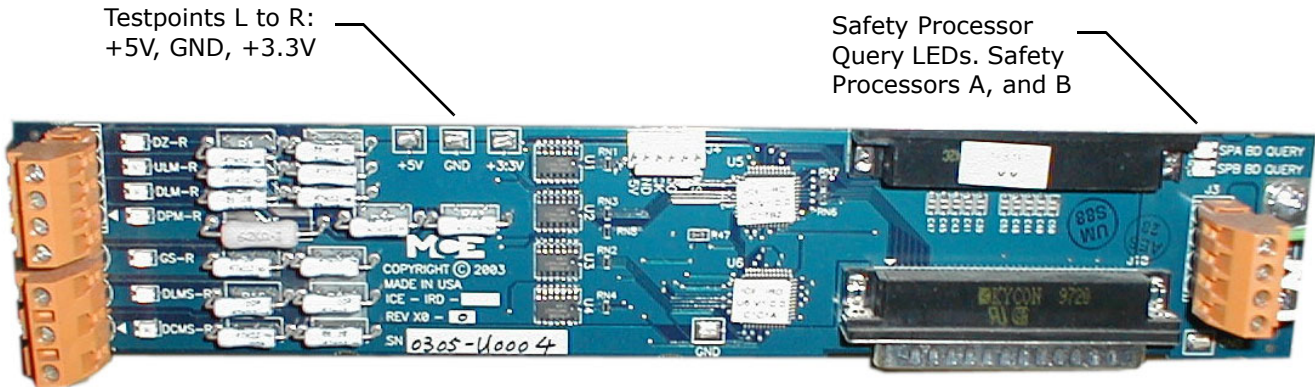
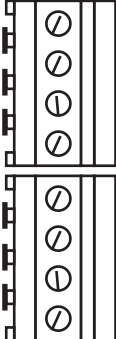


Table 6.11 Rear Door Board Connections

Connector	Signal	Connector	Signal
	DZ-R: Rear Door Zone signal from iLink. 110VDC active signal level. Off = 0.		1 (4x): Common bus connections.
	ULM-R: Rear Up Level Marker signal from iLink. 110VDC active signal level Off = 0.		
	DLM-R: Rear Down Level Marker signal from iLink. 110VDC active signal level. Off = 0.		
	DPM-R: Rear Door Position Monitor input. Door closed, input inactive. 120VAC. Door not closed, 0VAC.		
	GS-R: Rear Gate Switch input. The gate switch makes up when the elevator doors close. When the switch is made, there will be 110VDC on this input. When the switch is open, there will be 0VDC on this input. The gate switch may be wired in series with other switches or locks on the elevator doors (as shown in the job prints) so that, if any of the switches do not make, the GS input will remain low and the car will not run.		
	DLMS-R: Rear Door Lock Main String input. If top and bottom hoistway access is not provided, all hoistway rear door locks are wired in series between the #3 bus and this input. When the switch is made, there will be 110VDC on this input. When any switch is open, there will be 0VDC on this input and the car will not run.		
	DCMS-R: Rear Door Contact Main String input. If top and bottom hoistway access is not provided, all hoistway rear door contacts are wired in series between the #3 bus and this input. When the switch is made, there will be 110VDC on this input. When any switch is open, there will be 0VDC on this input and the car will not run.		

Troubleshooting

ICE-LCB Low Current Brake Board

Most iControls use the iField brake module for precise control of brake picking, holding, and application. If the requirements of the job permit, the Low Current Brake board may be used instead to provide simple brake pick and hold control. If used, the Low Current Brake board is usually mounted on the right wall inside the iPower Box. Brake adjusting components (resistors, capacitors, diodes) may be “wired in” to the board circuitry using AWG 18 wire and on-board screw terminals to modify the performance of the circuit. The job prints will show the Low Current Brake board connections clearly if it is used.

Table 6.12 Low Current Brake Board Signals

Signal	Use
B2 -, B1+	Brake voltage feedback signals to iControl Safety Board.
BKX1, BKX2	110VAC (typical) inputs to Low Current Brake Board rectifier.
BKD1	Brake Diode D1 cathode (used to include D1 in the circuit)
B2MCE	Used to include external components in the circuit
FBS1	Brake Diode D1 anode (used to include D1 in the circuit)
FBS2	Used to include external components in the circuit
BK2	Used to include external components in the circuit
BK1	Used to include capacitor C1 in the circuit
B1	Positive voltage output to brake coil via controller B1 terminal
B2	Return from brake coil via controller B2 terminal

ICE-MIAC (-24V) Multiple Input Board

The ICE-MIAC board is used in AC and DC iControls and in the iLink cartop interconnect as a general purpose input board suitable for industry-common 120VAC input signal levels. The ICE-MIAC-24V board can be used for 24V AC or DC inputs.

Figure 6.10 ICE-MIAC Multiple Input AC Board

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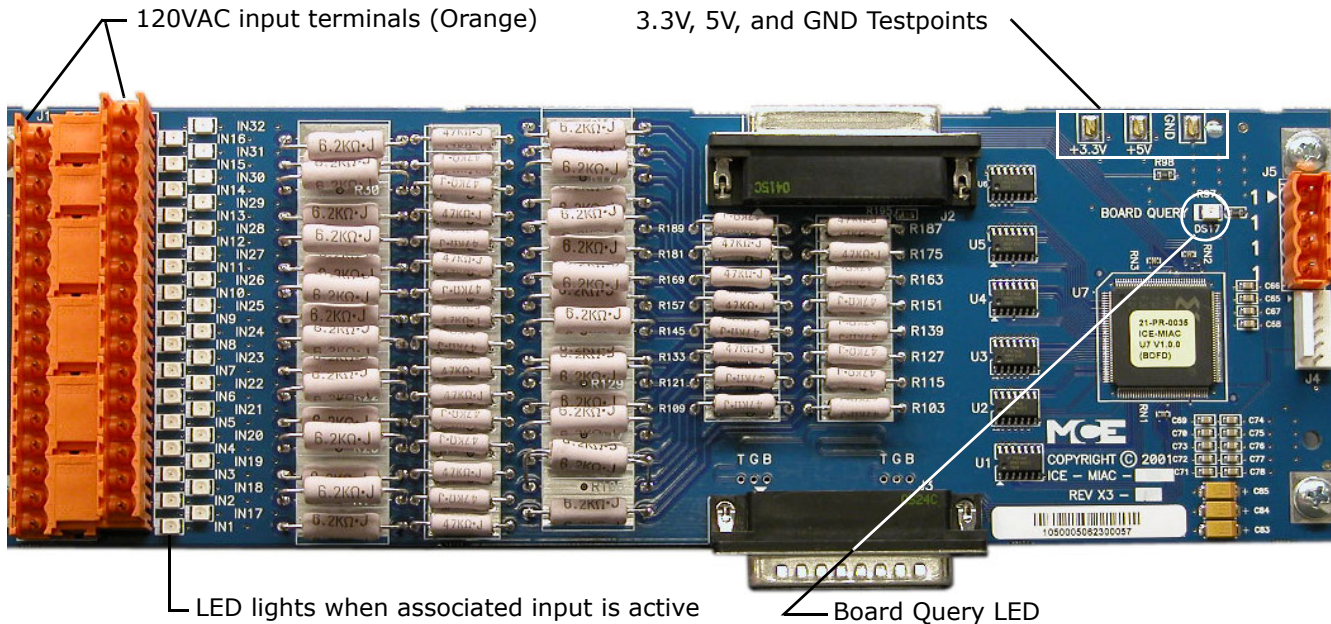
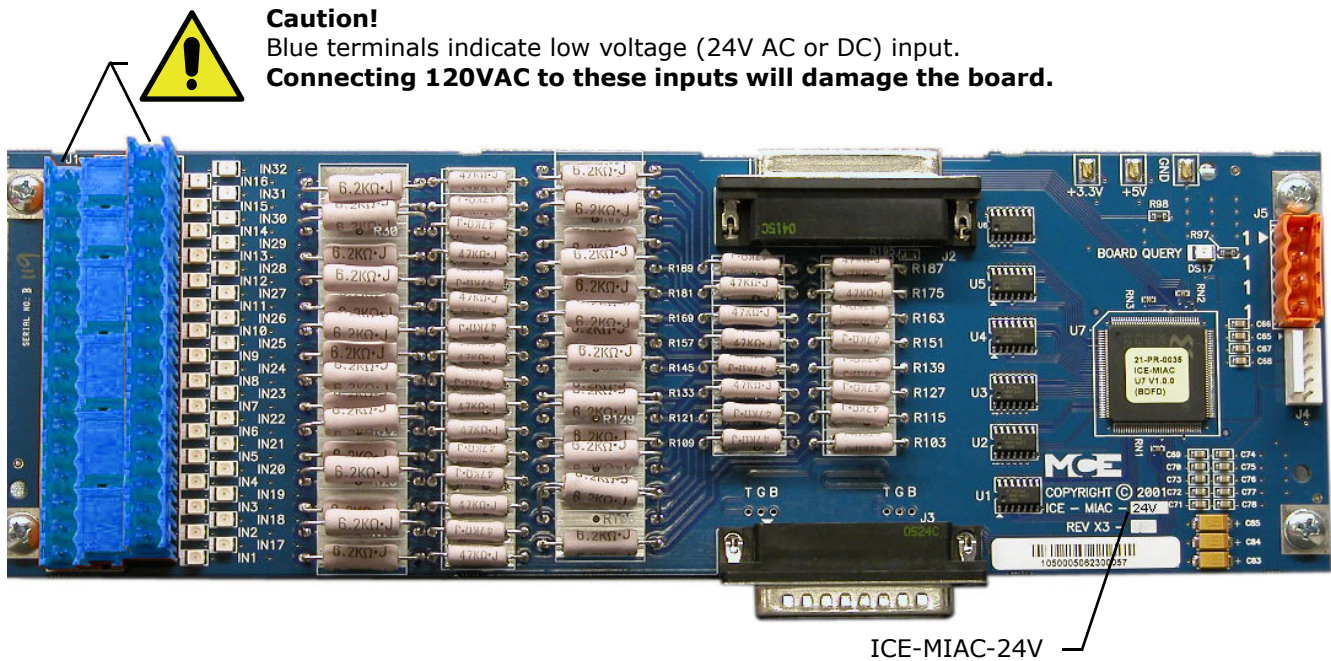


Figure 6.11 ICE-MIAC-24V Multiple Input AC/DC Board



Troubleshooting

Table 6.13 ICE-MIAC Board Connections

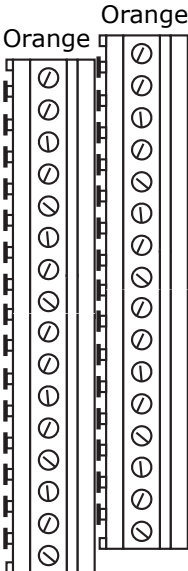
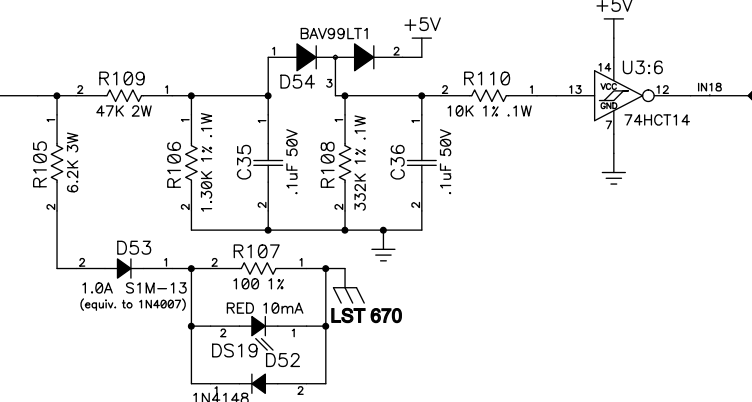
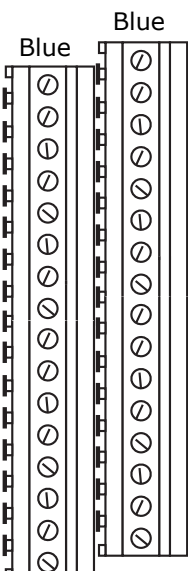
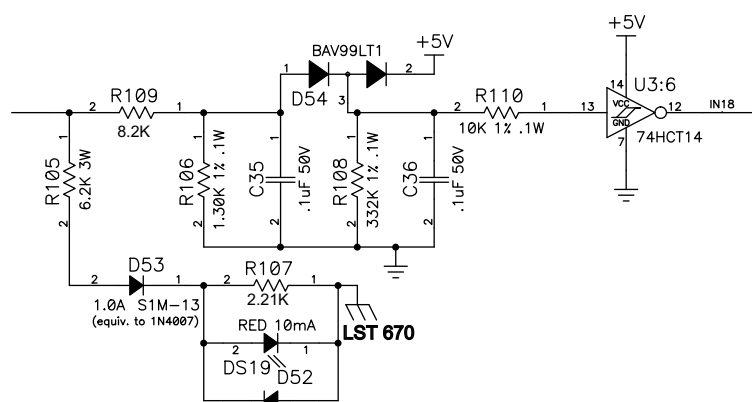
Connector	Signal	Connector	Signal
	Orange Terminals Inputs 1 - 32 120VAC = input active		1: Common
Typical Input Circuit 			

Table 6.14 ICE-MIAC-24V Board Connections

Connector	Signal	Connector	Signal
	Blue Terminals Inputs 1 - 32 24V AC or DC = input active Caution! Connecting 120V to these terminals will damage the board.		1: Common
Typical Input Circuit 			

ICE-MOR Multiple Output Relay Board

The ICE-MOR board is a multi-purpose, relay-closure output board. ICE-MOR boards are used in iControl elevator controllers and in iLink cartop enclosures.

Output Connections

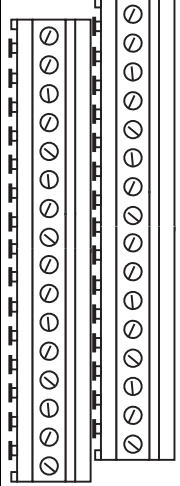
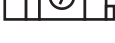
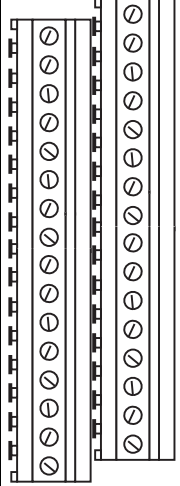
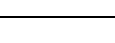
Connect outputs as shown in your job prints. Outputs may be configured (in specific groups) to provide either a path to ground or current to drive indicator lamps/LEDs.

Output State Selection The outputs are divided into five groups. Each group shares a common. The common may be wired to provide a current source or a path to ground. The groups are:

- Relays 1 – 4
- Relays 5 – 8
- Relays 9 – 16
- Relays 17 - 24
- Relays 25 - 32

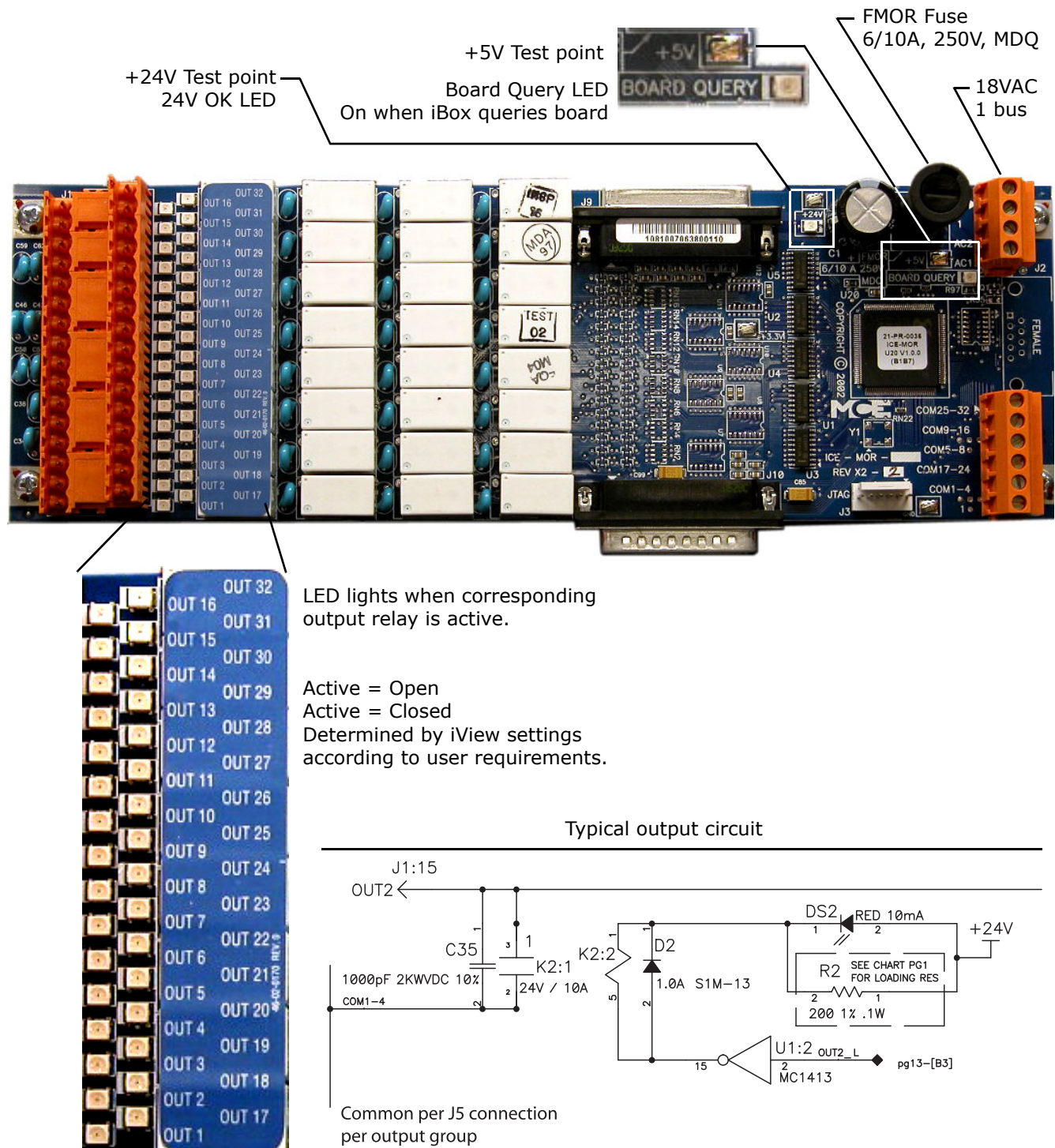
The commons for the groups are determined by the connections made to board connector J5. The appropriate connections are determined during the job survey. Each system is configured before shipment. You need only connect outputs as shown on the job prints.

Table 6.15 ICE-MOR Board Connections

Connector	Signal	Connector	Signal
	Output determined by Common connection to board connector J5.		1: Common
			1: Common
			AC2: MOR2, typical 18VAC
			AC1: MOR1, typical 18VAC
			
			
			Common 25 - 32
			Common 9 - 16
			Common 5 - 8
			Common 17 - 24
	Output determined by Common connection to board connector J5.		Common 25 - 32
			1: Common
			
			
			
			
			
			
			
			

Troubleshooting

Figure 6.12 ICE-MOR Board



ICE-RG-2 Rope Gripper Boards

The Rope Gripper board monitors and resets a rope gripper (emergency brake). The board is used in both AC and DC iControls.

Figure 6.13 ICE-RG Rope Gripper Board

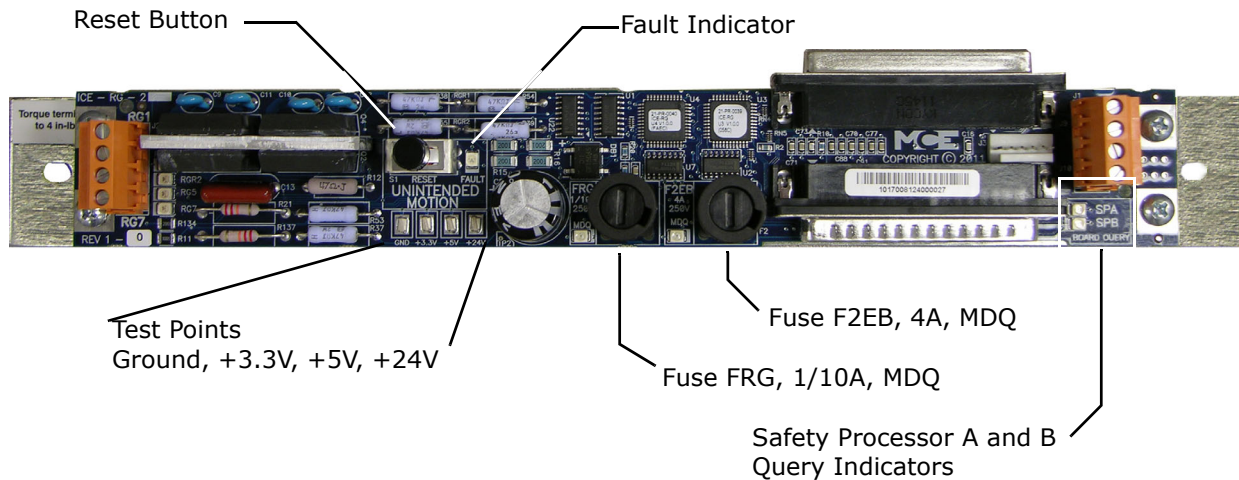


Figure 6.14 ICE-RG-3 Rope Gripper Board

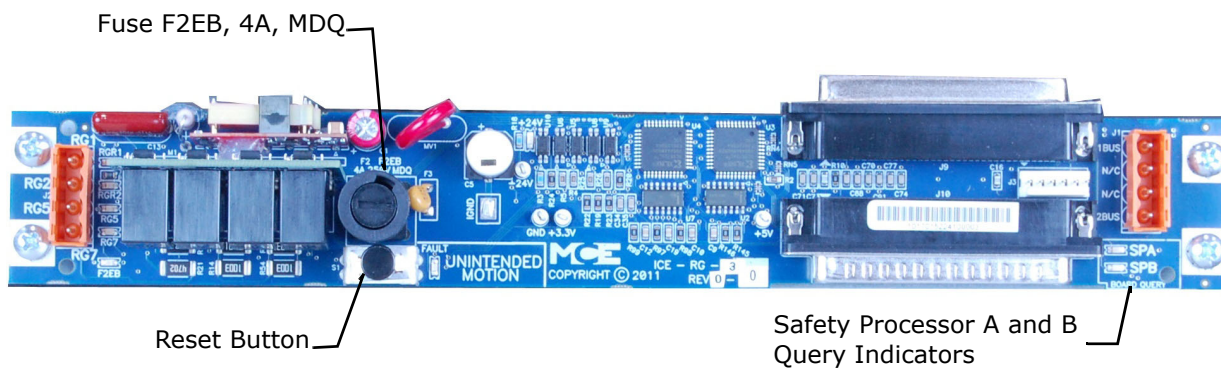
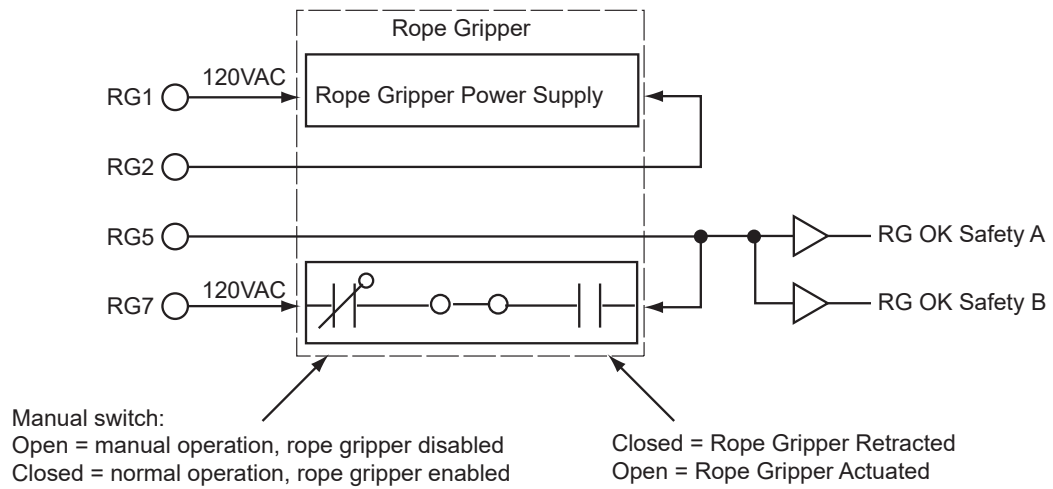


Table 6.16 Rope Gripper Board Connections

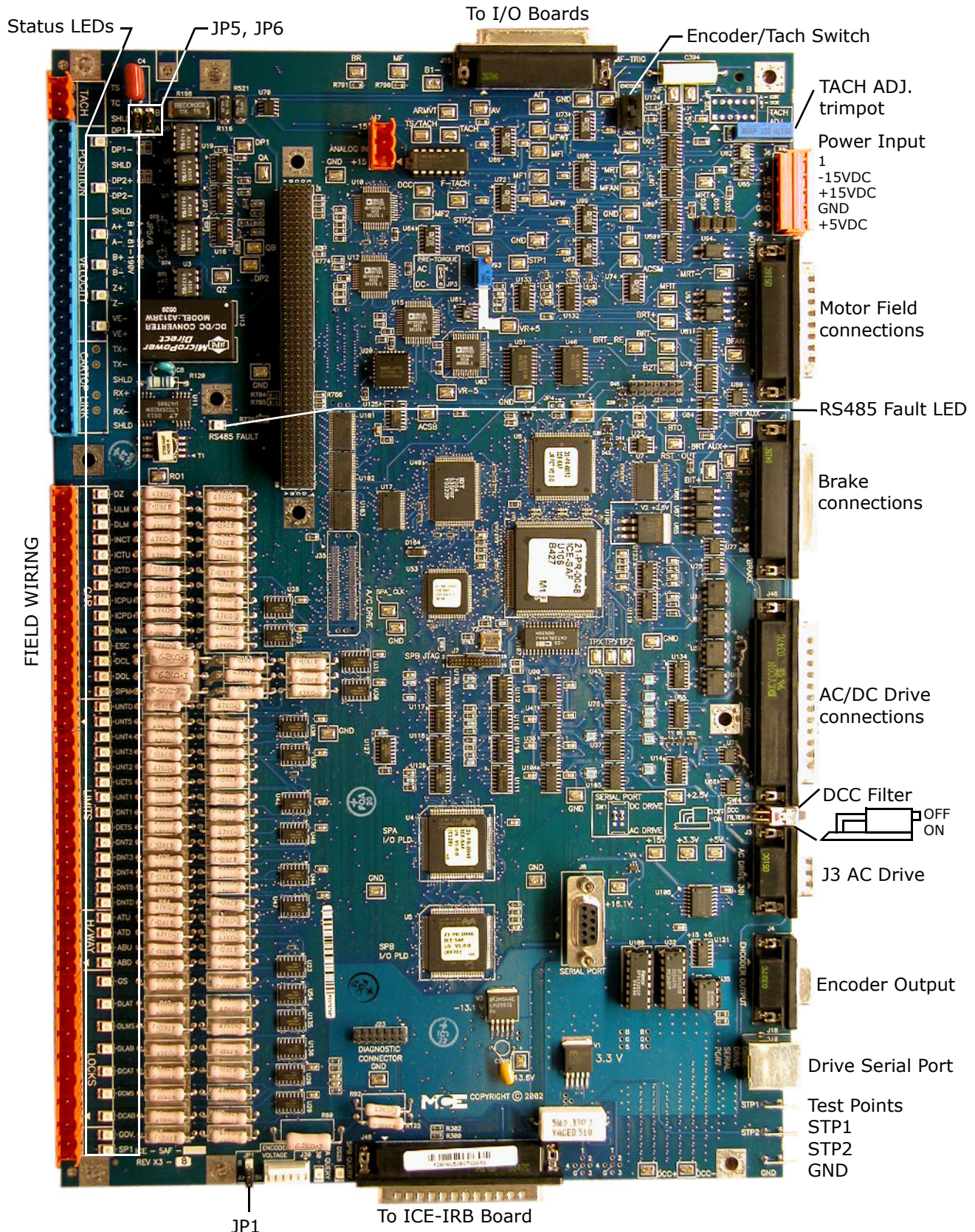
Connector	Signal	Connector	Signal
	RG1: 120VAC to RG power supply		1: Common
	RG2: RG power supply return		24x2: 18VAC in
	RG5: 120VAC=rope gripper OK 0V=rope gripper tripped		24: 18 VAC in
	RG7: 120VAC signal to rope gripper		2: 120VAC in

Troubleshooting

Figure 6.15 Simplified Rope Gripper Operation



ICE-SAF Safety Board



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Troubleshooting

Table 6.17 ICE-SAF Board Jumper Table

Jumper	Setting	Description
JP1	A	Encoder Voltage. A = +5V, B = +15V
JP3	AC	Pretorque Filter (AC / DC): AC setting is hard wired, adds filtering to the Pre-torque output.
JP5	B	Tach input range. A = 20-80V, B = 81-190V
JP6	B	Tach input range. A = 20-80V, B = 81-190V

Table 6.18 ICE-SAF Board Switches

Switch	Description
SW1	Serial Port switch: Setting for the Drive Serial Port (AC Drive / DC Drive). DC Drive setting hard wired.
SW2	Encoder / Tach: Encoder = AC drive with velocity encoder connected to AC drive. Tach = DC drive or AC drive with velocity encoder connected to iBox VELOCITY inputs.
SW4	DCC Filter (ON / OFF) Default = ON, adds filtering to Drive Current Command output.

Table 6.19 iBox Field Connections on ICE-SAF Board

Source	Connection	Signal Description
TACH	TS	Tach positive signal. Analog. 0 - 30 VDC (15 VDC @ 1000 RPM). Please refer to "Tachometer or Encoder Installation and Wiring" on page 2-11.
	TC	Tach common (negative in respect to TS when car moving down)
	SHLD	Tach shield connection (connect at iBox-end only)
POSITION	DP1+	Positive going, +15V, digital pulse stream from iLand to iLink to iBox (DP1 leads DP2 when car moves up).
	DP1-	Negative going, -15V, digital pulse stream from iLand to iLink to iBox.
	SHLD	Shield connection for twisted-pair DP1+/DP1-
	DP2+	Positive going, +15V, digital pulse stream from iLand to iLink to iBox (DP2 leads DP1 when car moves down)
	DP2-	Negative going, -15V, digital pulse stream from iLand to iLink to iBox
	SHLD	Shield connection for twisted-pair DP2+/DP2-
VELOCITY ENCODER	A+	Positive going, +12V, digital pulse from motor velocity encoder. Please refer to "Tachometer or Encoder Installation and Wiring" on page 2-11.
	A-	Negative going, -12V, digital pulse from motor velocity encoder.
	B+	Positive going, +12V, digital pulse from motor velocity encoder.
	B-	Negative going, -12V, digital pulse from motor velocity encoder.
	Z+	Positive going, +12V, digital pulse from motor velocity encoder.
	Z-	Negative going, -12V, digital pulse from motor velocity encoder.
	VE-	Encoder power return
	VE+	+12 VDC power to encoder (relative to VE-)

Table 6.19 iBox Field Connections on ICE-SAF Board

Source	Connection	Signal Description
CARTOP LINK	TX+	iBox transmit, positive going serial communication stream from iBox to iLink. Connects to iLink ICE-CTP Board terminal RX+. TX+ and TX- comprise a differential communications pair. Please refer to "Installing iLink" on page 3-2.
	TX-	iBox transmit, negative going serial communication stream from iBox to iLink. Connects to iLink ICE-CTP Board terminal RX-.
	SHLD	Shield connection for twisted-pair TX+/TX-
	RX+	iBox receive, positive going serial communication stream from iLink to iBox. Connects to iLink ICE-CTP board terminal TX+. RX+ and RX- comprise a differential communications pair.
	RX-	iBox receive, negative going serial communication stream from iLink to iBox. Connects to iLink ICE-CTP board terminal TX-.
	SHLD	Shield connection for twisted-pair RX+/RX-
CAR	DZ	Door Zone Sensor input. Activated = 110 VDC.
	ULM	Up Leveling Marker Sensor input. Activated = 110 VDC.
	DLM	Down Leveling Marker Sensor input. Activated = 110 VDC.
	INCT	Cartop Inspection Station INSP/AUTO Switch input. Activated = 110 VDC.
	ICTU	Cartop Inspection Station UP Button input (includes SAF button). Activated = 110 VDC.
	ICTD	Cartop Inspection Station DN Button input (includes SAF button). Activated = 110 VDC.
	INCP	COP Inspection Station INSP/AUTO Switch input. Activated = 110 VDC.
	ICPU	COP Inspection Station UP Button input. Activated = 110 VDC.
	ICPD	COP Inspection Station DN Button input. Activated = 110 VDC.
	INA	Car Panel (Hoistway) Access Enable switch input. 0 VDC active signal level. Off = 110 VDC.
	ESC	Car Panel Emergency Stop switch input. 0 VDC active signal level stops car. Off = 110 VDC.
	DCL	Door Close Limit input. Door fully closed, input inactive, 0 VAC. Door not closed signal level, 120 VAC.
	DOL	Door Open Limit input. Door fully open, input inactive, 0 VAC. Door not open signal level, 120 VAC.
	DPM	Door Position Monitor input. Door closed, input inactive, 120 VAC. Door not closed, 0 VAC.

Troubleshooting

Table 6.19 iBox Field Connections on ICE-SAF Board

Source	Connection	Signal Description
LIMITS	UNTD	Up Normal Limit Direction switch input. 110 VDC = input on/switch closed. 0 VDC = input off/switch open.
	UNT5	Up Slowdown Limit switch #5 input. (see UNTD)
	UNT4	Up Slowdown Limit switch #4 input. (see UNTD)
	UNT3	Up Slowdown Limit switch #3 input. (see UNTD)
	UNT2	Up Slowdown Limit switch #2 input. (see UNTD)
	UETS	Up Emergency Terminal Limit switch input. (see UNTD)
	UNT1	Up Slowdown Limit switch #1 input. (see UNTD)
	DNT1	Down Slowdown Limit switch #1 input. (see UNTD)
	DETS	Down Emergency Terminal Limit switch input. (see UNTD)
	DNT2	Down Slowdown Limit switch #2 input. (see UNTD)
	DNT3	Down Slowdown Limit switch #3 input. (see UNTD)
	DNT4	Down Slowdown Limit switch #4 input. (see UNTD)
	DNT5	Down Slowdown Limit switch #5 input. (see UNTD)
	DNTD	Down Normal Limit Direction switch input. (see UNTD)
H/WAY	ATU	Hoistway Access Top Up switch input. When the Car Panel Access Enable switch (INA input) is on, an active input (key switch closure) here (110 VDC) will cause the car to move up the hoistway. A hoistway limit switch electrically between the ATU input and the activating switch will open and stop the car after it has moved the required distance up the hoistway (if installed). Normal/Off state = 0 VDC. Refer also to the -MRW drawing in the job prints.
	ATD	Hoistway Access Top Down switch input. When the Car Panel Access Enable switch (INA input) is on, an active input (key switch closure) here (110 VDC) will cause the car to move down the hoistway. A hoistway limit switch electrically between the ATD input and the activating switch will open and stop the car after it has moved the required distance down the hoistway (if installed). Normal/Off state = 0 VDC. Refer also to the -MRW drawing in the job prints.
	ABU	Hoistway Access Bottom Up switch input. When the Car Panel Access Enable switch (INA input) is on, an active input (key switch closure) here (110 VDC) will cause the car to move up the hoistway. A hoistway limit switch electrically between the ABU input and the activating switch will open and stop the car after it has moved the required distance up the hoistway (if installed). Normal/Off state = 0 VDC. Refer also to the -MRW drawing in the job prints.
	ABD	Hoistway Access Bottom Down switch input. When the Car Panel Access Enable switch (INA input) is on, an active input (key switch closure) here (110 VDC) will cause the car to move down the hoistway. A hoistway limit switch electrically between the ABD input and the activating switch will open and stop the car after it has moved the required distance down the hoistway (if installed). Normal/Off state = 0 VDC. Refer also to the -MRW drawing in the job prints.

Table 6.19 iBox Field Connections on ICE-SAF Board

Source	Connection	Signal Description
LOCKS/CONTACTS	GS	Gate Switch input. The gate switch makes up when the elevator doors close. When the switch is made, there will be 110 VDC on this input. When the switch is open, there will be 0 VDC on this input. The gate switch may be wired in series with other switches or locks on the elevator doors (as shown in the job prints) so that if any of the switches do not make, the GS input will remain low and the car will not run.
	DLAT	Door Lock Access Top input. When a top hoistway access is provided (see INA, ATU, and ATD), the hoistway door lock associated with that landing is connected between the #3 bus and this input. When the switch is made, there will be 110 VDC on this input. When the switch is open, there will be 0 VDC on this input and the car will not run unless INA is active and then only in response to the ATU or ATD input.
	DLMS	Door Lock Main String input. If top and bottom hoistway access (see INA, ATU, ATD, ABU, and ABD) is not provided, all hoistway door locks are wired in series between the #3 bus and DLMS. When the switches are made, there will be 110 VDC on this input. When any switch is open, there will be 0 VDC on this input and the car will not run.
	DLAB	Door Lock Access Bottom input. When a bottom hoistway access is provided (see INA, ABU, and ABD), the hoistway door lock associated with that landing is connected between the #3 bus and this input. When the switch is made, there will be 110 VDC on this input. When the switch is open, there will be 0 VDC on this input and the car will not run unless INA is active and then only in response to the ABU or ABD input.
	DCAT	Door Contact Access Top input. When a top hoistway access is provided (see INA, ATU, ATD, and DLAT), the hoistway door contact associated with that landing is connected between the #3 bus and this input. When the switch is made, there will be 110 VDC on this input. When the switch is open, there will be 0 VDC on this input and the car will not run unless INA is active and then only in response to the ATU or ATD input.
	DCMS	Door Contact Main String input. If top and bottom hoistway access (see INA, ATU, ATD, ABU, and ABD) is not provided, all hoistway door contacts are wired in series between the #3 bus and DCMS. When the switches are made, there will be 110 VDC on this input. When any switch is open, there will be 0 VDC on this input and the car will not run.
	DCAB	Door Contact Access Bottom input. When a bottom hoistway access is provided (see INA, ABU, ABD, and DLAB), the hoistway door contact associated with that landing is connected between the #3 bus and this input. When the switch is made, there will be 110 VDC on this input. When the switch is open, there will be 0 VDC on this input and the car will not run unless INA is active and then only in response to the ABU or ABD input.
	GOV	Governor input. The governor is connected between the #3 bus and this input. When the governor switch is made, there is 110 VDC on this input. If the governor switch trips/opens, there is 0 VDC on this input and the car will not run.
	SP 1	Spare input 1. If used, connect as shown in the job prints.

Troubleshooting

ICE-SF-x Serial Fixtures Board

The Serial Fixtures board is used in iControl elevator controllers to communicate with serial-control audible and visual indicators, e.g., voice annunciators or character displays. The board provides two identical outputs — one for hall displays and one for car displays. The “x” in the part number refers to the fixture type:

- CE = CE Electronics
- EM = E-Motive
- HJ = Hong Jiang

Figure 6.16 ICE-SF Serial Fixtures Board

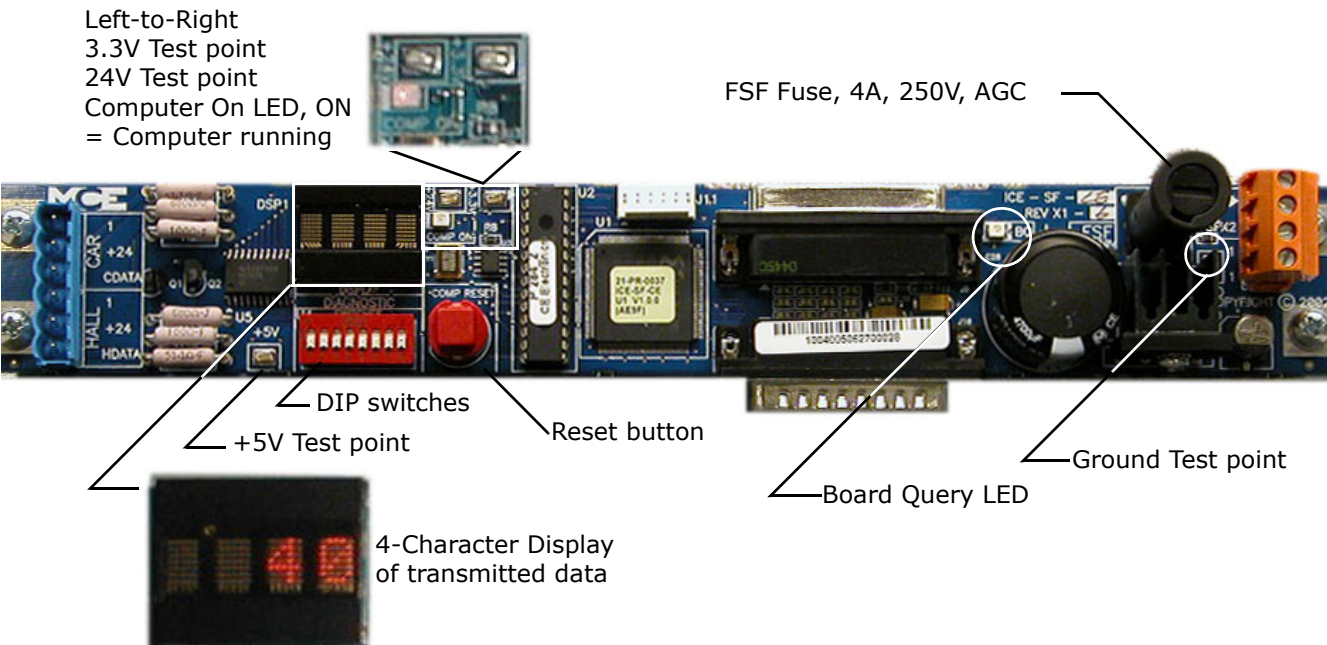
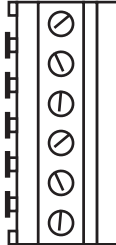


Table 6.20 Serial Fixture Board Connections

Connector	Signal	Connector	Signal
	1: Common		18VAC
	+24: 24VDC		18VAC
	CData: Data to car		1: Common
	1: Common		1: Common
	+24: 24VDC		
	HData: Data to hall		

DIP Switches and Display The DIP switches and 4-character display are used for factory testing and diagnostics. For normal operation, all of the DIP switches are set to OFF (down). The 4-character display shows direction and ascii floor number.

SC-HCDA-ISO Serial Hall Call Driver Isolation Board

The SC-HCDA-ISO Serial Hall Call Driver Isolation Board is used on iControl AC and DC Simplex and Swing car controllers. The isolation board is placed between the SC-HCDA Serial Hall Call Driver (usually mounted inside the iPower Box) and the Serial Hall Call Input on the right side of the iBox. Revision 6.0 and later of the ICE-IMP board incorporates the isolation circuitry thereby eliminating the need for the SC-HCDA-ISO. [Please refer to “Serial Hall Call” on page 5-17](#) for additional information.

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Figure 6.17 SC-HCDA-ISO Serial Hall Call Driver Isolation Board

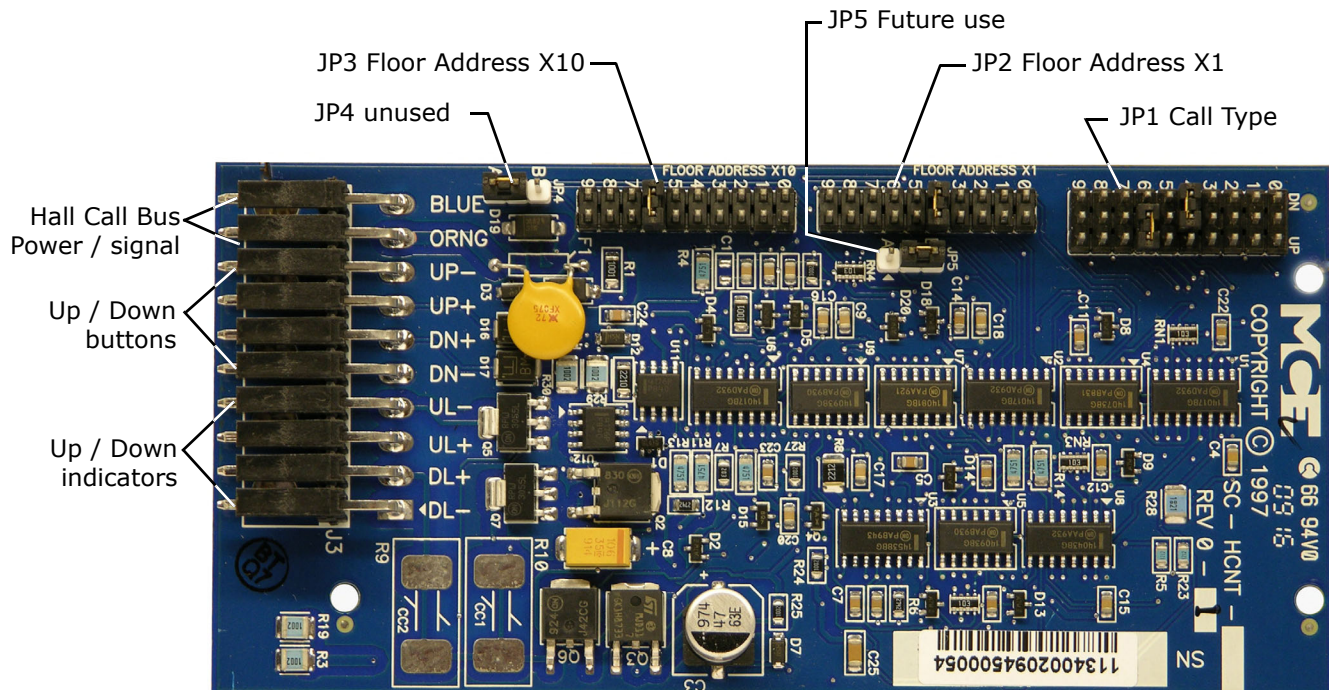


Troubleshooting

SC-HCNT Serial Hall Call Node Board

In a typical installation, an SC-HCNT Serial Hall Call Node board is mounted in each hall call fixture enclosure. Please refer to “Hall Call Installation” on page 5-19. The board provides two outputs to power the hall call lamps or LEDs, two inputs for the hall call buttons, and jumpers to set the floor ID and hall call “type.”

Figure 6.18 SC-HCNT Serial Hall Call Node Board



For more information on setting the node board addresses, See “Setting Node Board Addresses” on page 5-20..

SC-ION: Serial Control I/O Board

One or more SC-ION boards may be used in an iCentral group. The SC-ION board provides a communications interface between discrete signal or relay-oriented field equipment and the serial communications bus used for serial hall call and other serial messaging. Inputs and outputs on the SC-ION board are assigned unique serial addresses at the factory according to customer requirements. Using iView, customers can view the function assigned to each address and may even assign a different (MCE-supported) function if their needs change. Each SC-ION board provides 16 user-configurable inputs and 16 user-configurable outputs.

I/O Connections

Connect inputs and outputs as shown in your job prints. SC-ION board inputs are always 117VAC. Outputs may be configured (in specific groups) to provide either a path to ground or current to drive indicator lamps/LEDs.

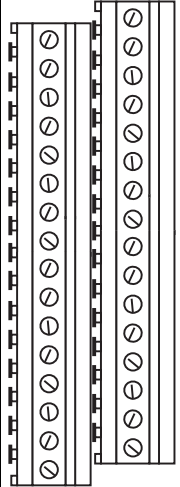
Output State Selection The outputs are divided into three groups. Each group shares a common. The common may be wired to provide a current source or a path to ground. The groups are:

- Relays 1 – 4
- Relays 5 – 8
- Relays 9 – 16

The commons for the groups are determined by the connections made to board connector J4. The appropriate connections are determined during the job survey. Each system is configured before shipment. You need only connect the inputs and outputs as shown on the job prints.

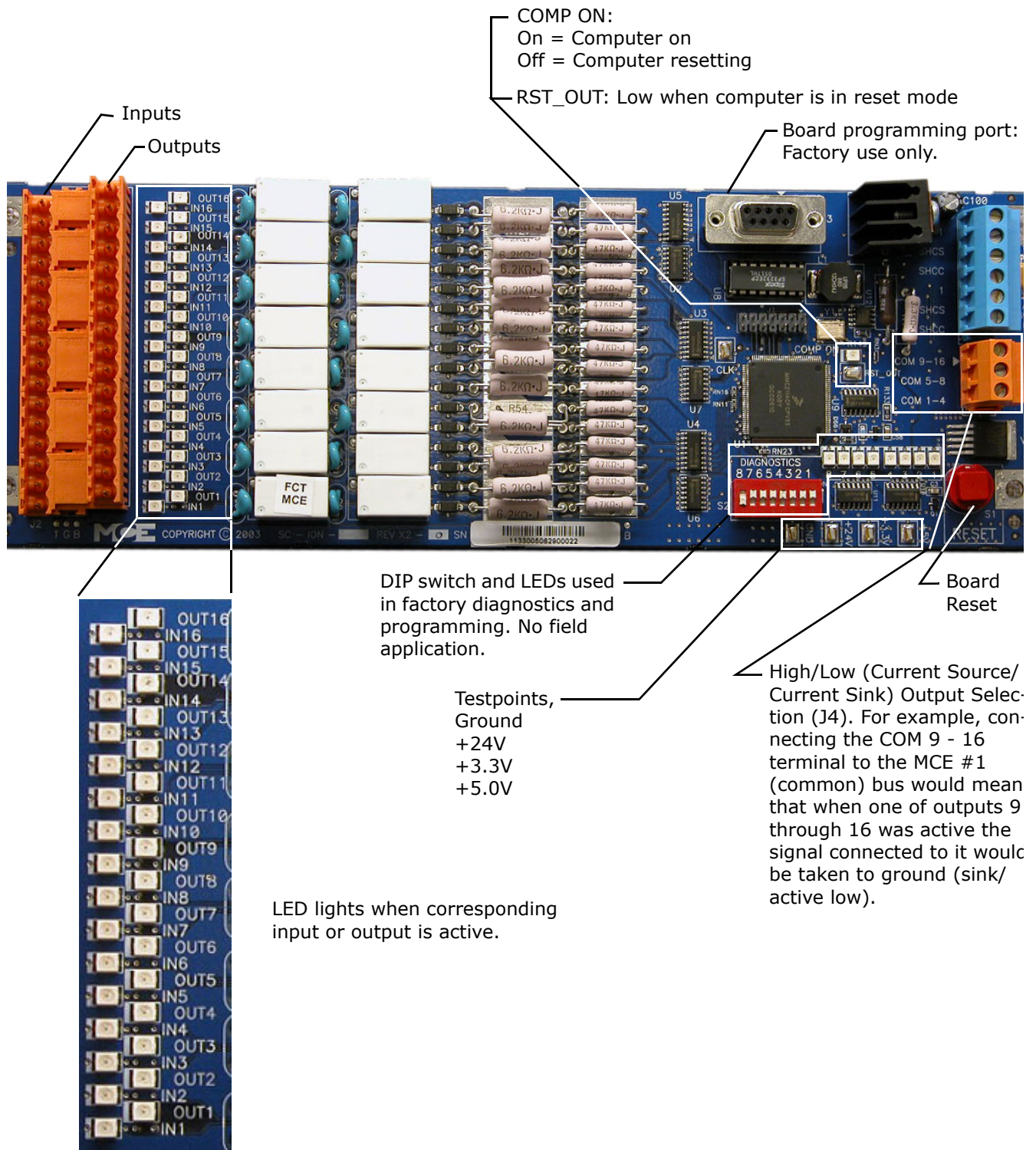
Board Addresses Each of the 16 inputs and 16 outputs have an address on the system bus. The addresses are assigned as indicated by the job survey before the system is shipped. The board may be configured using a serial cable connected from the iView computer to the board. The configuration screen is available through iView/System/System Configuration/System I/O - SC-ION board configuration.

Table 6.21 SC-ION Board Inputs and Outputs

Connector	Signal	Connector	Signal
	In 1-16: 117VAC when active		1: Common
	Out 1-16: Determined by common connection		SHCS: Serial signal, +/-15V bit stream
			SHCC: Serial signal, common
			1: Common
			SHCS: Serial signal, +/- 15V bit stream
			SHCC: Serial signal, common
			COM 9-16: Connect to select active output for outputs 9-16.
			COM 5-8: Connect to select active output for outputs 5-8.
			COM 1-4: Connect to select active output for outputs 1-4.

Troubleshooting

Figure 6.19 SC-ION Serial Control I/O Board



System 12 SCR Drive

This section provides a quick reference to the indicators, test points and jumper settings found on the SCR-LGA Drive Logic board and explains how to replace various components in the System 12 SCR Drive, including:

- [Replacing Fuses](#)
- [Replacing Contactors](#)
- [Replacing SCRs and Diodes](#)
- [Replacing PC Boards](#)

SCR-LGA - SCR Drive Logic Board Quick Reference

This quick reference provides descriptions of the following:

- Indicators on the SCR-LGD and SCR-LGA boards
- [SCR-LGA Test Points](#)
- [SCR-LGA Jumper Settings](#)

Refer to the [SCR-LGA Board Layout](#) to locate the jumpers and test points.

Table 6.22 Indicators on the SCR-LGD and SCR-LGA Boards

Indicator	Description
Up Direction	Up direction is selected.
Down Direction	Down direction is selected.
Drive Ready	There are no faults and the drive is ready to run.
Drive ON	The drive is enabled and is producing torque output.
Current Limit	The drive has reached either the current or voltage limit set by the drive header and software parameters Armature current limit or Armature voltage limit (Configuration > Safety tab).
Low Line - WYE Secondary	The voltage at the Wye connection of the drive isolation transformer secondary is below 30% of the rated value.
Low Line - Delta Secondary	The voltage at the Delta connection of the drive isolation transformer secondary is below 30% of the rated value.
WYE P.R.	The phase relationship of the Wye connection (Y1, Y2, Y3) is incorrect.
Delta P.R.	The phase relationship of the Delta connection (X1, X2, X3) is incorrect.
30° P.R.	The phase relationship between the Wye and Delta connections is incorrect.
Contactor or High Current Fuse Failure	The main contactor is not picked, or one or more of the high current fuses is open when the drive is enabled.
PLL No Lock	(SCR-LGA board) The PLL circuit has a problem of synchronization with the Delta connection from the AC line. This indicator will also turn on while the controller is powering up and when the SCR-LGA board is being reset.

Troubleshooting

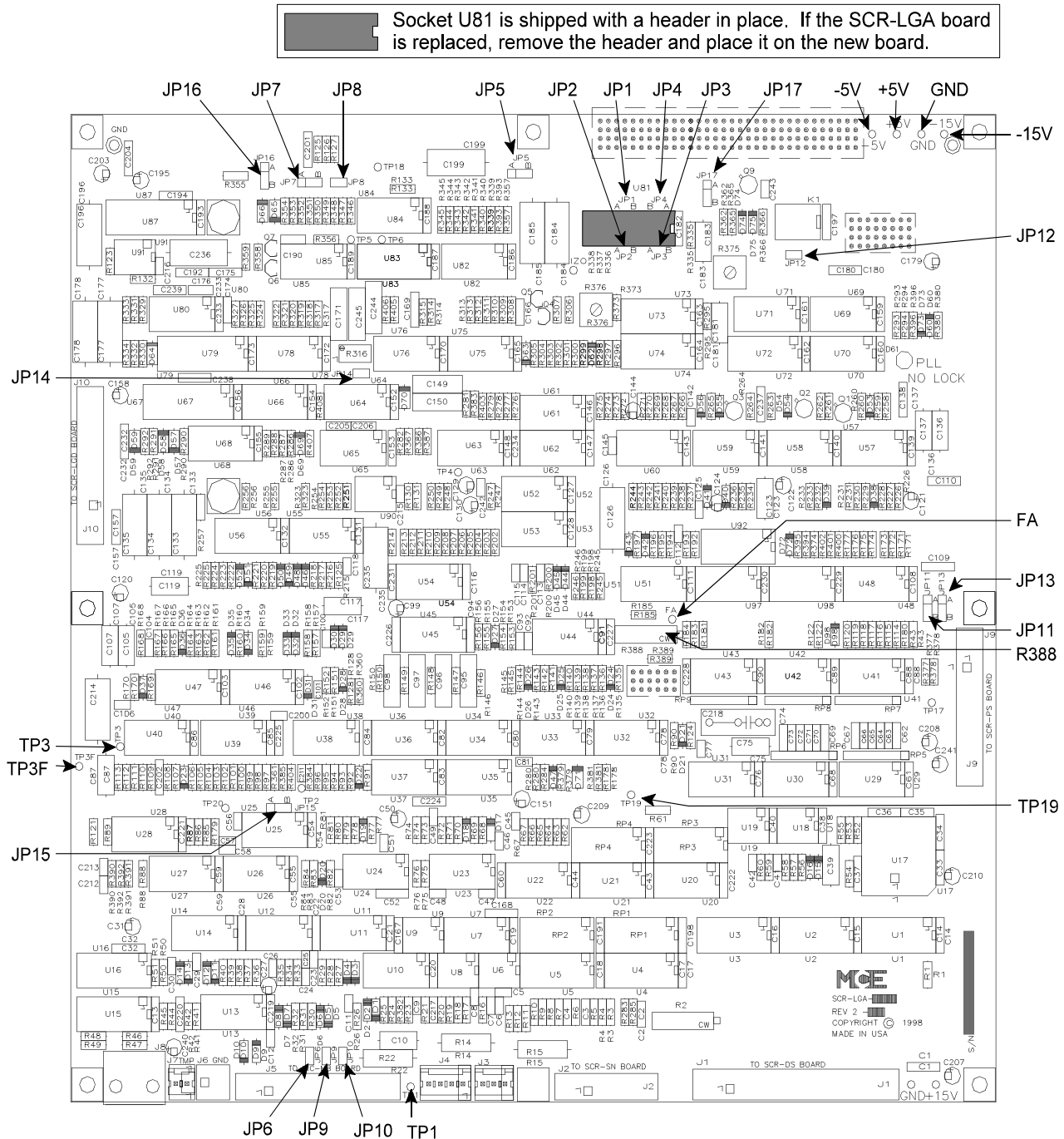
Table 6.23 SCR-LGA Board Test Points

Test Point	Description
FA	Firing Angle: '+' = not firing, '-' = firing (-6VDC = maximum output)
IZO	Integrator Reset Status: Used to adjust the zero offset for the Current Loop Integrator or the Voltage Loop Integrator.
TP1	Armature Differential: Hoist motor armature voltage = TPI volts x 100.
TP2	Armature Voltage (scaled): 10VDC = 100% of Drive armature voltage rating. Actual armature voltage = Drive voltage rating x voltage at TP2 / 10 volts.
TP3	Armature Current (scaled): Measured in volts, 1.8 volts = 100% of Drive armature current rating. Actual armature current = Drive current rating x voltage at TP3 / 1.8 volts.
TP3F	Pure DC Armature Current: 1.8 volts = 100% of Drive current rating.
TP4	Line Frequency: Sine wave with frequency = line frequency (50 Hz or greater).
TP5	Direction of Current Flow: When drive is enabled, +15VDC = current flow from A2 to A1 and 0 VDC = current flow from A1 to A2. When drive is disabled, test point indicates previous direction of armature current flow.
TP6	Current Loop integrator Output: 0.0 VDC when drive is disabled. Voltage at TP6 should not drift when the Pattern scaling parameter (Configuration > Pattern > Common tab) = 0 and the drive is enabled.
TP17	Burst Enable: 720 Hz square wave with on-time of 300 microseconds A10%.
TP18	Total Current Command: measured in volts.
TP19	Fault Bus: 15 VDC = normal, 0 VDC = fault condition in the SCR drive.
TP20	Drive reset: 0.0 VDC = normal (Ready is ON), -15 VDC = drive is being reset.

Table 6.24 SCR-LGA Board Jumper Settings for use with iControl

Jumper	Setting	Description
JP1	N/C	(Header U81) Function not used.
JP2	N/C	(Header U81) Function not used.
JP3	B	(Header U81) B = Current Loop selected.
JP4	A	(Header U81) Permanently soldered jumpers
JP5	B	If JP2 is not selected, JP5 can be set to either A or B.
JP6	ON	On = Continuous/Discontinuous Detection circuit selected.
JP7	A	A = Low gain for current loop. B = High gain for current loop.
JP8	ON	ON = Auto-tune for Current Loop Offset selected.
JP9	ON	Must be set the same as JP8.
JP10	ON	ON = Auto-tune for Current Sensor Offset selected.
JP11	A	A = Current balancing selected for more current in WYE. B = Current balancing selected for more current in DELTA.
JP12	N/C	N/C = Normal operation. Always use N/C setting for iControl.
JP13	A	A = Current balancing selected for more current in WYE. B = Current balancing selected for more current in DELTA.
JP14	N/C	N/C = 60Hz AC. ON = 50Hz AC.
JP15	A	A = iControl setting.
JP16	A	A = iControl setting.
JP17	A	A = iControl setting. Loss of power at the Emergency Power Input causes a signal to be sent to the drive which causes the drive to modify the PLL feedback gain so that the PLL circuit can tolerate frequency shift for faster response.

Figure 6.20 SCR-LGA Board Layout



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Troubleshooting

Replacing Fuses

The 12-pulse drive has a total of 9 fuses. Of the 9, 6 are semiconductor fuses (FL1 - FL6, one on each input line terminal for a 6 phase transformer). These semiconductor fuses are located above the contactors, under the drive cover. The 12-Pulse Drive also has 2 fuses (FD1, FD2) protecting the 120VAC line. FD1 and FD2 are located on the left side of the controller in panel mounted fuse holders. Fuse FD3 protects the commutation circuit. FD3 is located near the top of the drive under the cover.



Caution

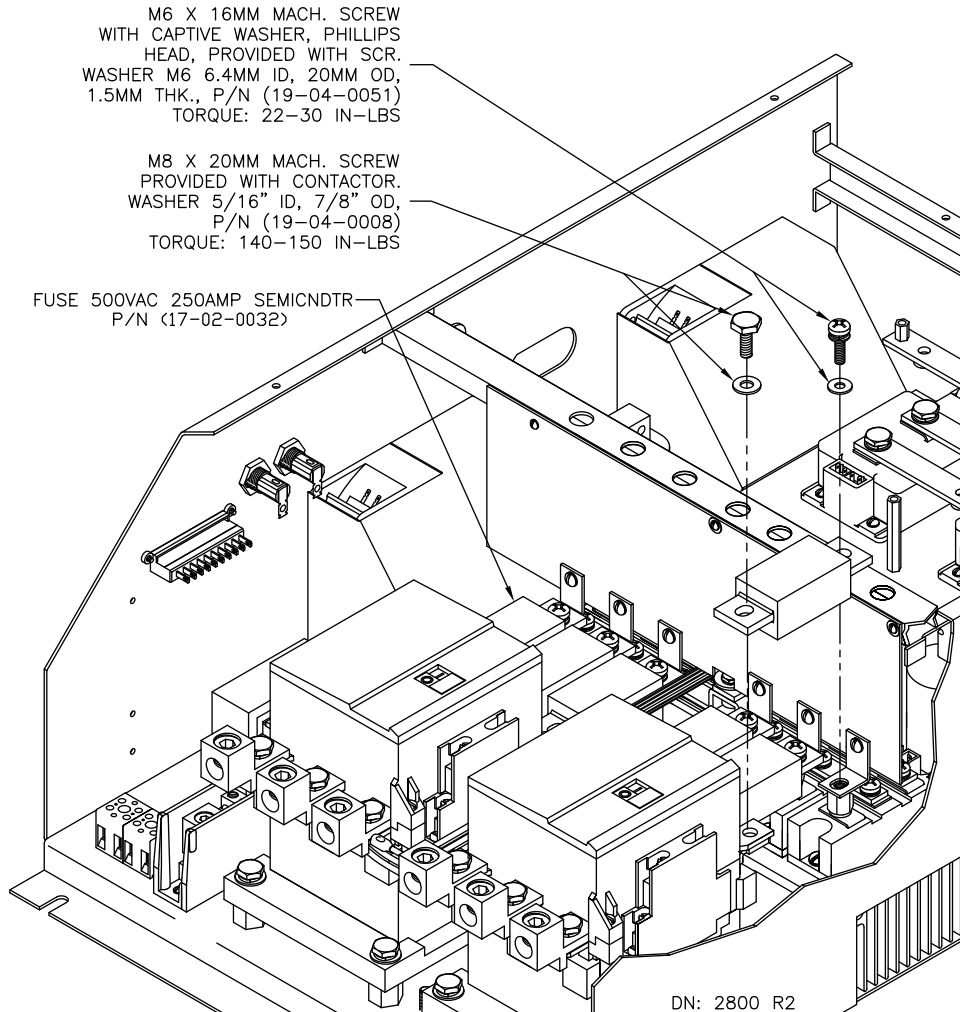
The fuse ratings for the 12-Pulse Drive have been calculated to provide the best protection. DO NOT replace fuses with a higher rated fuse than the one specified in this manual. NEVER bypass a fuse with a direct short.

Fuse replacement instructions include:

- [Semiconductor Fuses](#)
- [AC Fuses](#)
- [Commutation Fuse](#)

Semiconductor Fuses Replace semiconductor fuses as described here.

Figure 6.21 Replacing the Semiconductor Fuses



The semiconductor fuses (FL1 - FL6) are rated at 200 Amps, 500 Volts. Before removing or replacing a fuse, ensure that all power is **OFF**. The cover of the 12-Pulse SCR Drive must be removed to access the semiconductor fuses.

Table 6.25 Parts List for Semiconductor Fuses

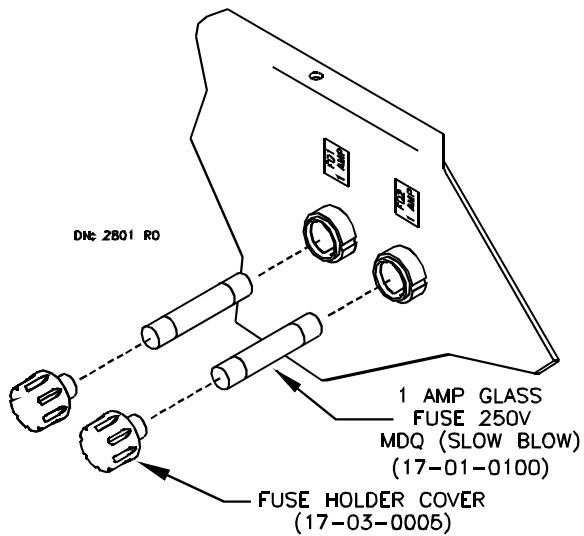
ITEM (DESCRIPTION)	MCE PART #	UNIT
Semiconductor Fuse (fuse 500VAC 250 Amp)	17-02-0032	Each

1. Remove the two screws that hold the fuse in place (see the illustration). When removing screws, make sure that no loose parts (bolts, screws, or washers) fall into the drive.
2. Install the replacement semiconductor fuse. Replace the screws.
3. On the SCR side of the fuse, torque the screw to 22-30 inch pounds. On the Contactor side of the fuse, torque the screw to 140-150 inch pounds. Ensure that no loose parts are left in the drive enclosure.

Troubleshooting

120VAC Fuses (FD1, FD2) Replace AC line fuses as described here.

Figure 6.22 120VAC Fuses (FD1, FD2)



FD1 protects the power supply and the trigger transformer. FD2 protects the two fans. Both fuses are 1 Amp, 250VAC Slow Blow. Do not use a fuse with a different rating. The fuses are located on the left side of the drive enclosure.

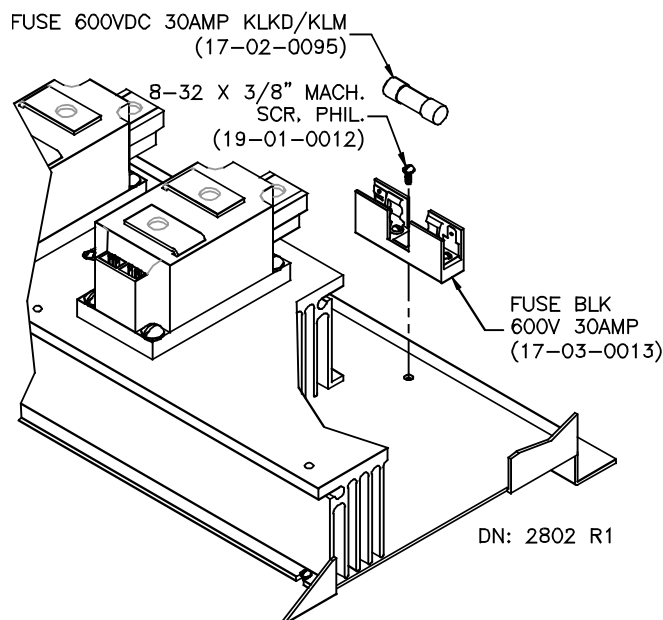
1. Press in and turn the cap counter-clockwise to remove the fuse. Replace if necessary. Continual failure of a fuse may indicate an underlying problem.

Table 6.26 120VAC Fuse Replacement Parts

ITEM (DESCRIPTION)	MCE PART #	UNIT
FD1 & FD2 Fuse (fuse 250VAC 1 Amp) MDQ type	17-02-0100	Each
Fuse Holder (Fuse Holder Panel Mount)	17-03-0005	Each

Commutation Fuse (FD3) Commutation fuse replacement is described here.

Figure 6.23 Commutation Fuse (FD3)



Fuse (FD3) protects the commutation circuit. The cover of the drive must be removed. FD3 is located on the top of the drive above the swing tray. The fuse is a KLKD type rated at 30 Amps DC at 600VAC. Do not use a fuse that has a different rating.

1. Remove the fuse using a fuse puller. Replace if necessary. If a fuse continues to fail, there may be an underlying problem.

Table 6.27 Replacement Parts for Commutation Fuse

ITEM (DESCRIPTION)	MCE PART #	UNIT
FD3 Fuse (fuse 600VAC 30 Amp) KLKD type	17-02-0095	Each
Fuse Block (Fuse block 600V 30 Amp)	17-03-0013	Each
Screw (8-32 x 3/8 KEP Screw)	19-01-0012	Each

Troubleshooting

Replacing Contactors

The 12-Pulse Drive has two main contactors located at the bottom of the enclosure. The left contactor is used to terminate Delta phases (X1, X2, X3) from the 6 phase transformer. The right contactor is used to terminate Wye phases (Y1, Y2, Y3).

Replacing Auxiliary Contactors There are two auxiliary contactors on each main contactor. The auxiliary contacts open or close 120VAC lines when the main contactor is picked. The auxiliary contactors are attached to the right and left sides of the contactor. Mark wires for identification before removing them. It is **VERY IMPORTANT** that the wires are reconnected to the correct terminals.

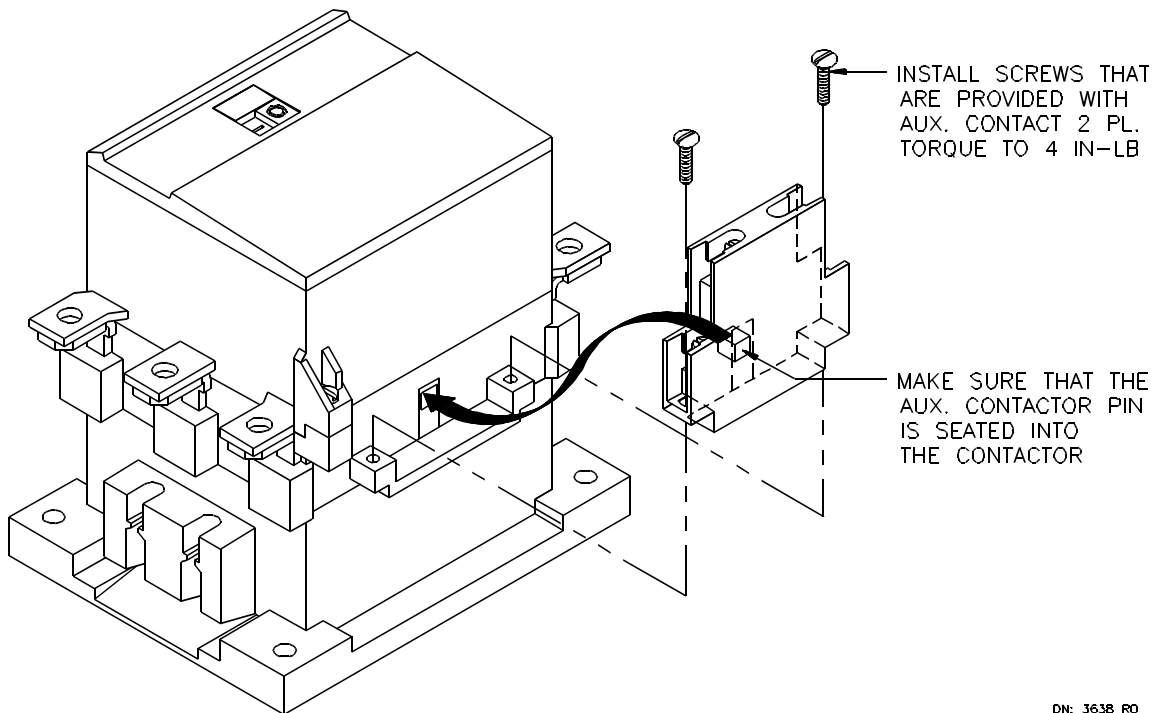


Danger

Before working on the 12-Pulse Drive, ensure that all power going to the drive is OFF. Be sure that power to the Drive Isolation Transformer is OFF at the main disconnect.

1. Mark all wires for identification before disconnecting.

Figure 6.24 Auxiliary Contactor Detail



DN: 3638 RO

2. Loosen the two screws on the right and left side of the auxiliary contactor and remove it by pulling out and away from the main contactor.
3. Install the new auxiliary contactor. Make sure that the auxiliary contactor pin is inserted into the body of the main contactor.
4. Replace the mounting screws (torque to 4 IN LBS.).
5. Reconnect the wires. Note: Load the outer-most terminals first.

Table 6.28 Replacement Parts for Contactors

ITEM (DESCRIPTION)	MCE PART #	UNIT
Contactor (Contactor for SCR Drive)	35-12-0001	Kit
Terminal Lug Kit (Lug Kit for Contactor set)	35-14-0001	Kit (3 sets)
Auxiliary Contactor	35-14-0002	EA
Contactor Coil	35-14-0003	EA
Contacts	35-15-0001	KT

Replacing a Contactor Coil

To replace the coil on a contactor, the contactor must first be removed.

1. Remove the coil by pressing up on the red tab and pulling out.
2. Insert the new coil into the slot on the contactor and lock it in place.

Replacing Contactor Internal Contacts

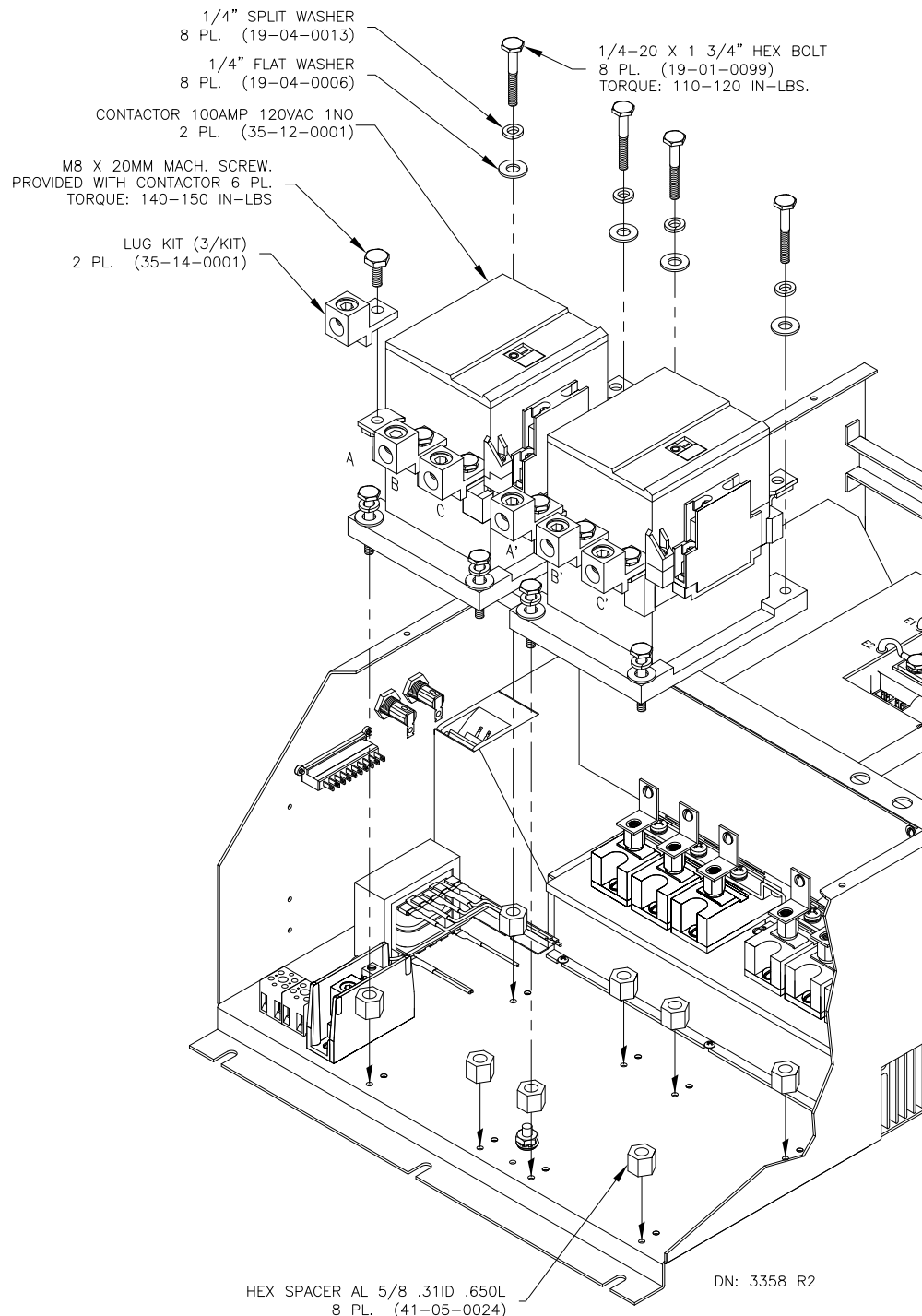
1. Remove the cover.
2. Remove the top contacts by lifting the metal bracket up and then removing the contact.
3. Replace the contacts:
 - Use a small screwdriver to lift the metal bracket up.
 - While lifting, insert the contact at an angle, then lay it flat and lower the metal bracket.
4. Remove the bottom contacts using a 3mm Allen wrench.
5. Install a new bottom contact by inserting it in the contactor and replacing the mounting screw.
6. Replace the cover. The mounting screws should be torqued to 30-35 inch pounds.

Troubleshooting

Replacing the Contactors Refer to the following illustration.

1. Remove all semiconductor fuses attached to the contactor being replaced.
2. Mark and disconnect all necessary wires.
3. Loosen the four contactor mounting bolts. Remove the contactor.
4. Replace the contactor. Torque the bolts to 110 - 120 inch pounds. Reconnect wires.

Figure 6.25 Drive Contactors



Replacing SCRs and Diodes

SCR devices are located on and near the drive heatsinks. There are 6 SCR devices (12 Pulse Bridge) on the heatsink located in the middle of the drive. Three SCR devices (Direction Bridge and Dynamic Braking) are on the top-most heatsink in the drive. Just below the top-most heatsink is a combination SCR/Diode device and a dual Diode device.

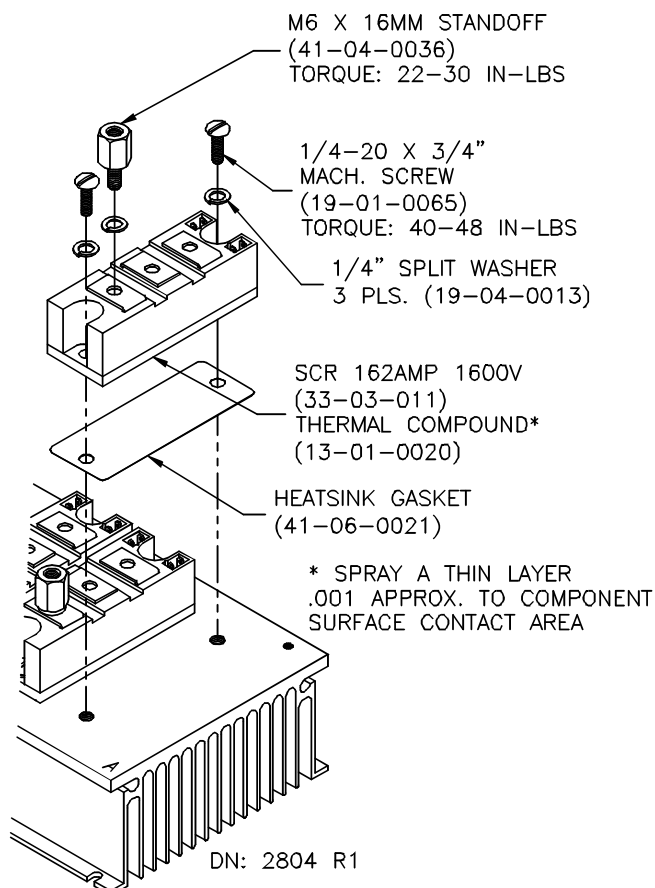
Replacing the 12 Pulse Bridge SCRs (SCR1 - SCR6) Be sure to mark all wires for identification before removing them. They must be correctly replaced.

6

Table 6.29 Replacement Parts for SCRs and Diode Devices

ITEM (DESCRIPTION)	MCE PART #	UNIT
SCR (162 Amp 1600V SCR Pack)	33-03-0011	Each
Heatsink Gasket (Heatsink Gasket, SCR 162 Amp)	41-06-0021	Each
Standoff (M6 x 16MM Standoff)	41-04-0036	Each
Split Washer (1/4" Split Washer)	19-04-0013	Each
Mach. Screw (1/4-20 x 3/4" Mach. Screw)	19-01-0065	Each
Thermal Compound Spray Non-Silicone	13-01-0020	A/R

Figure 6.26 12 Pulse Bridge (SCR1 - SCR6)



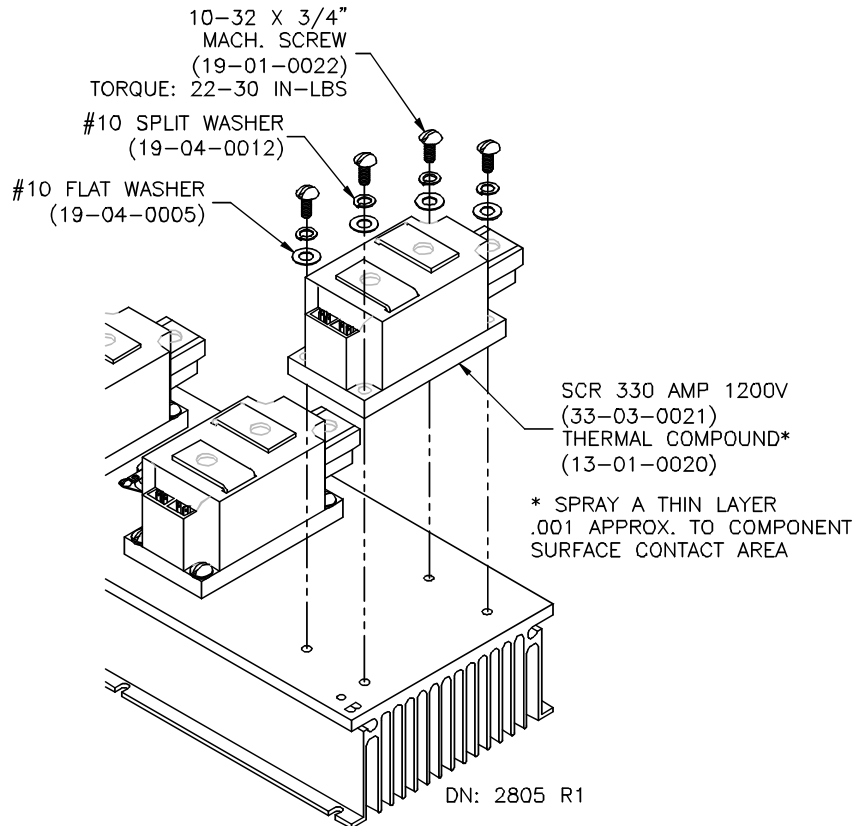
Troubleshooting

1. Remove the semiconductor fuse attached to the SCR device being replaced.
2. Remove bus bars G and H.
3. Loosen and remove the screws in terminals 2 and 3 on SCR1 - SCR6. (The terminal number is on top near the left side of the SCR pack.)
4. Remove bus bars A and B and the connecting wires from the SCR-SN board.
5. Remove the mounting screws and the leads that go to the Firing board (SCR-DS)
6. Remove the heatsink gasket.
7. Clean the surface of the heatsink where the SCR device is to be placed. There cannot be any foreign matter between the SCR and the heatsink.
8. Install the SCR device, heatsink gasket, and mounting screws. Torque the mounting screws to 40-48 inch pounds.
9. Install the standoff (M6 x 16MM, 41-04-0036) and the split washer (1/4", 19-04-0013). Torque the standoff to 22-30 inch pounds. Note: Over-torquing will damage the stand-off.
10. Reinstall bus bars A and B and the connecting wires.
11. Torque the screws to 40-48 inch pounds. Ensure that the shaft of the ring lug stays over the bus bar it is attached to. The ring lug should not touch the other bus bar. To maintain clearance, the ring lug cannot pass the edge of the bus bar.
12. Reinstall semiconductor fuses and bus bars G and H.

Replacing Direction Bridge (SCR7, SCR8) and Dynamic Braking (SCR9)

Ensure that all power is OFF at the main disconnect.

Figure 6.27 SCR7, SCR8, SCR9



1. Remove the bolts on terminals 1, 2, and 3 of the SCR being replaced. Place the bus bars that connect to the SCR so that they will not obstruct removal and replacement.
2. Remove the SCR.
3. Clean the area where the SCR will be placed. Spray a thin layer (0.001 approximately) of Thermal compound to the component surface contact area.
4. Install the SCR. Torque the mounting screws to 22-30 inch pounds.
5. Reconnect all wires and bus bars to the correct terminals. Torque bolts 1, 2, and 3 on the SCR to 106-132 inch pounds.

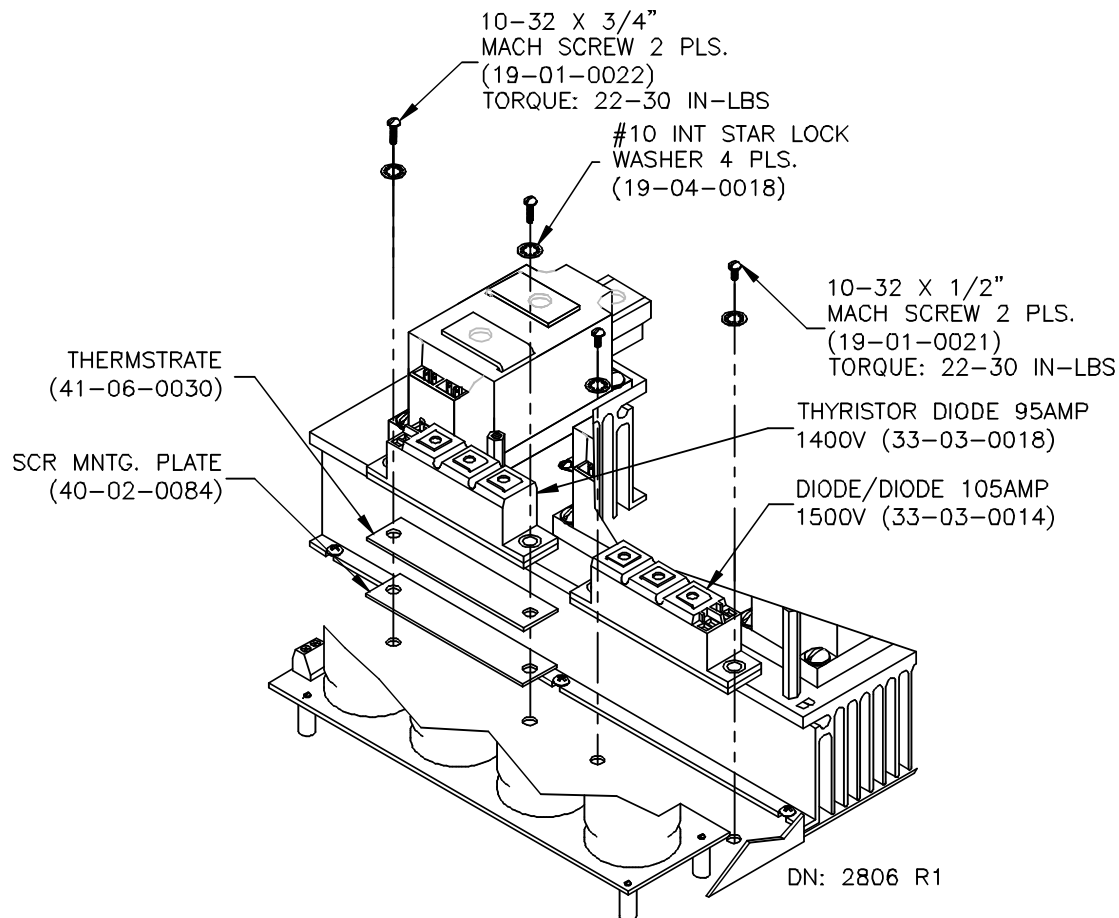
Table 6.30 Replacement Parts for Direction Bridge and Dynamic Braking

ITEM (DESCRIPTION)	MCE PART #	UNIT
SCR (330 Amp 1200V SCR Pack)	33-03-0021	Each
Thermal Compound Spray - Non Silicone	13-01-0020	A/R
Mach. Screw (10-32 x 3/4" Mach. Screw)	19-01-0022	Each
Split Lock Washer (#10)	19-04-0012	Each
Flat washer (#10)	19-04-0005	Each

Troubleshooting

Commutation SCR/Diode and Dual Diode Device To gain access to the Commutation SCR/Diode and Dual Diode Device, the SCR-DS board must be partially removed. We suggest you leave the connections on the bottom of the board connected and remove only the mounting screws.

Figure 6.28 Replacing the Commutation SCR/Diode and Dual Diode



1. The SCR-DS board is directly over the Commutation SCR. This means that the SCR-DS board must be moved into a position that will not interfere with the removal or installation of the commutation SCR. Refer to "Replacing the SCR-DS board."
2. Label all the wires connected to the device being removed before disconnecting them.
3. Note the orientation of the device, then remove it and clean the surface of the SCR mounting plate.
4. Install the new device. Torque the mounting screws to 22-30 inch pounds.
5. Reconnect all wires. Torque the terminal screws to 22-30 inch pounds.
6. Reinstall the SCR-DS board.

Table 6.31 Replacement Parts for Commutation SCR/Diode and Dual Diode Device

ITEM (DESCRIPTION)	MCE PART #	UNIT
Thyristor Diode (95 Amp 1400V)	33-03-0018	Each
Thermstrate	41-06-0030	Each
SCR Mounting Plate	40-02-0084	Each
Dual Diode Pack (105 Amp 1500V Diode/Diode)	33-03-0014	Each
Mach. Screw (10-32 x 1/2" Mach. Screw)	19-01-0021	Each
Mach. Screw (10-32 x 3/4" Mach. Screw)	19-01-0021	Each
Star Lock Washer (#10 Star Lock Washer)	19-04-0018	Each

Replacing PC Boards

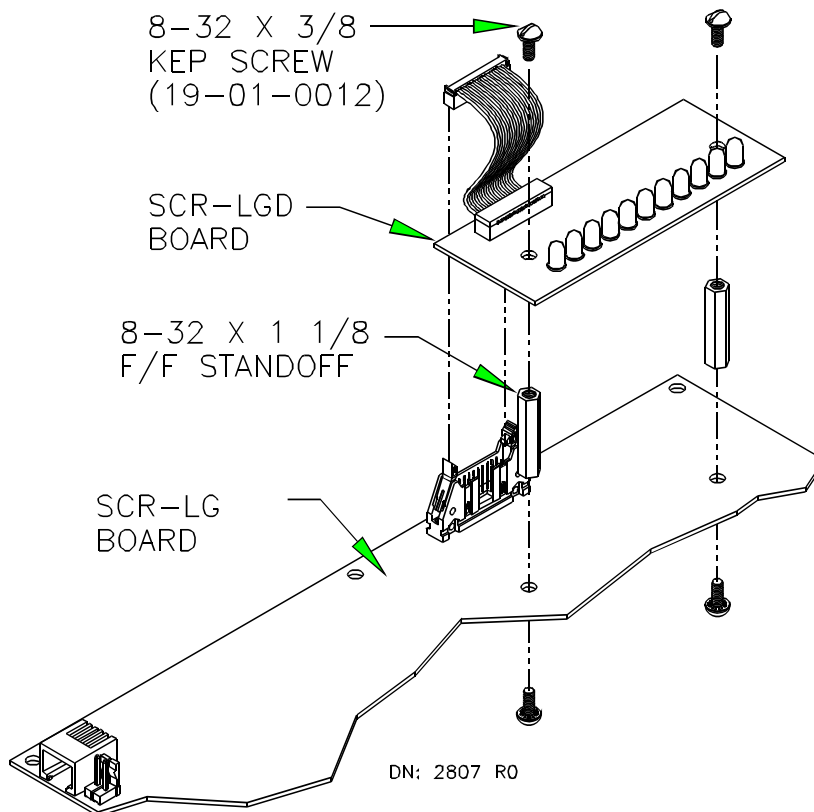
There are a total of 6 boards (SCR-LGD, SCR-LGA, SCR-PS, SCR-SN, SCR-DS and SCR-CC) in the System 12 SCR Drive. While replacing boards, other parts may require removal. Ensure that all power is OFF at the main disconnect before removing boards.

Replacing the SCR-LGD Logic Display Board

The SCR-LGD board displays the status of the System 12 Drive.

The SCR-LGD board displays the

Figure 6.29 Replacing the SCR-LGD Board



Troubleshooting

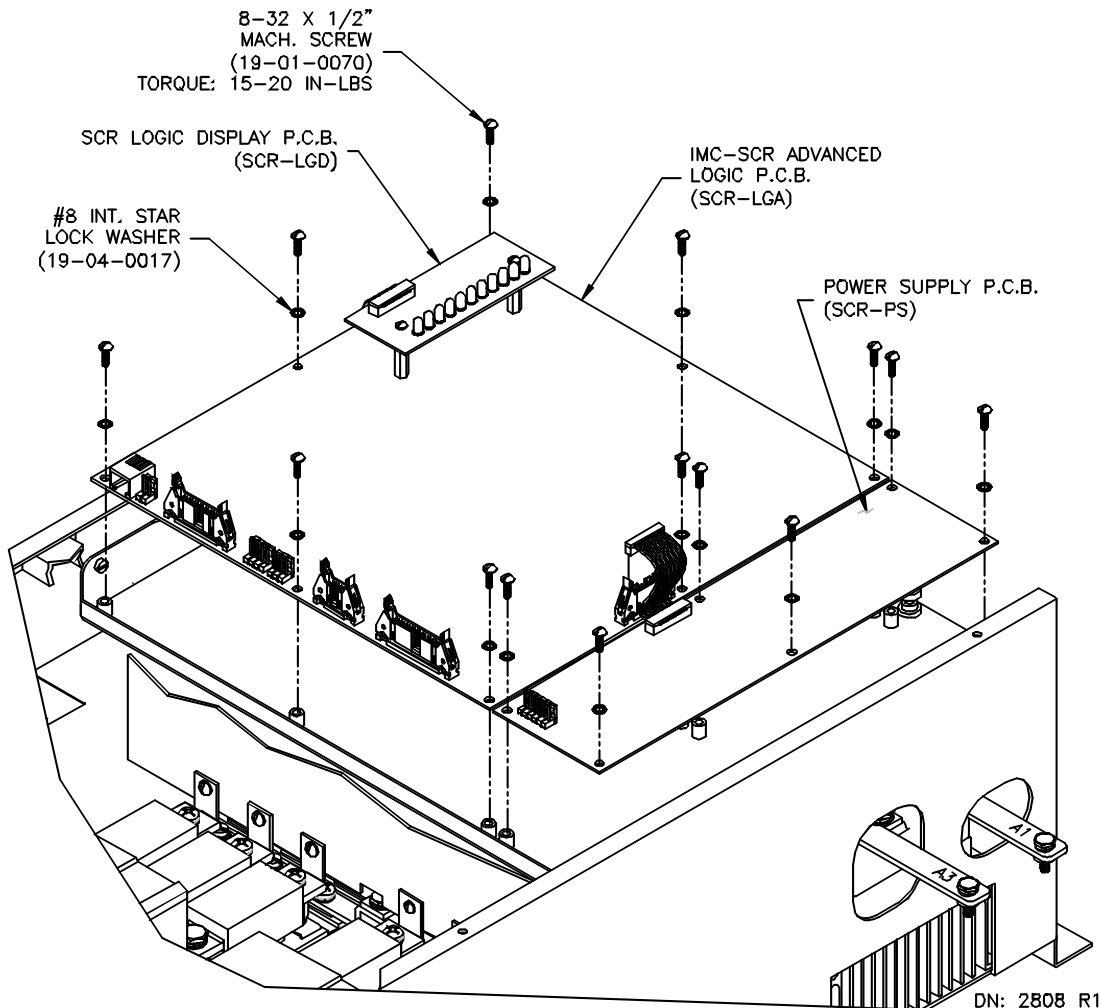
1. Remove the two mounting screws from the SCR-LGD board.
2. Disconnect the ribbon cable from J10 on the SCR-LGA board and remove the SCR-LGD board.
3. Install the new SCR-LGD board and torque the mounting screws to 15-20 inch pounds.
4. Connect the SCR-LGD board ribbon cable to J10 on the SCR-LGA board.

Table 6.32 Replacement Parts for SCR-LGD

ITEM (DESCRIPTION)	MCE PART #	UNIT
SCR-LGD (SCR Drive Display Board)	SCR-LGD	Each
Standoff (8-32 x 3/8" F/F Standoff)	41-04-0037	Each
Kep Screw (8-32 x 3/8 Kep Screw)	19-01-0012	Each

Replacing the SCR-LGA SCR Drive Logic Board When replacing the SCR-LGA board, the SCR-LGD board must be transferred from the old SCR-LGA board to the new board. This is best done when both boards are detached from the drive. The transfer includes installing the standoffs needed to hold the SCR-LGD. The standoffs are loaded from the back of the SCR-LGA board.

Figure 6.30 Replacing the SCR-LGA Board



1. Disconnect all connections to the board (J1-J10 and the ribbon cable ground wire attached to the bottom right corner mounting screw).
2. Remove the mounting screws and the board. Ensure that no loose parts fall into the drive.
3. Install the new board and torque the mounting screws to 15-20 inch pounds. [Please refer to “SCR-LGA Board Jumper Settings for use with iControl” on page 6-128 and See “SCR-LGA Board Layout” on page 6-129..](#)
4. Reinstall the board connectors (J1-J10 and the ground wire). Ensure that the bottom right corner mounting screw is torqued to 15-20 inch pounds.

Table 6.33 Replacement Parts for SCR-LGA

ITEM (DESCRIPTION)	MCE PART #	UNIT
SCR-LGA (SCR Drive Logic Board)	SCR-LGA	Each
Mach. Screw (8-32 x 1/2" Mach. Screw)	19-01-0070	Each
Star Lock Washer (#8 Star Lock Washer)	19-01-0017	Each

Replacing the SCR-PS Board Only The SCR-PS board supplies DC power to the SCR-LGA board. Ensure that the new SCR-PS board is generating the correct DC voltage before connecting it to the SCR-LGA board. [Please refer to “Replacing the SCR-LGA SCR Drive Logic Board” on page 6-142 for an illustration.](#)

1. Disconnect the ribbon cable from SCR-LGA board J9 and remove the 6 position IDC from J1 on the SCR-PS board.
2. Remove the mounting screws and remove the board.
3. Install the board and torque the screws to 15-20 inch pounds.
4. Connect the ribbon cable from the SCR-PS board to J9 on the SCR-LGA board. Reconnect the 6 position IDC to J1 on the SCR-PS board.
5. Test the SCR-PS board for the correct voltage:
 - Disconnect the ribbon cable from J9 on the SCR-LGA board.
 - Turn ON power to the enclosure at the main disconnect. Ensure that the controller is on Inspection.
 - Using a DC voltmeter, verify +5V, -5V, +15V, and -15V on the test points on the SCR-PS board. If the voltages are not within $\pm 1\%$ of the correct value, adjust the following on the SCR-PS board: R16 for +5V, R2 for -5V, R13 for +15V, or R5 for -15V.
 - Turn power OFF at the main disconnect. Reconnect the ribbon cable to J9 on the SCR-LGA board and turn power ON at the main disconnect.

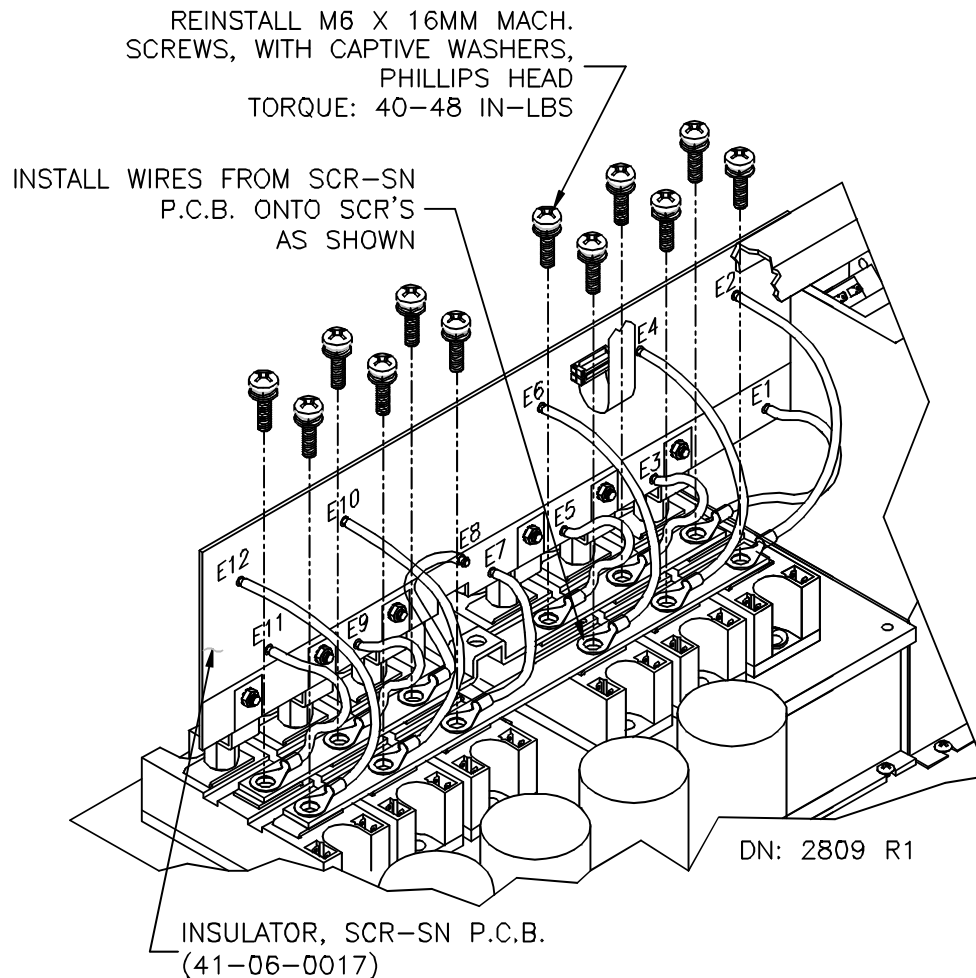
Table 6.34 Replacement Parts for SCR-PS

ITEM (DESCRIPTION)	MCE PART #	UNIT
SCR-PS (SCR Drive Power Supply Board)	SCR-PS	Each
Mach. Screw (8-32 x 1/2" Mach. Screw)	19-01-0070	Each
Star Lock Washer (#8 Star Lock Washer)	19-01-0017	Each

Troubleshooting

Replacing the SCR-SN Board Removing the SCR-SN board requires that a few wires be disconnected. Label the wires to ensure they can be reconnected correctly. The right angle copper brackets and the insulator on the SCR-SN board must be transferred to the new board. This is best done when both boards are detached from the drive. The swing tray that holds the SCR-LGA and the SCR-PS board must be removed to make it simpler to remove the SCR-SN board. Do not disconnect the boards from the tray; remove the tray with the board on it.

Figure 6.31 Replacing the SCR-SN Board



1. Remove the semiconductor fuses and the ribbon cable from J2 on the SCR-LGA board.
2. Disconnect the wires attached to terminals 2 and 3 on SCR1 through 6 in the drive.
3. Remove the three mounting screws on top of the SCR-SN board and remove the board. Transfer the angle brackets (35-30-0009) to the new board. Lightly tighten the screws.
4. Install the new SCR-SN board and install the mounting screws (19-01-0012) and flat washer (19-04-0004). Torque the mounting screws to 15-20 inch pounds.
5. Connect the wires as indicated below. Torque the M6 machine screws to 40-48 inch pounds. Ensure that the ring lug does not cross the outer limits of the bus bar. To ensure proper clearance, the space between bus bars A and B must be maintained.
- Note: The terminal number is on the top left side of the SCR pack near the terminal.
 - Wire from E1 to SCR1 terminal 2
 - Wire from E3 to SCR2 terminal 2
 - Wire from E5 to SCR3 terminal 2
 - Wire from E7 to SCR4 terminal 3
 - Wire from E9 to SCR5 terminal 2
 - Wire from E11 to SCR6 terminal 2
 - Wire from E2 to SCR1 terminal 3
 - Wire from E4 to SCR2 terminal 3
 - Wire from E6 to SCR3 terminal 3
 - Wire from E8 to SCR4 terminal 2
 - Wire from E10 to SCR5 terminal 3
 - Wire from E12 to SCR6 terminal 3
6. Install the semiconductor fuses (see Replacing the Semiconductor Fuses) and tighten the screws that attach the copper bracket to the SCR-SN board.
7. Reinstall the swing tray that holds the SCR-LGA and SCR-PS board.

Table 6.35 Replacement Parts for SCR-SN

ITEM (DESCRIPTION)	MCE PART #	UNIT
SCR-SN (SCR Drive Snubber Board)	SCR-SN	Each
Insulator (Insulator for the SCR-SN board)	41-06-0017	Each
M6 Mach. Screw (M6 x 16MM Mach. Screw)	35-74-A5FT	Set (30 EA.)
Kep Screw (8-32 x 3/8" Kep Screw)	19-01-0012	Each
Flat Washer (#8 Flat Washer)	19-04-0004	Each
Kep Nut (8-32 Kep Nut)	19-02-0005	Each
Angle Bracket (Copper Angle Bracket Bus Bar)	35-30-0009	Each

Troubleshooting

Replacing the SCR-DS Board The SCR-DS board contains the SCR firing leads that attach to the SCR devices. Handle these wires with care. In some cases, the SCR-DS board does not require complete removal. Partial removal consists of removing all of the items stated below except the cathode and gate connectors on the bottom of the SCR-DS board, the 6 phase wires, and the A2 wire.

Figure 6.32 Replacing the SCR-DS Board

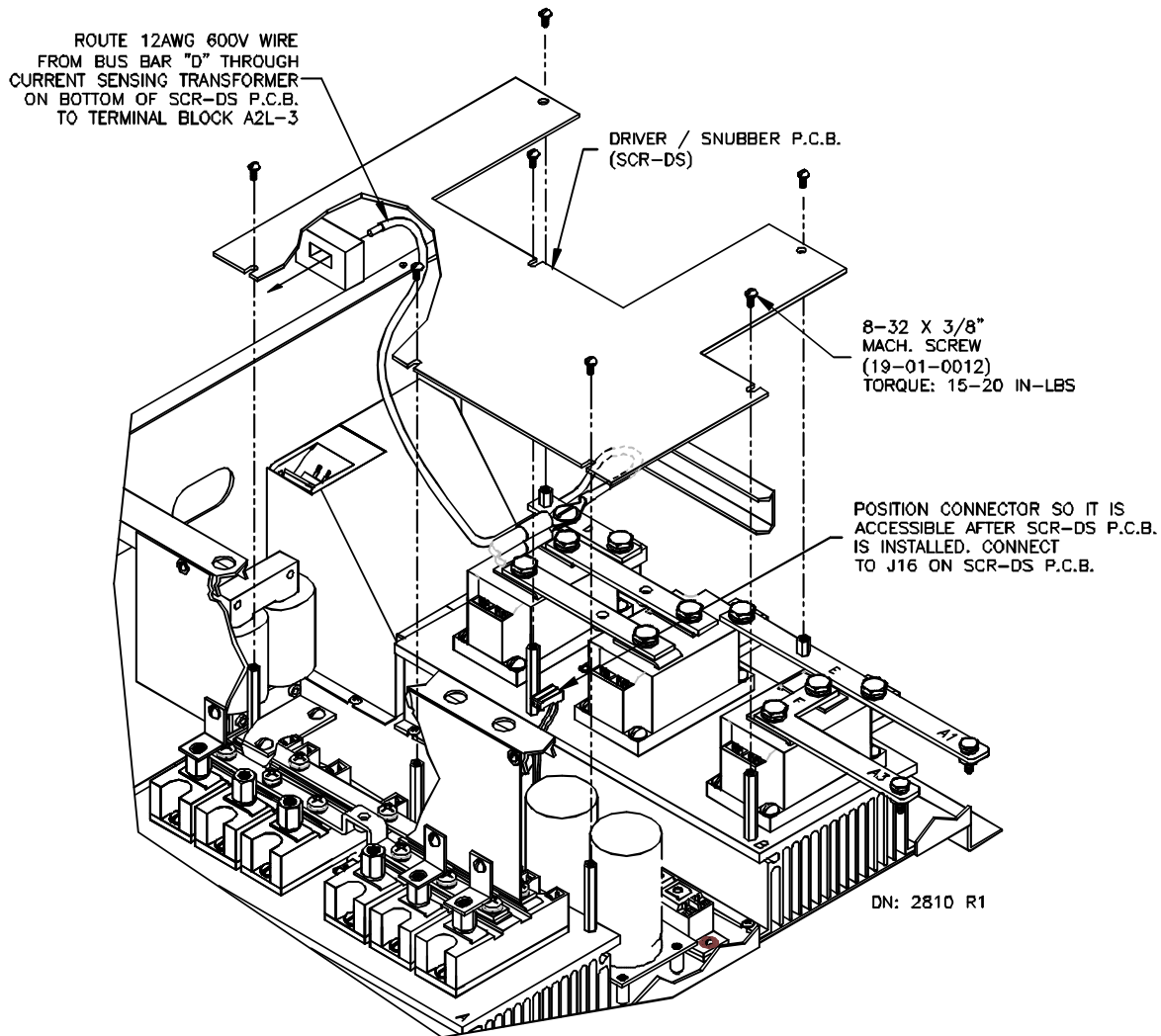


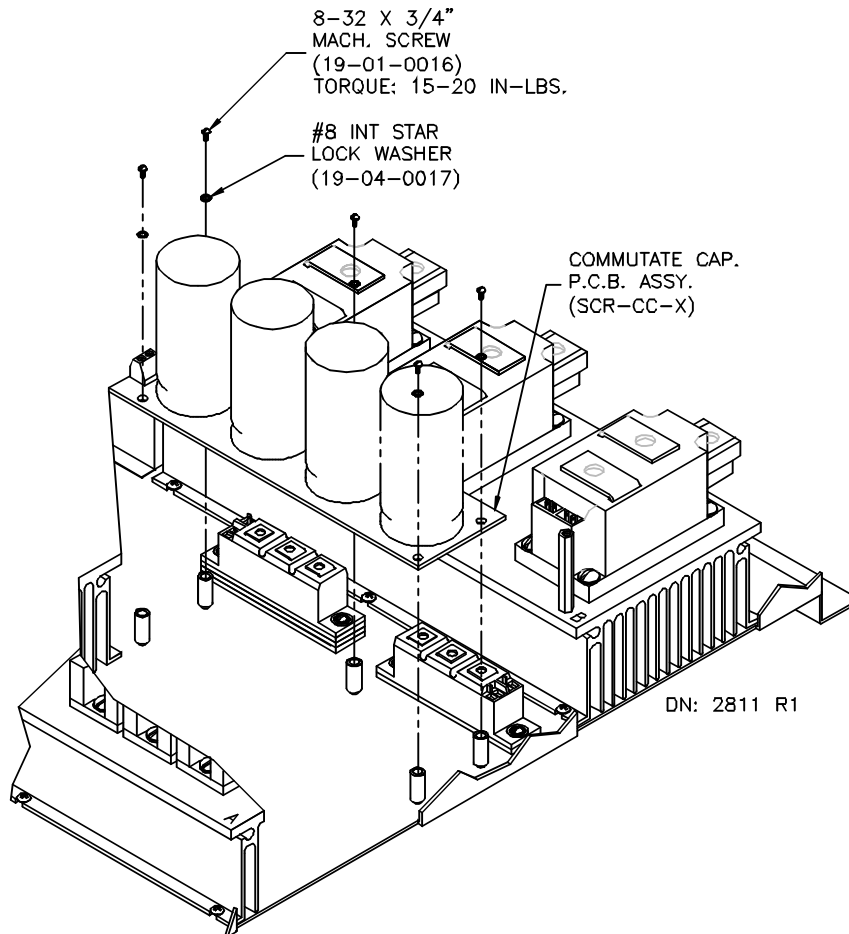
Table 6.36 Replacement Parts for SCR-DS

ITEM (DESCRIPTION)	MCE PART #	UNIT
SCR-DS (SCR Drive Driver/Snubber Board)	SCR-DS	Each
Kep Screw (8-32 x 3/8" Kep Screw)	19-01-0012	Each
Current Sensor (70 Amp board mounted)	38-01-0502	Each

Replacing the SCR-CC H/L Board To gain access to the SCR-CC-H/L board, the SCR-DS board must be removed. Label the wires you disconnect so they can be reconnected correctly. The three studs (X1, A, AX) on the board should be torqued with care.

Figure 6.33 Replacing the SCR-CC H/L Board

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1. Label and disconnect the wires on the studs (X1, A, AK) and J1 of the SCR-CC-H/L board.
2. Remove the mounting screws and the board.
3. Install the new SCR-CC board and torque the mounting screws to 15-20 inch pounds.
4. Install all the wires that connect to J1.
5. Reconnect the wires to the studs (X1, A, AK). Torque the nuts to 22-30 inch pounds.
6. Reinstall the SCR-DS board.

Table 6.37 Replacement Parts for SCR-CC

ITEM (DESCRIPTION)	MCE PART #	UNIT
SCR-CC-L (commutation Board Low Voltage)	SCR-CC-L	Each
SCR-CC-H (Commutation Board High Voltage)	SCR-CC-H	Each
Mach. Screw (8-32 x 3/4" Mach. Screw)	19-01-0016	Each
Star Lock Washer (#8 Star Lock Washer)	19-01-0017	Each

Troubleshooting



iBox Front Panel Controls

About the iBox Front Panel

System status indicator LEDs and function control switches are on the iBox front panel. The front panel also provides:

- LCD display and entry keypad (see [page 7-2](#)).
- Access to iBox Ethernet Port addresses (see [page 7-8](#)).
- System-level diagnostic LED display (see [page 7-10](#)).
- System function control switches (see [page 7-11](#)).

Front panel controls allow you to:

- [Directly view and adjust iBox configurable parameters](#) (see [page 7-2](#)).
- [Quickly ascertain system status](#) (see [page 7-10](#)).
- [Access Controller mode and other function switches](#) (see [page 7-11](#)).

iBox Front Panel Controls

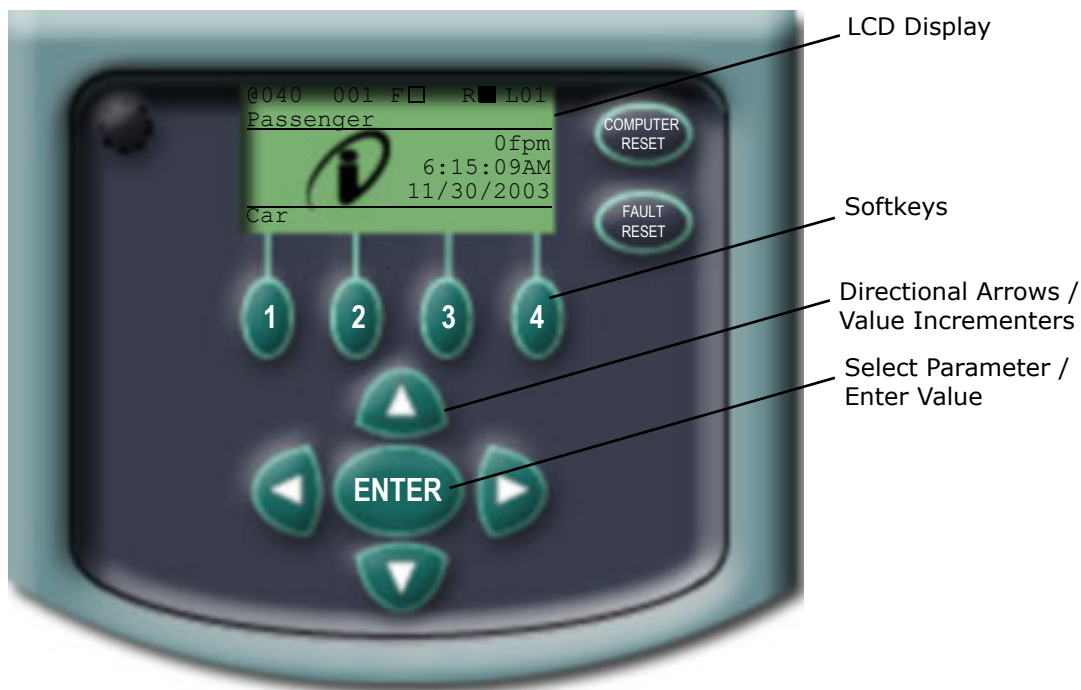
LCD Display and Keypad

The iBox LCD display and keypad allow you to:

- View and change parameter settings
- View and register calls
- View the status of inputs, outputs, and flags
- View error messages and the system event log

Typically, when you need to view or change parameters in an iControl, you connect to the iBox through the PC or LAN Ethernet port and use the iView graphical user interface running on a Windows OS PC to easily access, view, or edit any desired parameter. However, during initial system setup when setting the parameters that allow PC access to your system, or when a PC is not available, some parameters can be directly accessed and edited through the keypad and LCD display located on the front panel of every iBox.

Figure 7.1 iBox Data Entry Keypad and LCD Display



Keypad Controls

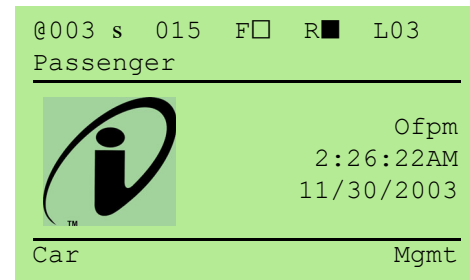
Keypad controls include:

- Display Contrast — adjusts the LCD display
- Computer Reset — resets the iBox computers
- Fault Reset — initializes the fault list
- Softkeys — selects the associated topic across the bottom of the LCD display
- Up Arrow — moves the selection bar up or increases a parameter value
- Down Arrow — moves the selection bar down or decreases a parameter value
- Left Arrow — moves the cursor left (digit selection)
- Right Arrow — moves the cursor right (digit selection)
- ENTER — confirms a selection or enters a parameter value

LCD Display

The LCD display allows you to view iBox parameters. The top line of each display “screen” provides a status “snapshot” for the car associated with the controller. In our example:

- @ (door zone) —
 - @: in door zone
 - —: below door zone
 - +: above door zone
- 003 — current floor
- s or t (direction arrows)
- 015 — next floor
- F (front doors) —
 - ☐ Open
 - ☒ Closed
 - ☐ Opening/Closing
 - ☒ Invalid door position
- R (rear doors) —
 - ☐ Open
 - ☒ Closed
 - ☐ Opening/Closing
 - ☒ Invalid door position
- S or L (Simplex or Local)
- 03 (Car ID)



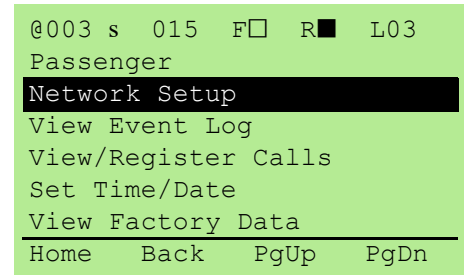
The second line of the display shows the mode of operation (Passenger in the example) displayed in rotation with any active status or error messages. If a soft key is pressed (Car or Mgmt) the remaining display lines change to display appropriate information. The labels in the bottom line change to indicate the function of their associated soft key.

iBox Front Panel Controls

Parameter Entry

To edit or view a parameter, you select a broad topic by pressing the Enter soft key, then select and view or edit a parameter. For example, to change or edit a Car-associated parameter.

1. Press the soft key (1) beneath the Car label. The LCD will change as shown to the right.
2. Use the arrow keys to scroll to a topic.
3. With the topic selected (Network Setup in our example), press ENTER.



Note that the soft key labels have changed:

- Home — Returns you to the home screen.
 - Back — Takes you back one screen.
 - PgUp — When there are more topics than can be listed on a single screen, PgUp moves you up the list a full “screen” at a time.
 - PgDn — When there are more topics than can be listed on a single screen, PgDn moves you down the list a full “screen” at a time.
4. Use the arrow keys to scroll to a topic.
 5. With the topic selected, press ENTER.

When you press ENTER, the display updates.

6. Use the arrow keys to scroll to a topic.
7. With the topic selected, press ENTER.

When you press ENTER, the display updates. The cursor/arrow indicates a parameter can be edited.

8. Use the left/right arrow keys to position the arrow below the number to be changed.
9. Use the up/down arrow keys to increment or decrement the value.
10. Repeat positioning and incrementing/decrementing as necessary. Press ENTER to enter the new value.
11. The soft key labels will indicate Save and Cancel. Press Save to save your changes after a yes or no acknowledgment.

or,

12. Press Cancel to leave the screen without saving your changes (after a yes or no acknowledgment).

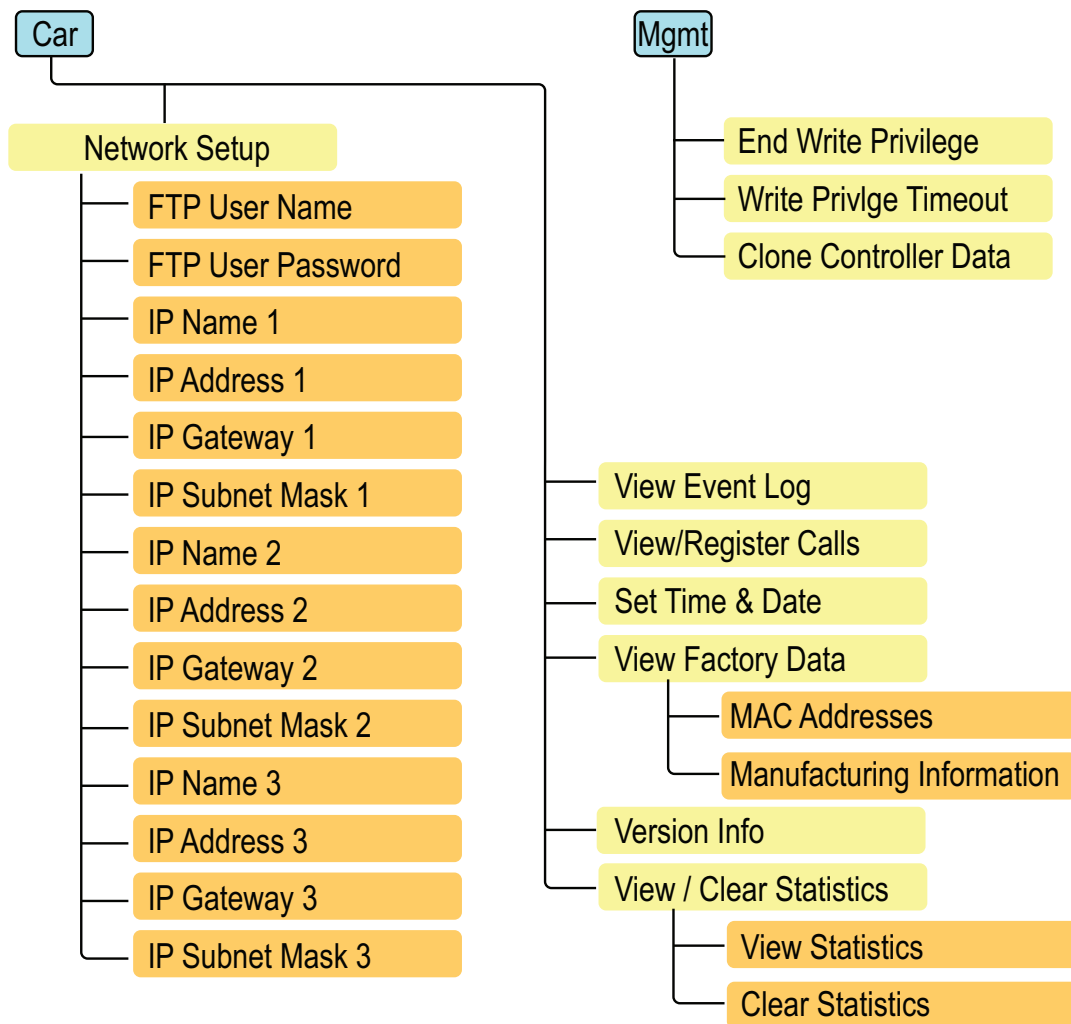
Editing a Controller Parameter

To edit a parameter:

1. Navigate to the desired screen.
2. Edit the parameter.
3. Save the edited parameter.

The following illustration shows which parameter groups are accessible on the Car and Mgmt menu LCD screens. Use the illustration and Table 6.1 to help you locate a parameter to be adjusted.

Figure 7.2 Onboard Diagnostics Car Menu Tree



iBox Front Panel Controls

Table 7.1 Car Menu Parameters

Car Menu Parameters
Network Setup There are three Ethernet ports on the iBox. #1 is the Local Area Network connection used to connect Group and Elevator controllers to your Local Area Network. #2 is the MCE equipment connection used to interconnect Group and Elevator controllers for equipment control purposes. #3 is the PC Direct connection used to connect a PC directly to a Controller. Network setup parameters allow IP information to be set for each of the ports. Additionally, an FTP User Name and Password must be set here without which the File Transfer Protocol server may not be accessed. There are many websites that are helpful in learning about TCP/IP.
To set the FTP User Name: Enter a User Name that must be employed to access the FTP server.
To set the FTP User Password: Enter a password that must be employed to access the FTP server.
To set the IP Name 1: Enter a name for the #1 port. This is the peripherals port used for local area network connection, typically for networked PCs running iView.
To set the IP Address 1: Enter an address for the #1 port. Please refer to "System, LAN, & 3=PC TCP/IP Addresses" on page 7-8.
To set the IP Gateway 1: Enter a gateway address for the #1 port. Please refer to "System, LAN, & 3=PC TCP/IP Addresses" on page 7-8.
To set the IP Subnet Mask 1: Enter a subnet mask address for the #1 port. Please refer to "System, LAN, & 3=PC TCP/IP Addresses" on page 7-8.
To set the IP Name 2: Enter a name for the #2 port. This is the system port used to connect to the hub that supports MCE controllers, serial hall call, etc.
To set the IP Address 2: Enter an address for the #2 port. Please refer to "System, LAN, & 3=PC TCP/IP Addresses" on page 7-8.
To set the IP Gateway 2: Enter a gateway address for the #2 port. Please refer to "System, LAN, & 3=PC TCP/IP Addresses" on page 7-8.
To set the IP Subnet Mask 2: Enter a subnet mask address for the #2 port. Please refer to "System, LAN, & 3=PC TCP/IP Addresses" on page 7-8.
To set the IP Name 3: Enter a name for the #3 port. This is the PC port meant for direct connection to a PC running iView using a standard Ethernet cable and NO HUB.
To set the IP Address 3: Address for the #3 port. Default at 192.168.193.1.
To set the IP Gateway 3: Enter a gateway address for the #3 port. Please refer to "System, LAN, & 3=PC TCP/IP Addresses" on page 7-8.
To set the IP Subnet Mask 3: Enter a subnet mask address for the #3 port. Please refer to "System, LAN, & 3=PC TCP/IP Addresses" on page 7-8.

Table 7.1 Car Menu Parameters

Car Menu Parameters
View Event Log View Event log accesses the event database maintained by the controller. This database lists messages by ID Number, ordered by time-of-occurrence. Additional data is also stored, e.g. Type, Date, Time, Acknowledgment Status, and Event (name) for each event. A listing of iBox Event Log ID Numbers and a cross-reference to iControl Messages and descriptions can be found in Section 6 of this User Guide. Please refer to "Cross Reference: iBox Event Log ID Numbers to iControl Messages" on page 6-4 and see "iControl Messages" on page 6-15 To view the Event Log: Press softkey (1) beneath the <i>Car</i> label, scroll down to <i>View Event Log</i> and press Enter. To view event details, scroll to the desired event and press Enter. <i>Scroll down to see all data, including event name.</i>
View/Register Calls The View/Register Calls dialog allows you to send transport commands to the controller. To View/Register Calls: Allows you to enter car and hall calls for Front or Rear Car Operating Panels.
Set Time/Date This parameter sets the real time clock for the controller. To set the Set Time/Date: Enter the current time and date for use by the controller real time clock.
View Factory Data View Factory Data accesses serial number, date, and MAC address information for the controller. This information is very useful should you ever have to contact MCE about your equipment. MAC Addresses: A six-byte, unique, identifying code used by LANs to positively identify communicating equipment. This parameter allows you to view the MAC address for each of the three Ethernet ports. Manufacturing Info: View the controller serial number, revision, and ICE-IMP information.
Version Info Version Info provides version information for the software currently installed on your controller. Version Info: View the software version information for the controller and car top processors.
View / Clear Statistics View/clear statistical data collected by controller. Statistical data includes odometer, power-up cycles, front and rear door cycles, motion cycles, floor time, floor runs, inspection runs, auto runs, and auto relevels.

Table 7.2 Mgmt Menu Parameters

Mgmt Menu Parameters
End Write Privilege Use to cancel write privilege which has been granted to an iView PC connected to the controller.
Write Privlge Timeout Use to change the write privilege timeout timer setting. The default value is 15 minutes.
Clone Controller Data When replacing an iBox (or ICE-SAF board), this option allows safety learned and inventoried parameters to be saved to flash memory. That memory can then be physically transferred to the new iBox (or ICE-SAF board), eliminating the need to enter or relearn those settings. Specific instructions for using this feature are provided with the replacement iBox.

iBox Front Panel Controls

Setting iBox Ethernet Port Addresses

The table below lists the factory default addresses TCP/IP addresses. The iBox 3 = PC port (PC direct) is set to 192.168.193.001 and should not be changed.

Table 7.3 System, LAN, & 3=PC TCP/IP Addresses

Hub	Group	Group IP, Primary & Backup	Car ID	Car IP	System/Serial Hall Call Bus 1 - 4	iView PC
System	all	192.168.192.201-202	1-20	192.168.192.001-020	192.168.192.211-214	
LAN	A	192.168.191.201-202	1-20	192.168.191.001-020		192.168.192.101-200*
LAN	B	192.168.191.203-204	1-20	192.168.191.021-040		
LAN	C	192.168.191.205-206	1-20	192.168.191.041-060		
LAN	D	192.168.191.207-208	1-20	192.168.191.061-080		
LAN	E	192.168.191.209-210	1-20	192.168.191.081-100		
Port #3 = PC (iBox ONLY), NO HUB				192.168.193.001		

*192.168.191.101 is typically used for the iView PC.

The default Subnet Mask for all ports is 255.255.255.000.

The default Gateway for the #1 (LAN or Peripheral Port) is 192.168.191.254.

The default Gateway for the #2 and #3 ports is 000.000.000.000.

You should not need to change the factory-set IP information. If you are having problems connecting to an iBox Ethernet port, refer to the following topic to verify and, if necessary, set IP addresses.

Note

The Group ID setting in iView determines the iCue System IP address at which iCue will accept messages. **NO NOT set the Group ID to a setting other than 1** unless instructed to do so by MCE. Group IDs other than 1 are reserved for future use and will cause group-to-car communication to fail. If you need advanced System addressing information, please contact MCE.

IP Address Verification/Setting

You should not need to change the factory-set IP information. If you are having problems connecting to an iBox Ethernet port, verify that IP information is correct as described here. If you find an incorrectly set port, these instructions will help you correct it. These instructions are for Port 1 but the procedure is the same for all iBox ports.

1. Press the soft key (1) beneath the Car label. The LCD will change as shown to the right.
2. With Network Setup selected, press ENTER.
3. Scroll down to IP Address 1, press ENTER.
4. Verify that the Address displayed is correct (see preceding table). For example, Car A of Group 1 should be 192.168.191.001.
5. If you are using the default addresses, and the address displayed is incorrect, set it according to the table using Left and Right arrow keys to select a number and Up and Down arrow keys to change the value. Continue until the address is correct, then press ENTER. Press SAVE to save your changes (if any).
6. Scroll down to IP Gateway 1. The default for the #1 Port is 192.168.191.254. (The default for the #2 and #3 Ports is 000.000.000.000) If necessary, change it as described above.
7. Scroll down to IP Subnet Mask 1. The default is 255.255.255.000. If necessary, change as described above.
8. Continue as above to verify the IP information for the #2 and #3 Ports respectively. Check the preceding table for factory default addresses.

```
@003 s 015 F□ R■ L03
Passenger
Network Setup
View Event Log
View/Register Calls
Set Time/Date
View Factory Data
Home Back PgUp PgDn
```

iBox Front Panel Controls

System Status Display

iBox front panel LEDs and the LCD display both provide status information.

LED Status Display

The LEDs of the front panel display provide immediate controller status information:

- Computer: Lights green when the controller microprocessor is running properly.
- Safety A: Lights green when Safety System A is functioning properly.
- Safety B: Lights green when Safety System B is functioning properly.
- Car Top: Lights green when the Cartop microprocessor is running properly.
- Sys Comm: Lights green when controller is communicating with Group.
- Up: Lights amber when car is moving up.
- Drive On: Lights amber when drive has control of car. Drive On may be ON while UP and DOWN are OFF indicating no movement but drive is holding zero speed.
- Down: Lights amber when car is moving down.
- Run: Lights green when car is making a run between floors. Remains off during re-leveling operations.
- Relevel: Lights red when car is releveling.
- Safety OK: Lights green when safety path is made up.
- Doors Locked: Lights green when doors are locked.
- Inspection: Lights amber when car is on Cartop, In-Car, Machine Room, or Hoistway Access Inspection.
- In Group: Lights green if car is able to respond to group hall call demand.
- Fault: Lights red if one or more system faults are active.

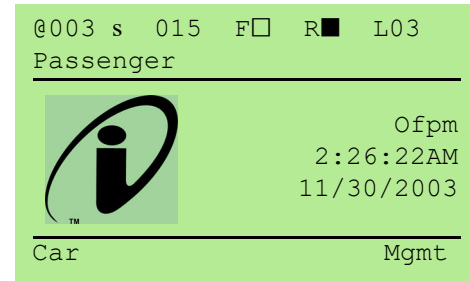


Note

These displays are frequently used when the elevator controller is being configured. Please refer to Sections 3 and 4 of this guide for use descriptions.

LCD Status Display

The LCD screen displays text messages advising of system status. The second line of the display shows the mode of operation (Passenger in the example) displayed in rotation with any active status messages. Please refer to “iControl Messages” on page 6-15 for description.



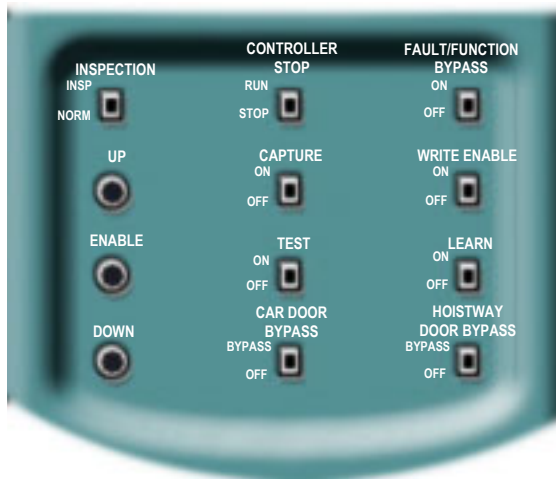
System Control Switches

The front panel system control switches allow you direct access to system functions including:

- Inspection: Switch used to place the car on Machine Room Inspection (Insp) or Normal operation (Norm).
- Up: Push switch used to run the car up when the system is on Machine Room Inspection and the Enable button is simultaneously pressed and held.
- Enable: Push switch used to run the car up or down when the system is on Machine Room Inspection and the Up or Down button is simultaneously pressed and held.
- Down: Push switch used to run the car down when the system is on Machine Room Inspection and the Enable button is simultaneously pressed and held.
- Controller Stop: Switch used to immediately remove hoist motor and brake power (Stop) or apply power to those systems (Run).
- Capture: Switch used to place Car on Capture operation (On). While this switch is On, the car will not respond to hall call demand or Parking.
- Test: Switch used to place the car on Test Mode operation (On).
- Fault/Function Bypass: Switch to allow specific faults and safety functions (as determined by Keypad/LCD settings) to be bypassed. Car must be in Test mode.
- Write Enable: (Factory only) Switch used to allow special data to be saved (On).
- Learn: Switch used to confirm intended Learn operation. The learn procedure must be selected. For Hoistway Learn, the car must be on Inspection mode. For Terminal Switch Learn, the car must be on Test mode.
- Car Door Bypass: Switch used to bypass the car door electric contacts (Bypass position). When set to Bypass, the car will run only on Inspection mode. The ability to set this bypass must be enabled at the factory and is only available if allowed by safety regulations in your area. Check the iView Safety Configuration screen to see if the feature is enabled in your installation.

iBox Front Panel Controls

- **Hoistway Door Bypass:** Switch used to bypass the hoistway door electric contacts (Bypass position). When set to Bypass, the car will run only on Inspection mode. The ability to set this bypass must be enabled at the factory and is only available if allowed by safety regulations in your area. Check the iView Safety Configuration screen to see if the feature is enabled in your installation.



Note

These control switches are used when the elevator controller is being configured. Please refer to Sections 3 and 4 of this guide for use descriptions.

Safety Bypass Jumper and Fuses

The iBox provides four fused outputs:

- 120v/60Hz AC: Fuses F2 and F2PI.
- 110v DC: Fuses F3 and F3HA.
- 120v/60Hz AC: Motor Drive. Fuse F2D.
- 120v/60Hz AC: Motor Contactor. Fuse F2MC.

When installed, the Safety Bypass jumper electrically connects the SB and 3 terminals on the IRB Relay Board. Information about the Safety Bypass jumper is in Section 6 of this guide ([see “Safety String Bypass Jumper” on page 6-3](#)).



Danger

The fuses and the bypass jumper expose dangerous high voltages that can cause bodily harm or death. **ONLY TRAINED, AUTHORIZED PERSONNEL** should have access to these areas.



About iView

This section provides working instructions for the iView application. iView on-line Help provides detailed information about settings and is available anytime you are working in the iView application. This section contains:

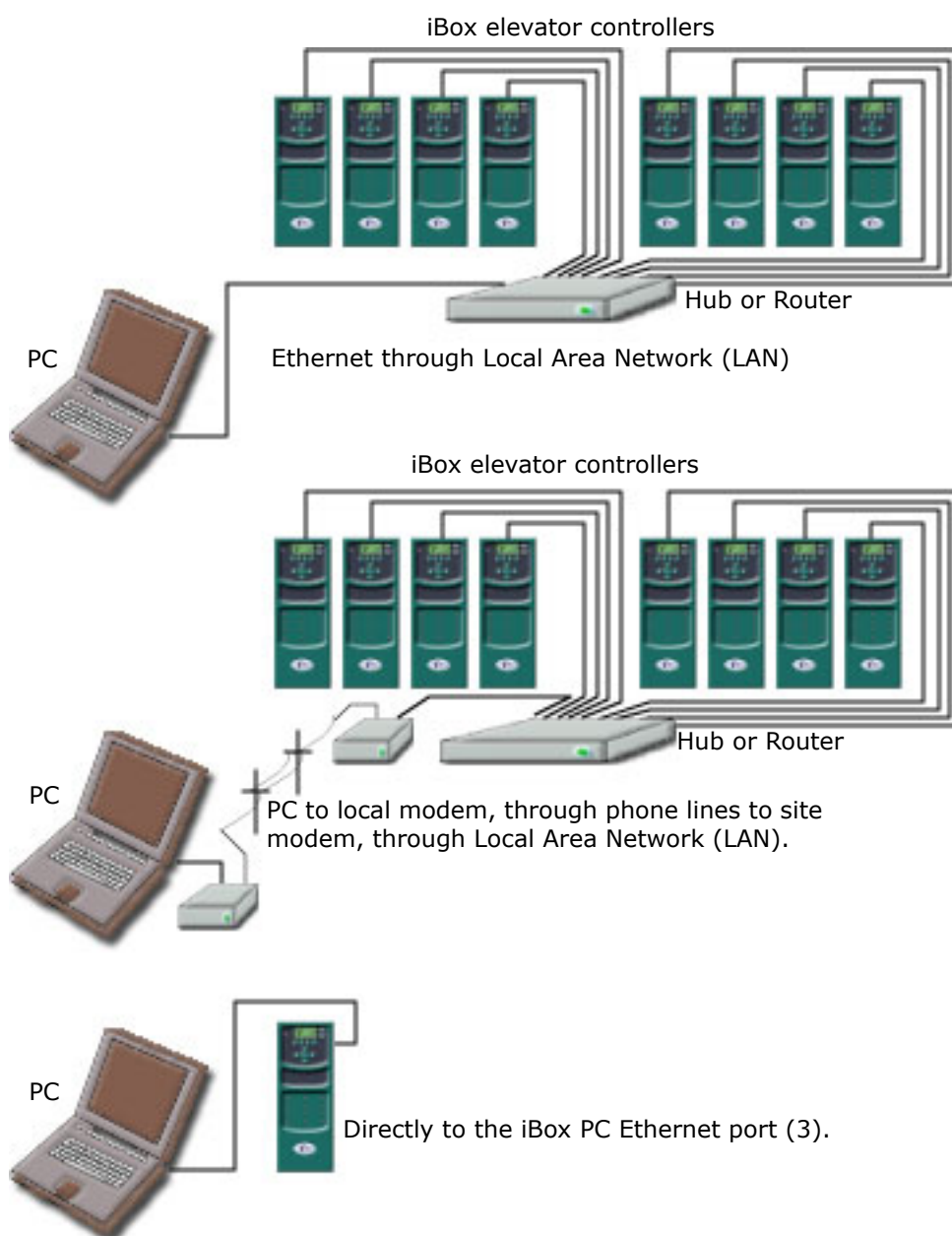
- How iView Works (see [page 8-2](#))
- Setting up an iView PC (see [page 8-3](#))
- LAN Connections (see [page 8-12](#))
- Working Online (see [page 8-16](#))
- Saving Parameters to a Configuration File (see [page 8-21](#))
- Saving Default Parameters to a Configuration File (see [page 8-22](#))
- Loading Parameters from a Configuration File (see [page 8-22](#))
- Working Offline (see [page 8-23](#))
- Accessing Online Help (see [page 8-24](#))
- iView Windows and Tabs (see [page 8-25](#))
- Resizing Windows & Docking/Undocking Windows (see [page 8-35](#) & [page 8-36](#)).
- Updating Controller Firmware (see [page 8-42](#))

Using iView

How iView Works

iView software runs on any PC using the Windows 2000 or later operating system. iView communicates with a controller through an Ethernet connection and loads operating parameters stored on the controller into iView screens. The iView user can view virtually any controller parameter and can edit/adjust any user-configurable parameter, then send changed parameters to the controller.

Because iView communicates with elevator controllers through an Ethernet connection, a single PC can be used to administer multiple elevators or even multiple groups of elevators (with each group operating under the direction of a group dispatcher). Elevator adjusters who service multiple sites will find it convenient to connect directly to a controller, then easily upload proven settings from a file on their hard drive to the controller. The diagram below illustrates just a few of the ways Ethernet connectivity allows iView to communicate with elevator controllers.



Setting Up an iView PC

Important If you purchased your iView PC from MCE, iView was installed at the factory. In addition, all of the network assignments (connections) for your job have been created and stored on the iView PC. Therefore, once the physical connections (cables) between each iController's iBox and the iCentral or Comm-Connect Ethernet Switches have been installed per the job prints, you are set to go. You can power up the iView PC and launch the iView.NET application. If this is the case you can skip this section and go to Working Online (see [“Working Online” on page 8-16](#)).

The following information is provided in case you find it necessary to reinstall iView or if you wish to install and setup iView on a laptop or other PC. Setting up an iView PC for the first time is a three step process:

1. Installing the iView application software (see Installing iView below).
2. Setting the iView PC's IP address (depends on the type of connection to be used). Please refer to [“Setting the iView PC's IP Address” on page 8-4](#).
3. Creating *Connections* in iView. For a direct connection see [“It is important that a free-standing iView PC have only one IP address assigned \(The iView/iCue PC in the iCentral dispatcher has two network interface cards; each with its own IP address\). Click the Advanced button and verify that the PC is configured for only a single IP Address \(192.168.193.2 for a direct connection and an unused address like 192.168.191.110 - 200 for a LAN connection\). Creating a Direct Connection in iView” on page 8-7](#). For LAN connections see [“Creating a New LAN Connection” on page 8-12](#).

Installing iView

Minimum requirements for the iView PC are:

- At least 1GB free hard drive space for installation
- Minimum 256MB RAM
- Windows 10 operating system
- USB
- 10/100 Ethernet capable
- Simple text or comparable text editing software

These instructions assume familiarity with personal computers. To install iView:

1. Insert the iView USB Drive into the computer.
2. Launch the USB Drive .
3. Double-click the ReadMeFirst (or other accompanying text file) to review the latest iView instructions.
4. Double-click on the Setup.exe application.
5. Follow on-screen instructions to install iView.

After installation, the iView icon will appear on your desktop



Double click the iView.NET icon to launch the iView application.

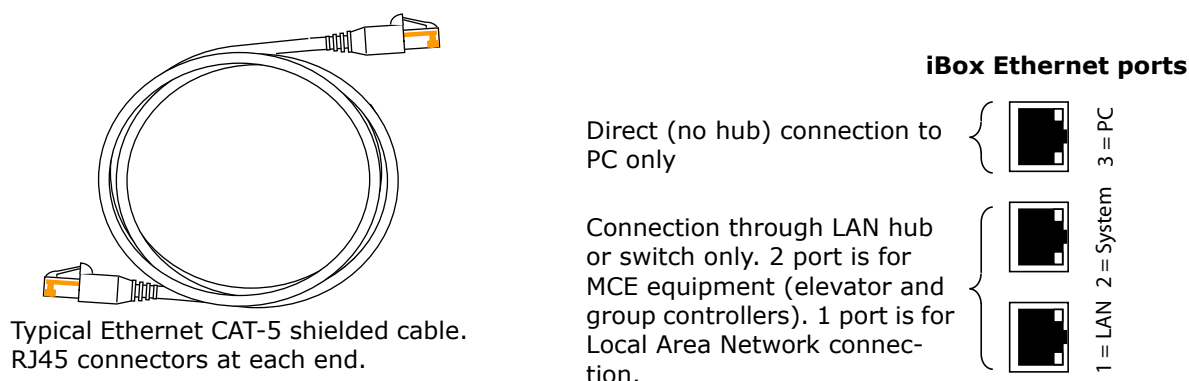
Using iView

Setting the iView PC's IP Address

There are two ways to connect the iView PC to an iController's iBox:

- **Direct Connection:** Connect the PC directly to the iBox using the iBox 3 = PC port. Unless the LAN hub/switch has already been installed, you will find it easiest to connect a PC to the iBox using the 3 = PC port (direct connection).
- **LAN Connection:** Connect the PC to the LAN hub/switch supporting one or more iControllers (iBox 1 = LAN port). The LAN hub/switch is part of the iCentral/Comm-connect installation.

Figure 8.1 Ethernet Cable and iBox Ethernet Ports



The IP address to which you set the iView PC depends on the type of connection you intend to use:

- For a direct connection the iView PC's IP address is typically set to 192.168.193.2
- For a LAN connection the main iView PC's IP address is typically set to 192.168.191.101 ([see About LANs below](#)). Note that each PC connected to the LAN must have a unique IP address.

About LANs: LAN stands for Local Area Network. A LAN is basically several computers (or smart equipment with a computer inside — like the iBox or iCue) all connected at a common point (the hub or switch) so they can communicate with each other. In order for a message from one computer to reach the computer (or iCue/iBox) it wants to talk to, all the computers connected to the LAN must have their own unique address. The address is called a TCP/IP number. The table below lists iControl default IP addresses. Your job prints provide specific instructions as to how all of your IP addresses are set.

Please refer to “System and LAN Ethernet” on page 9-15 for more detail. Also please see “System, LAN, & 3=PC TCP/IP Addresses” on page 8-5.

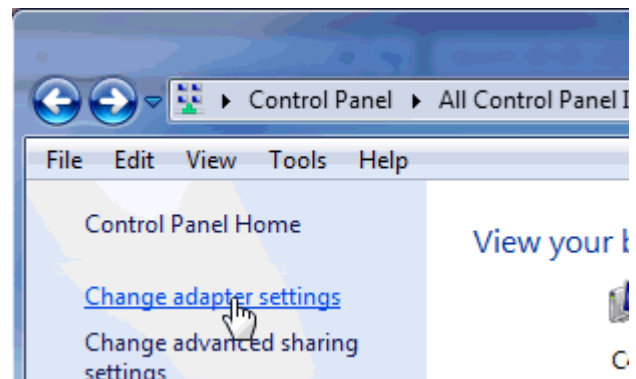
Table 8.1 System, LAN, & 3=PC TCP/IP Addresses

Hub	Group	Group IP, Primary & Backup	Car ID	Car IP	System/Serial Hall Call Bus 1 - 4	iView PC
System	all	192.168.192.201-202	1-20	192.168.192.001-020	192.168.192.211-214	
LAN	A	192.168.191.201-202	1-20	192.168.191.001-020		192.168.191.101-200*
LAN	B	192.168.191.203-204	1-20	192.168.191.021-040		
LAN	C	192.168.191.205-206	1-20	192.168.191.041-060		
LAN	D	192.168.191.207-208	1-20	192.168.191.061-080		
LAN	E	192.168.191.209-210	1-20	192.168.191.081-100		
Port #3 = PC (iBox ONLY), NO HUB				192.168.193.001		

*192.168.191.101 is typically used for the iView PC.

To set the iView PC's IP Address:

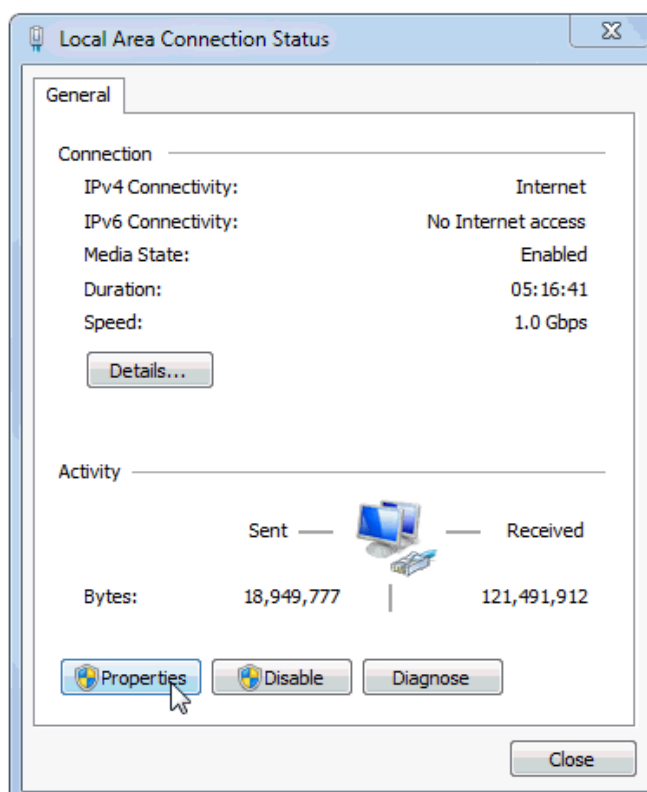
1. Start the PC.
2. From the Windows *Start* menu, double click *Control Panel*.
3. Double click *Network and Sharing Center* to open the Network and Sharing Center dialog.
4. Click *Change adapter settings* to open the Network Connections dialog.



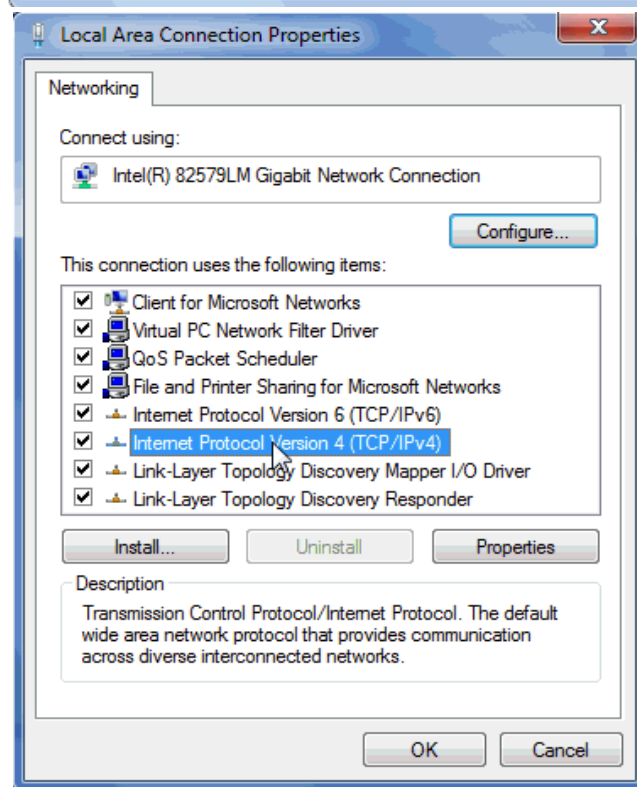
5. Double-click the *Local Area Connection* icon to open the Local Area Connection Status dialog.

Using iView

- Click *Properties* to open the Local Area Connection Status dialog.



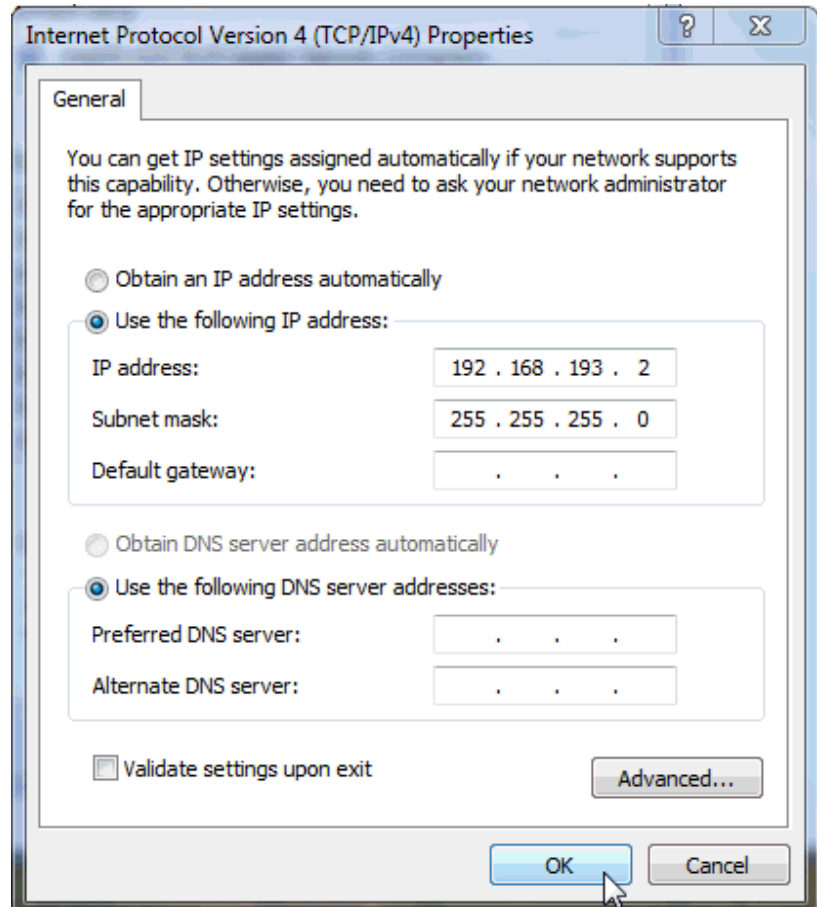
- In the Local Area Connection Properties dialog, select *Internet Protocol (TCP/IPv4)*.



- Click *Properties* to open the Internet Protocol (TCP/IPv4) Properties dialog

9. For a direct connection, set the IP Address to match the iBox EXCEPT FOR the last set of numbers. The #3 iBox port is defaulted to 192.168.193.1. Typically, you can set your PC's IP address to 192.168.193.2
10. For a LAN connection, the IP addresses available are 192.168.191.101 - 200. The main iView PC's IP address is typically set to 192.168.191.101. Each PC connected to the network must have a unique address.
11. Set the Subnet Mask to 255.255.255.0.
12. Click OK and follow any instructions to save the changes you made.

Sample screens are Windows 10 operating system.



The default Subnet Mask for all ports is 255.255.255.000.
 The default Gateway for the #1 (LAN or Peripheral Port) is 192.168.191.254.
 The default Gateway for the #2 and #3 ports is 000.000.000.000.

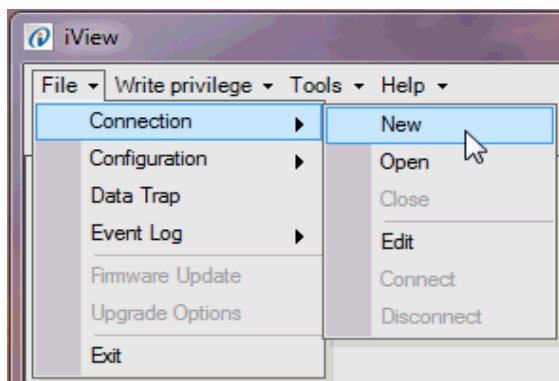
Note

It is important that a free-standing iView PC have only one IP address assigned (The iView/iCue PC in the iCentral dispatcher has two network interface cards; each with its own IP address). Click the *Advanced* button and verify that the PC is configured for only a single IP Address (192.168.193.2 for a direct connection and an unused address like 192.168.191.110 - 200 for a LAN connection). Creating a Direct Connection in iView

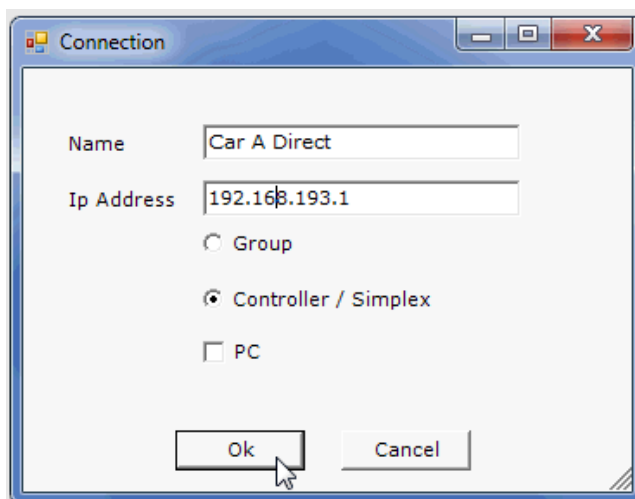
Using iView

Once you have set your computer TCP/IP as described previously, you need to create a connection in iView.

1. Double-click on the iView icon on your computer screen to launch iView.
2. Click *File* on the menu bar.
3. Select *Connection* and click *New* to open the Connection dialog.

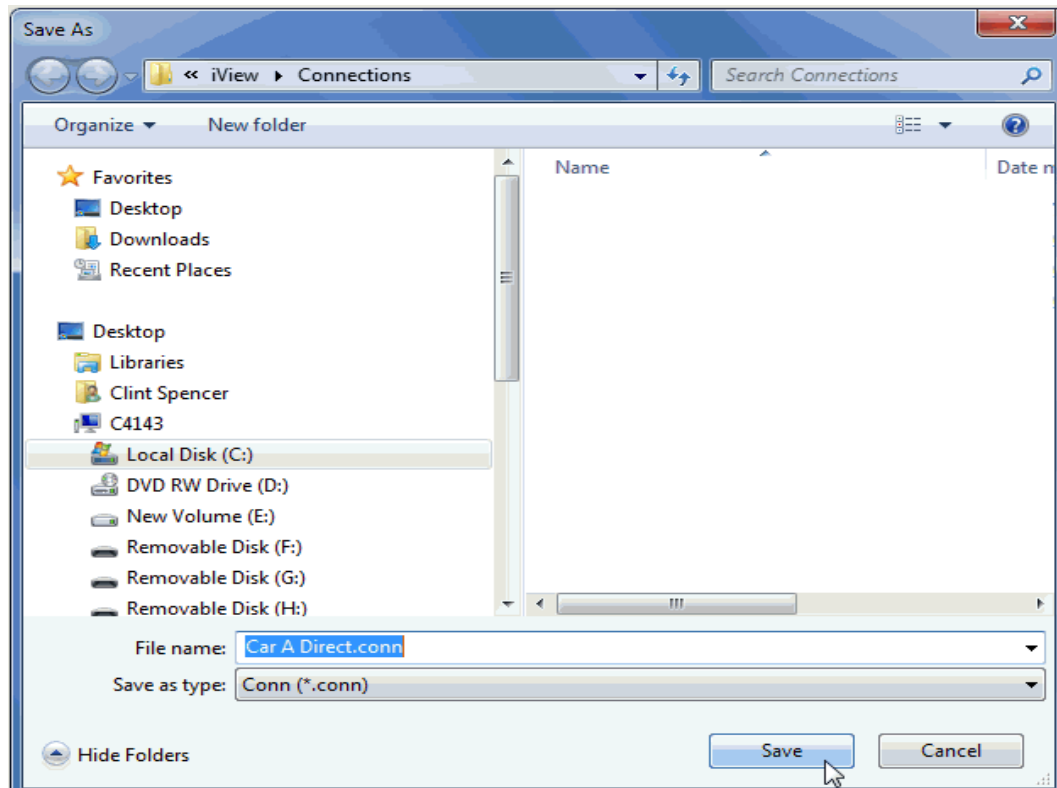


4. Type in a name for the connection.
5. Enter the direct connection IP Address for the iBox (192.168.193.1).
6. Select *Controller/Simplex*.
7. Click *OK*. The Save As dialog opens.



8. Enter a *File name* for this connection in the Save As dialog. When creating direct connections, it is a good practice to name them clearly so they are easy to distinguish (i.e., “CarA Direct”).
9. The suggested (default) location for connections is the *Connections* folder (My Documents > Motion Control Engineering > iView > Connections). You may choose another location using standard windows methods. You may also create sub-folders inside the iController Connections folder in which groups of connections can be stored.
10. Click *Save* to save the connection.

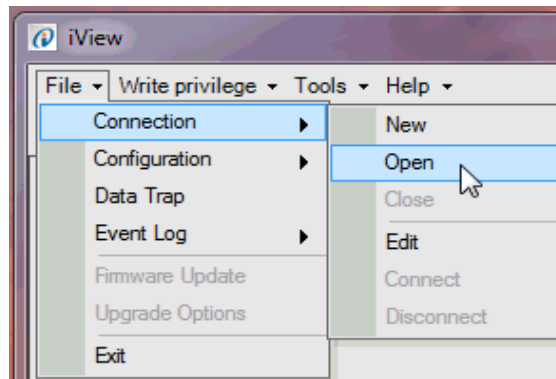
8



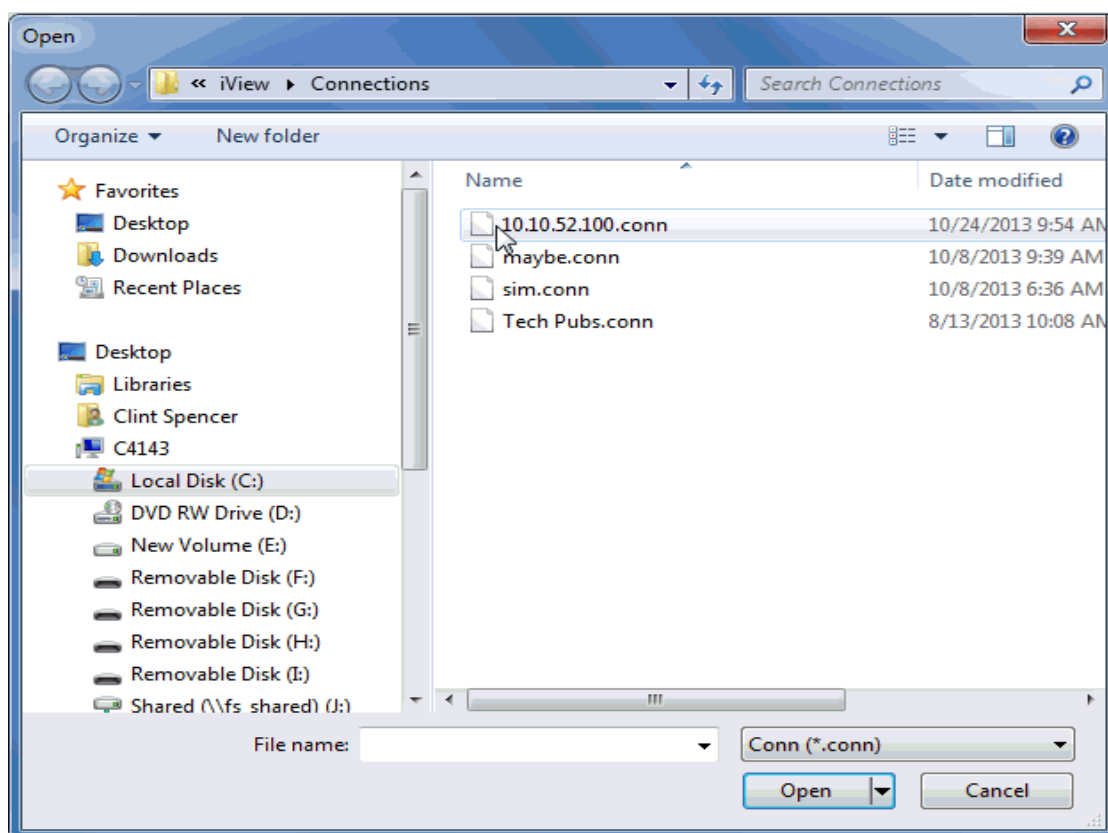
Using iView

Connecting to the iBox Once the connection is created and saved, you are ready to connect.

1. Click the *Open Connection* button 
2. or click *File* on the menu bar, select *Connection* and click *Open*. The Open dialog appears.



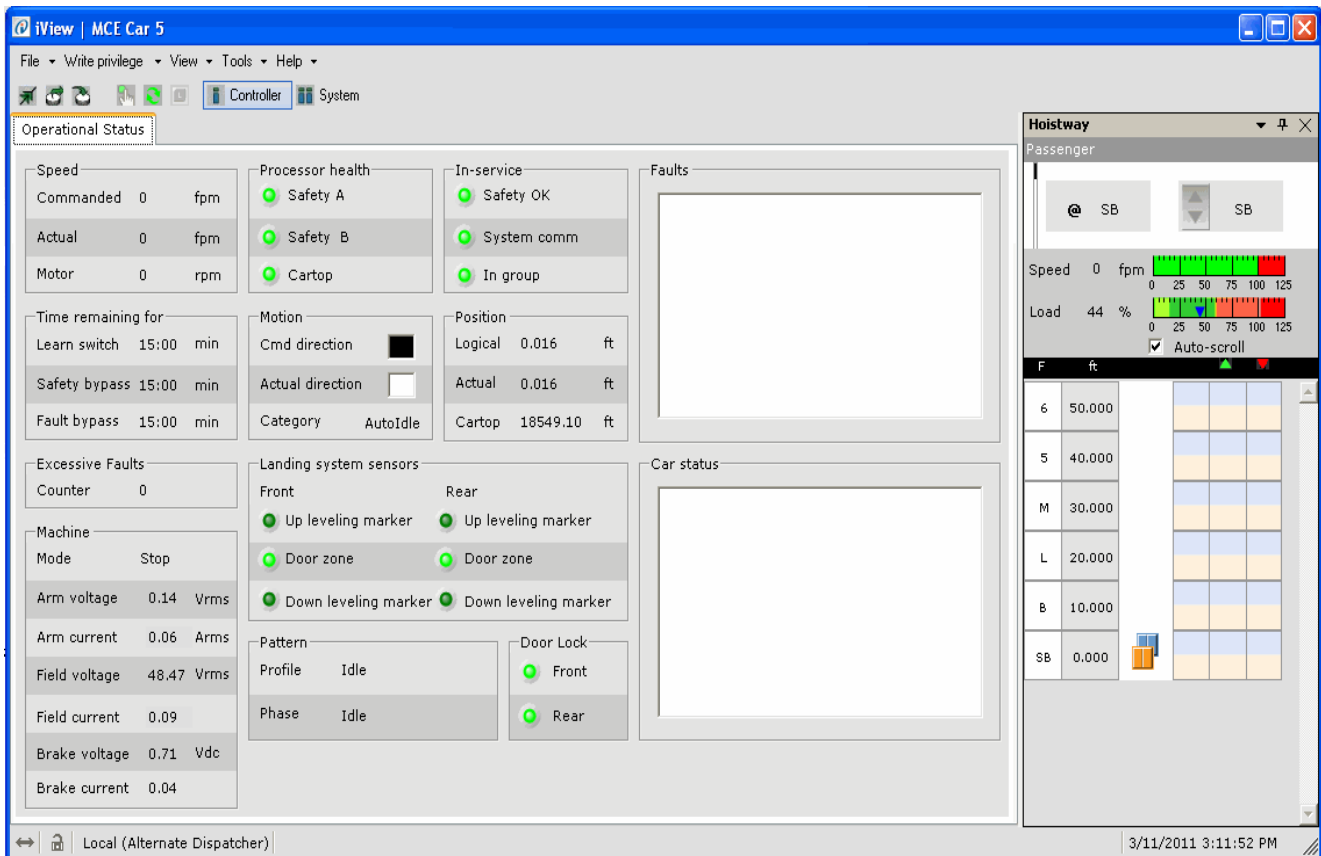
3. To connect to a controller, double click the desired connection or select the connection and click Open.



4. If there is a problem making the connection, you can “ping” the address using the iView PC (see “[Pinging](#)” on page 5-11).

5. When iView is communicating with a controller, this symbol  is displayed in the bottom left corner of the iView screen.
6. When iView is not communicating with a controller, this  symbol is displayed in the bottom left corner of the iView screen.
7. When the connection is established, the Operational Status tab and Hoistway window are displayed.

8



Using iView

LAN Connections

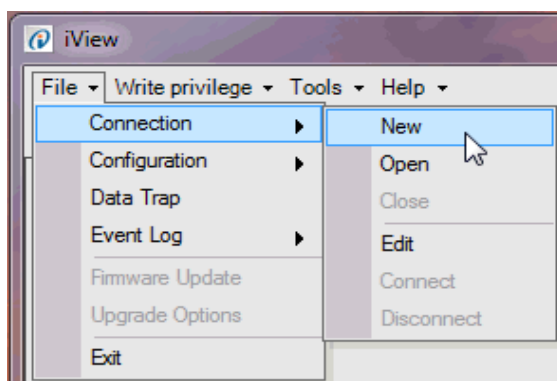
In most installations, there will be at least one iView PC continuously connected to the Local Area Network on which the iBox controllers reside. LAN TCP/IP addresses and associated settings for any hubs, routers, or other equipment involved are resolved when network equipment is installed. In these instances, the iView PC is already connected through the network to the controllers.

Creating a New LAN Connection

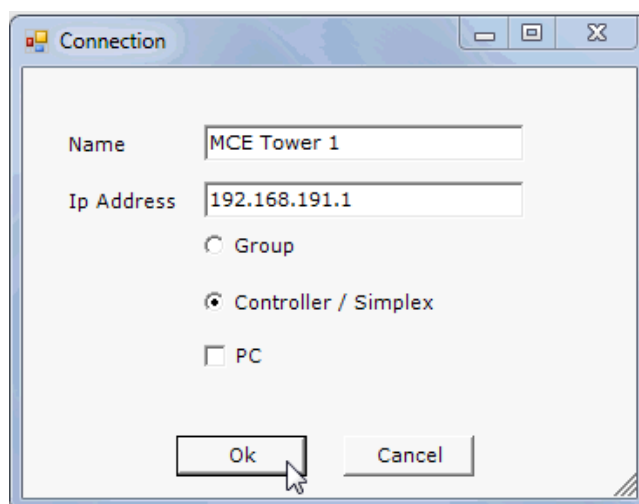
A controller connection must be created before it appears in the iView Connections folder. This is typically completed at the factory, before the system is shipped (if your PC was purchased through MCE). Creating a new LAN connection is similar to creating a new Direct connection.

To create a LAN connection:

1. Double-click on the iView icon on your computer screen to launch iView.
2. Click *File* on the menu bar.
3. Select *Connection* and click *New* to open the Connection dialog.

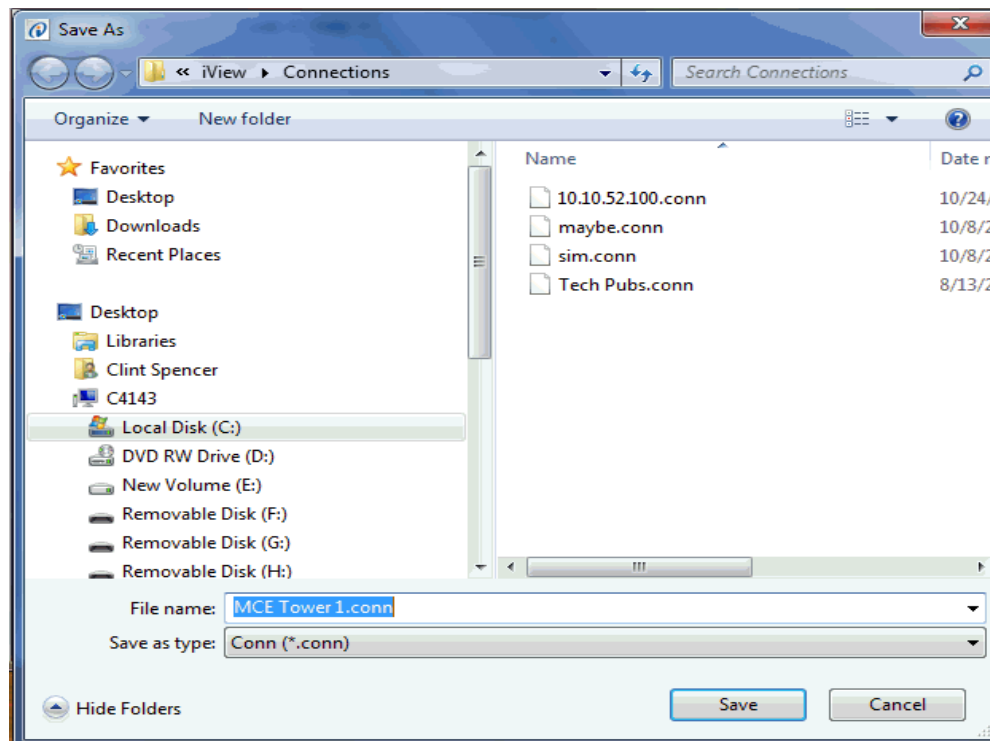


4. Type in a name for the connection.
5. Enter the Ip Address, the controllers #1 (LAN) Ethernet port address. The site network administrator should have this information for you. [Please refer to “System, LAN, & 3=PC TCP/IP Addresses” on page 8-5](#) for the factory default settings.
6. Select *Controller/Simplex*.
7. Click *OK*. The Save As dialog opens.



8. Enter a *File name* for this connection in the Save As dialog (the Connection automatically suggested).
9. The suggested (default) location for connections is the *Connections* folder (My Documents > Motion Control Engineering > iView > Connections). You may choose another location using standard windows methods. You may also create sub-folders inside the iController Connections folder in which groups of connections can be stored.
10. Click *Save* to save the connection.

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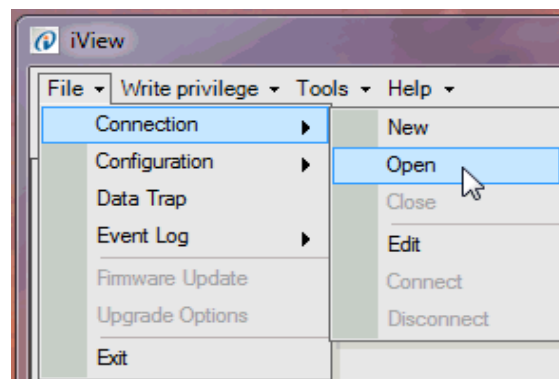


Using iView

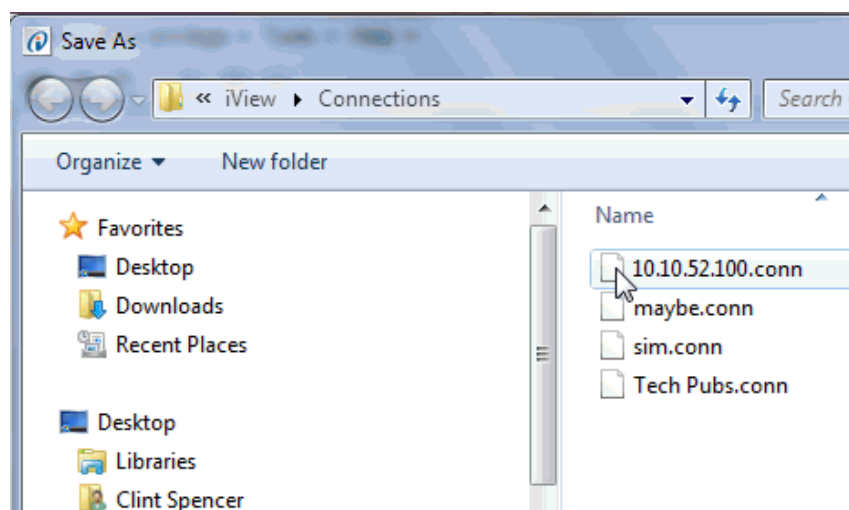
Connecting to the iBox

Once the connection is created and saved, you are ready to connect.

1. Click the *Open Connection* button 
2. or click *File* on the menu bar, select *Connection* and click *Open*. The Open dialog appears.



3. To connect to a controller, double click the desired connection. The connection will take a moment or two to establish, then a main screen will appear.



4. If there is a problem making the connection, you can “ping” the address using the iView PC (see “[Pinging](#)” on page 5-11).

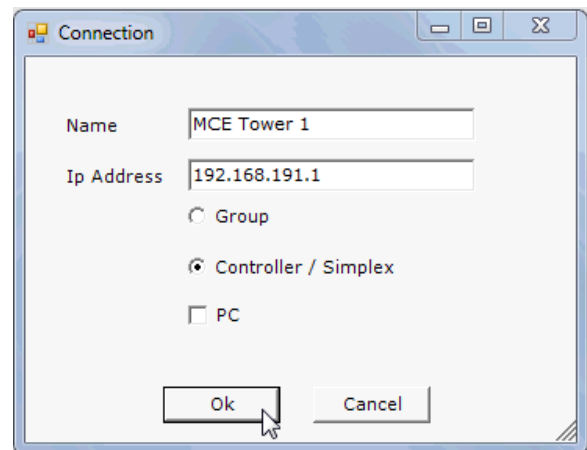
Note

The default location for connection (.conn) files is the *Connections* folder (My Documents > Motion Control Engineering > iView > Connections). The default location for configuration (.cfg) files is the *Configuration* folder (My Documents > Motion Control Engineering > iView > Configuration). If you want to work online, connected to a controller, select *Connection > Open* from the File menu. Connection (.conn) files will be displayed in the Open dialog. If you want to work in an offline configuration file, select *Configuration File > Edit* from the File menu. Configuration (.cfg) files will be displayed in the Open Configuration File dialog. Refer to the [Working Online](#) and [Working Offline](#) topics later in this section for more information.

Editing an Existing LAN Connection

You can edit existing LAN connections:

1. Click Edit on the File > Connection menu.
2. The Open dialog is displayed. Double click the connection you wish to edit. The connection dialog is displayed. Click in any field and correct the information you wish to edit.
3. Click **OK**.

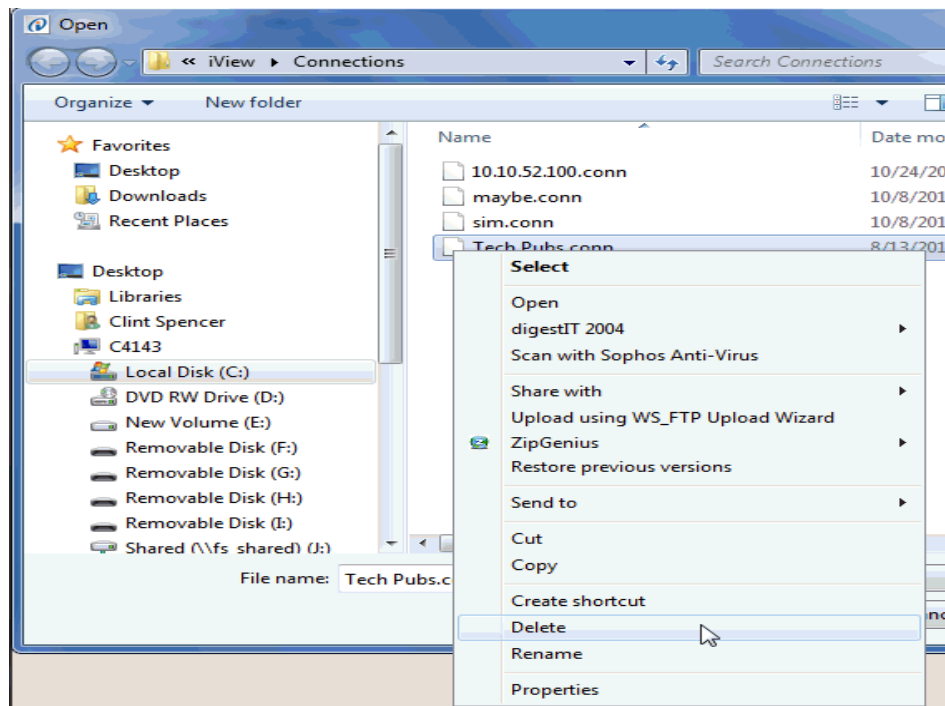


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Deleting an Existing LAN Connection

You can delete an existing connection from the iControl Connections folder:

1. Select Edit on the File > Connection menu.
2. The Open dialog is displayed. Right-click on the connection you wish to delete.
3. Select *Delete* from the popup menu.



4. A warning dialog will appear. Click **Yes** to delete the connection or **No** to cancel without deleting.

Using iView

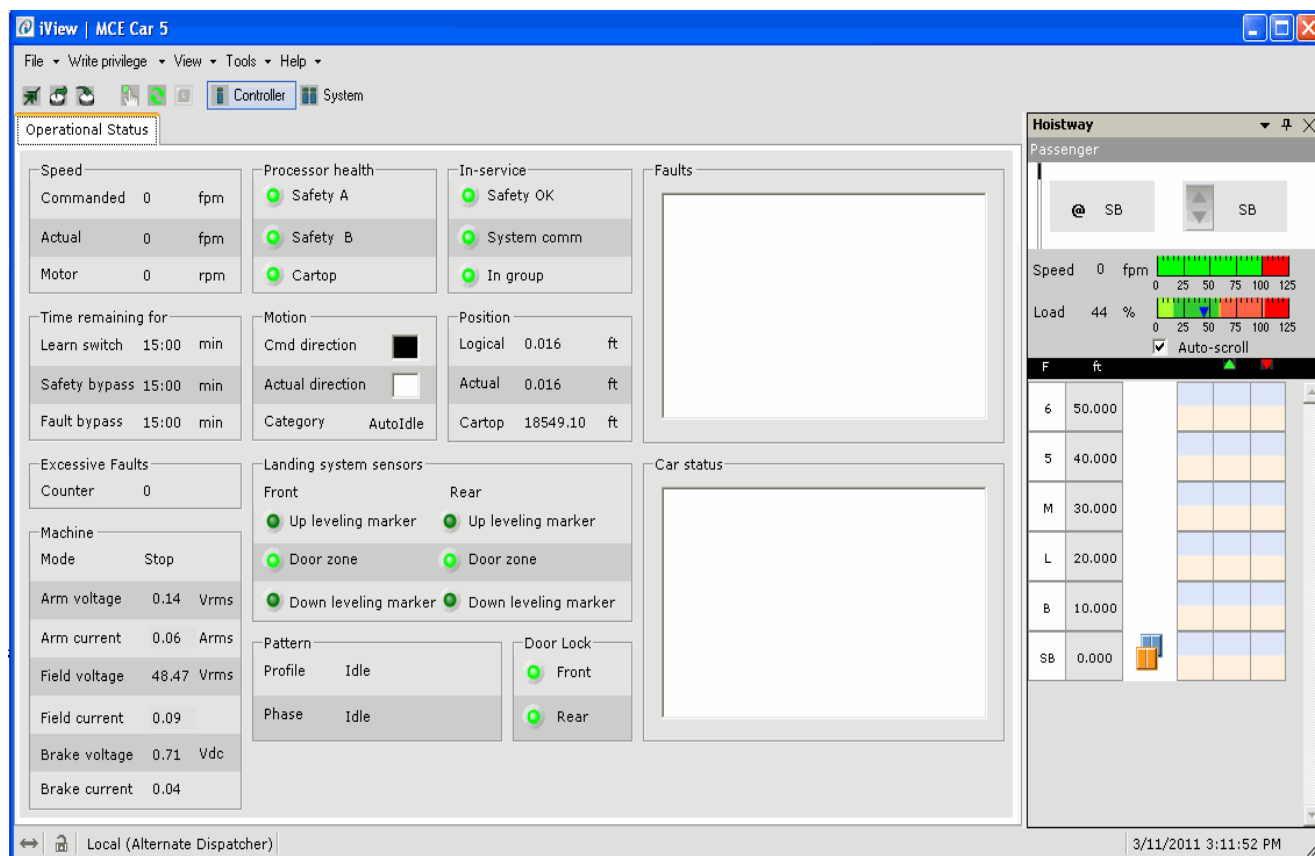
Working Online

Working Online means that you are connected to an iController and are viewing or adjusting its parameters. To work online, select Open from File > Connection menu and double click the desired connection in the Open dialog.

When the connection is established, the Operational Status tab and Hoistway window are displayed with the Controller's *connection name* on the top left side of the title bar.

When iView is communicating with a controller, this symbol  is displayed in the bottom left corner of the iView screen.

When iView is not communicating with a controller, this symbol  is displayed in the bottom left corner of the iView screen.

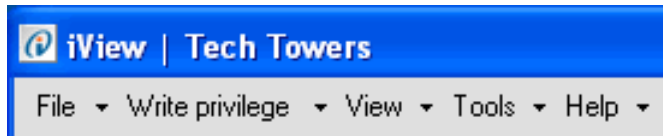


When working online, you may:

- View and adjust any configurable settings.
- [Send adjusted settings to the controller.](#)
- [Save parameters to a Configuration file.](#)
- [Get parameters from a Configuration file and send them to the controller.](#)
- [Access Online Help](#)

iView Menu Bar

Table 8.2 lists the description and location where the menu bar options are explained.



8

Table 8.2 iView Menu Bar Options

Menu	Option	Description
File	Connection	Create a new direct connection (page 8-7) or LAN connection (page 8-12). Open, close, edit or delete an existing connection (page 8-14).
	Configuration	Save default parameters (page 8-20) or current parameters (page 8-21) to a configurations file. Load parameters from a configuration file (page 8-22).
	Data Trap	View a previously saved data trap.
	Event Log	View the controller's event log.
	Firmware Update	Update the controller's firmware files (page 8-42).
	Upgrade Options	Allow an old version of iView to connect and make upgrade (page 8-44).
	Exit	Close the iView application.
Write Privilege	Acquire	Send adjustments to the controller (page 8-17).
	Relinquish	Relinquish write privilege.
View	Configuration	Please refer to "Controller - View Menu" on page 8-26.
	Diagnostics	Please refer to "Controller - View Menu" on page 8-26.
	Setup	Please refer to "Controller - View Menu" on page 8-26.
	Hoistway	Please refer to "Controller - View Menu" on page 8-26.
	Safety Tests	Please refer to "Controller - View Menu" on page 8-26.
	Layouts	Please refer to "Controller - View Menu" on page 8-26.
Tools	FTP File Viewer	Use under direction of MCE Tech Support to copy, save or replace controller firmware files (page 8-45).
	Boot parameter recovery	Use under direction of MCE Tech Support if the controller is unable to boot-up (page 8-50).
	SC-ION Board Configuration	SC-ION Board Inputs and Outputs.
Help	iView Help	View the on-line help for the iView application (page 8-24).
	About iView	iView and controller firmware version numbers.

Using iView

iView Button Bar

Table 9.2 lists the locations where the functions of the buttons are explained.

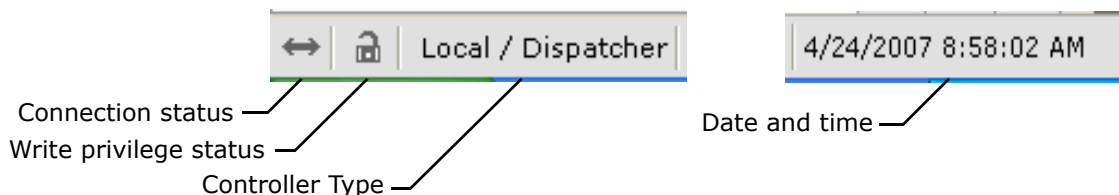


Table 8.3 Buttons and Dialogs

Buttons / Dialogs	Description	See
Open Connection	Displays the Open dialog	page 8-10
Open Configuration File	Displays the Open Configuration File dialog	page 8-22
Save Configuration File	Displays the Save Configuration File dialog	page 8-21
Call Registration	Place car calls and hall calls	
Refresh	Refreshes the parameters being displayed	
Firmware Update	Update the iBox embedded firmware	page 8-42
Save Diagnostic Records	Creates and saves logs	
Controller	Causes the Controller view to be displayed	
System	Causes the System view to be displayed	

iView Status Bar

The status bar at the bottom of the iView screen provides the following information:



Connection Status Connected arrows, shown above, indicate that iView is communicating with the controller. Broken arrows indicate that the connection has been broken.

Write Privilege Status/Time Remaining An unlocked lock, shown above, indicates that this connection does not have write privilege. A locked lock indicates that write privilege has been granted, and the time remaining before time-out is displayed.

Controller Type Indicates the type of controller to which iView is connected. For a description of each type. The controller types include:

- Simplex - a single car that is not part of a group.
- Local - a car that is part of a group.
- Local (Swing) - a local car that can swing away (detach from the group).
- Swing - a local car that is currently detached from the group and is acting like a simplex.
- Local (Alternate Dispatcher) - a local car that can assume dispatching responsibilities.
- Local / Dispatcher - a local car that is also currently the dispatcher. iCue dispatching software is running on the local car's iBox.
- iCentral - a central dispatcher with iCue dispatching software running on a dedicated PC or embedded micro controller.

Viewing and Adjusting Settings

To view and/or adjust settings, you first select the Configuration tab associated with those settings. There are two ways to select Configuration tabs:

1. Click the desired tab on the View > Configuration menu.
2. To display all of the configuration tabs (this takes a few seconds), click View > Layouts > Configuration. You can then click the desired tab (Configuration layout shown with Pattern/Modes tab selected).

8

Timer Tables

Security

IBox Configuration

Floor Heights

User Events

Custom Outputs

Destination Based Dispatching

Operational Status

Pattern

Brake

Car Operation

General

Drive

Load Weigher

I/O Board

Terminal Switches

Common

Modes

Profiles

	Initial jerk	Acceleration	High roll jerk	High speed	Low roll jerk	Deceleration	Flare jerk	Approach deceleration	Approach jerk
Standard	3.000	3.000	3.000	799.998	3.000	3.000	3.000	1.500	3.000
Earthquake	2.000	1.400	2.000	150.000	2.000	1.200	1.400	0.600	1.200
Emergency power	1.600	1.200	1.600	500.000	1.600	1.000	2.000	0.500	1.800
Emergency slowdown	25.000	5.000	20.000	799.998	20.000	5.000	5.000	1.500	3.000
Correction	2.305	1.955	2.305	100.002	2.305	1.898	2.305	0.949	2.305
Inspection	1.027	0.998	1.027	79.998	1.000	0.626	1.027	0.313	1.027
Alternate 1	3.000	2.500	3.000	499.998	3.000	2.000	2.500	1.250	2.500
Alternate 2	2.000	2.000	2.000	349.998	2.000	2.000	2.000	1.000	2.000

☐ Reduced inspection speed

Some tabs have one or more sub-tabs, each supporting a related set of controls or displays. For example, if you want to adjust a timer associated with the brake, click the Brake tab and then click the Timers tab. The Timer settings will appear.

To adjust a particular setting, Pick delay for example, you may either drag the cursor over the existing value and type in a new value or you may use the associated control (up/down arrows) to increase or decrease the setting.

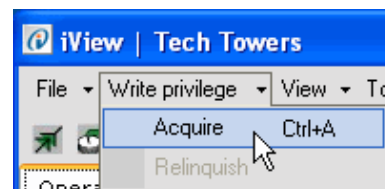
Timer	
Pick delay	0.000 sec
Hold delay	2.000 sec
Weakening delay	0.000 sec
Repick time	0.000 sec
Speed pick delay 1	0.000 sec
Speed pick delay 2	0.000 sec
Contactor drop delay	1.100 sec
Brake drop delay	0.000 sec
Voltage decay time	0.000 sec
Relevel drop delay	0.000 sec

Using iView

Sending Adjustments to the Controller

After making adjustments you will want to send the new parameter values to the controller. To send the new values:

1. Select *Acquire* from the ¹Write Privilege menu.
2. Press the “Yes” softkey on the iBox to grant the privilege request.
3. Then click *Send* to send changes to the controller. (The Send button becomes active when parameter changes have been made.)

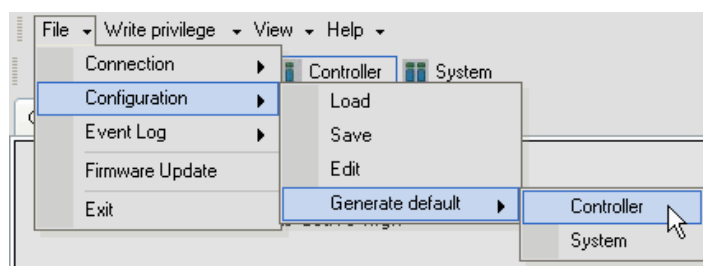


Saving Default Parameters to a Configuration File

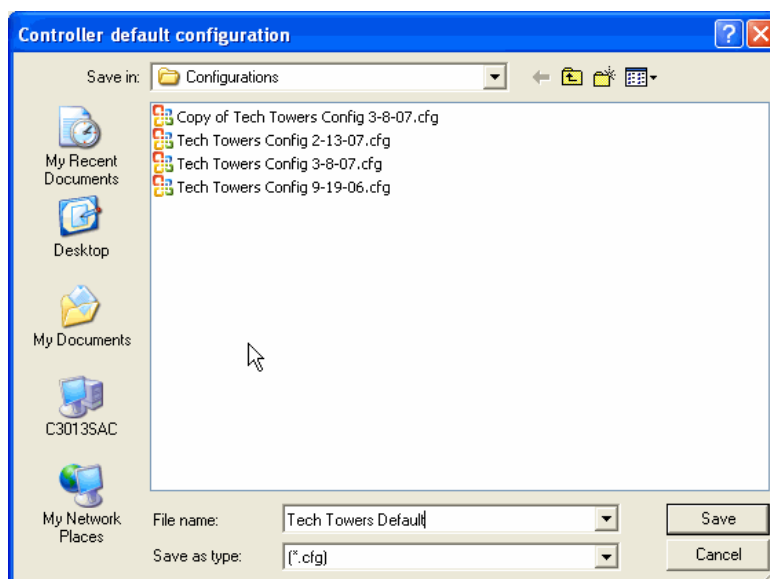
The Controller and/or System default parameter settings can be saved to a configuration (.cfg) file. The default parameter values can then be loaded onto the controller should you determine that you want to start making adjustments beginning with the default values.

To Save the Default Parameters:

1. Select *Controller* or *System* from the *File > Configuration > Generate default* menu. The Controller or System default configuration dialog appears.



2. In the *Controller or System default configuration* dialog, enter the desired file name.
3. The default folder suggested is the *Configurations* folder (My Documents > Motion Control Engineering > iView > Configurations). You may change this if you so desire.



4. Click *Save* to save the file.
5. Once you have saved the file, it will appear in the Open Configuration File dialog the next time you

select either Load or Edit from the *File > Configuration* menu. You can load the default parameters onto the controller by selecting *Load* from the *File > Configuration* menu as described on the next page.

1. If iView and iCue are on the same PC in a central dispatcher, write privilege for that PC/Dispatcher is automatic.

Saving Current Parameters to a Configuration File

All of the iView settings associated with a controller can be saved in a configuration (.cfg) file. The .cfg extension identifies a file used to store information in a predetermined, fixed structure (XML).

Using configuration files to store settings on a hard drive, USB Flash Drive or other storage media provides some great capabilities:

- **Working Offline:** Using iView, you can open a file and work with its settings without necessarily having access to the controller itself.
- **File Uploading:** When connected to a controller, you can choose to get some or all of the settings in a configuration file and send them to the controller.
- **Adjuster Portability/Flexibility:** Elevator adjusters can store configuration files associated with all the controllers they service on their laptop PC. They can edit values offline, then coordinate with on site, machine room personnel to connect and upload those changes to the controller through the elevator Local Area Network or, through modems, DSL, T1 or other Internet connections, from virtually anywhere in the world.
- **Archiving controller data for future use.**

You create configuration files by saving controller parameters to a file while you are working online.

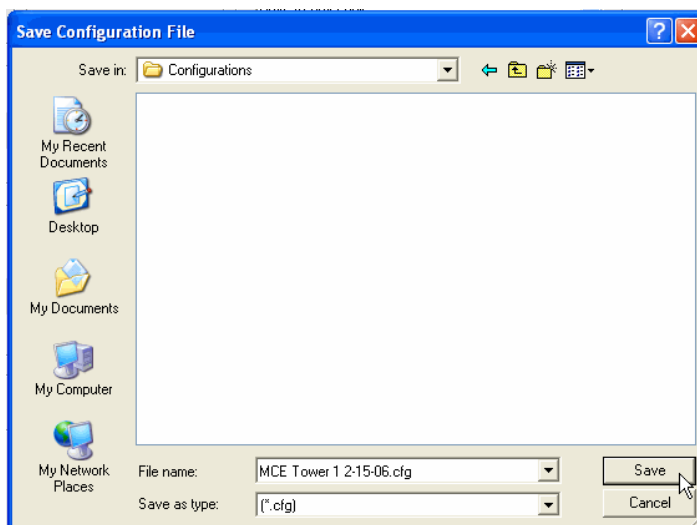
Save to File

While connected to a controller, you can easily save all controller parameters to a configuration (.cfg) file.

1. Click the *Save Configuration File* button 

2. or select *Save* from the *File > Configuration* menu. A typical Windows save dialog appears.

- The default name suggested for the file will be the controller connection name with .cfg appended. **Caution:** If the parameters for this controller have previously been saved using the default name, those previously saved parameters will be overwritten unless you change the file name. You may want to add a number or date to the file name.



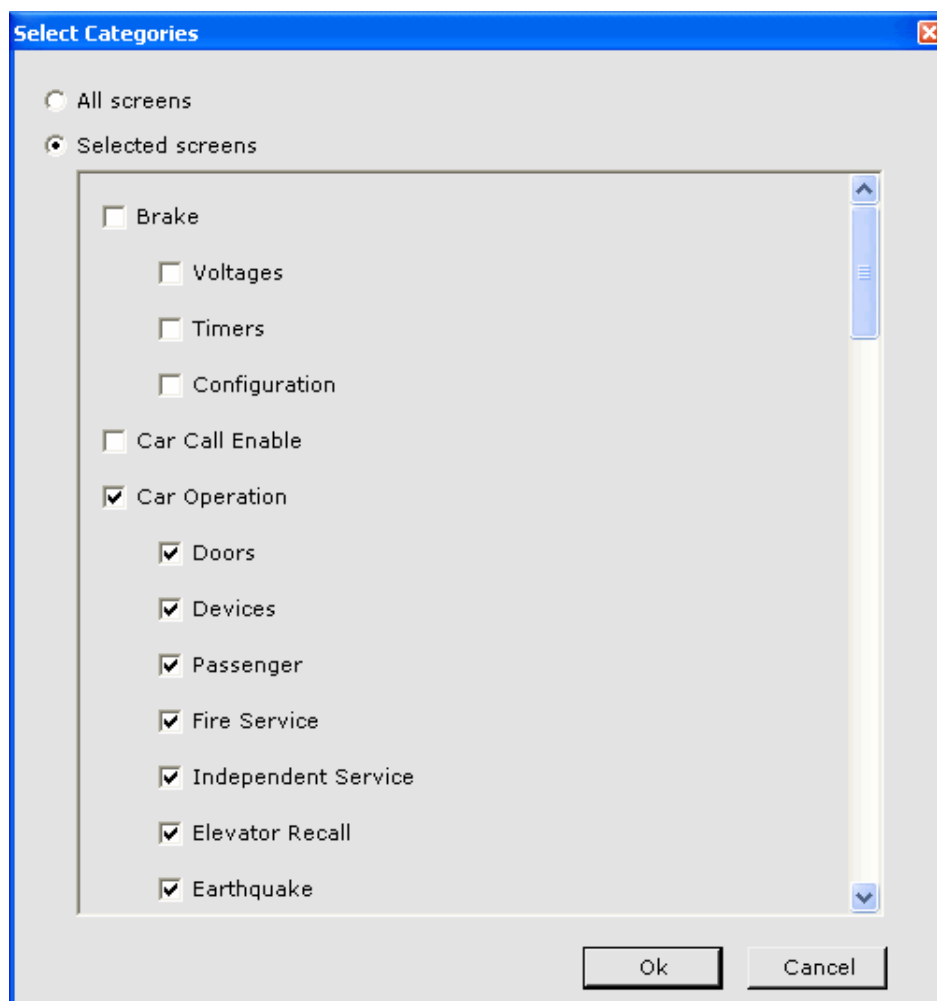
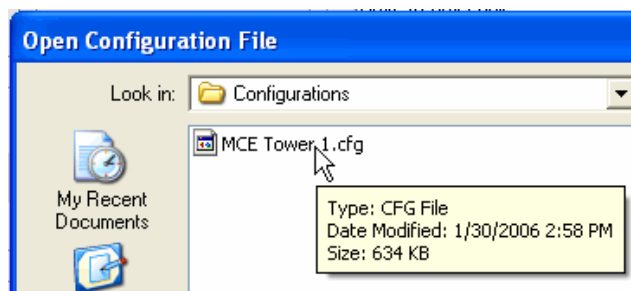
- The default folder suggested in the dialog is the Configurations folder (My Documents > Motion Control Engineering > iView > Configurations).
3. Click *Save* to save the file.
 4. Once you have saved the file, it will appear in the Open Configuration File dialog the next time you select either Load or Edit from the File > Configuration menu.

Using iView

Loading Parameters from a Configuration File

When working online (connected to a controller), you may load (send) selected data from a previously saved configuration (.cfg) file to the controller (after ensuring that it is safe to do so and setting the iBox Controller Stop switch appropriately).

1. Acquire Write Privilege (select Acquire from the Write Privilege menu).
2. Select *Load* from the File > Configuration menu.
3. The Open Configuration File dialog is displayed, allowing you to choose the desired configuration file. Select the file and click **Open** or double click the file.
4. The Select Categories dialog opens allowing you to choose the data to send: **All screens** or data from **Selected screens**.
5. After selecting the desired data, click **OK** to send or **Cancel**. If you selected **All categories** or any **Security** parameters, you must enter the Security Password and click **OK**. The default security password is **manager**.



Working Offline

Working offline means that you are not connected to a controller but are working with a configuration (.cfg) file. You must have previously created the configuration file by saving it while working *on line* with a controller. [Please refer to “Saving Current Parameters to a Configuration File” on page 8-21.](#) To work offline:

1. Launch iView.
2. Select **Edit** from the File > Configuration menu.
3. The Open Configuration File dialog opens. Double-click or select the desired configuration file and click **Open**. The .cfg extension indicates that this is a configuration file used when working off-line.
4. A top level screen resembling the controller screen will appear. The title bar of the screen displays the path and file name. You access the parameter screens and edit parameters just as you do online. However, you cannot send parameters to a controller while offline. [Please refer to “Loading Parameters from a Configuration File” on page 8-22.](#)
5. To save changes, click the Save button .

Note

While working offline you will not be able to view some real-time data screens such as Hoistway and Floor Heights.

To copy a configuration file: You may not want to modify the original configuration file. Instead, you can make a copy of the original and then edit the copy.

1. Click the **Start** button.
2. Click **My Documents**.
3. Double click the **Motion Control Engineering** folder.
4. Double click the **iView** folder.
5. Double click the **Configurations** folder.
6. Select the configuration file and click **Copy this file** in the File and Folder Tasks list.
7. Select a location from the **Copy Items** dialog and click **Copy**.
8. Right click the copied file and select **Rename**.
9. Type the new name and press **Enter**.
10. From the File menu in iView, select **Configuration > Edit**.
11. Select the file from the **Open Configuration File** dialog and click **Open**.
12. Edit and Save the file.

Using iView

Accessing Online Help

iView offers extensive online help. Help is available whether you are working online or offline. On-line help is incorporated into iView to provide information about iControl screens and parameters. You can access iView On-line Help in the following ways:

Context Sensitive Help You can view On-line Help information about any screen or tab by pressing function-key one (F1) while a screen or tab has focus. Do the following:

- Click the title bar of a window, e.g., the Hoistway window, to bring focus to the window. The background color of the window's title bar darkens indicating that the window has focus. Then press the F1 key. iView Help will display the topic that describes the window.
- Click a tab (title). An outline will appear around the tab title indicating that the tab has focus. Then press the F1 key. iView Help will display the topic that describes the tab.

Context Sensitive Event Help The Controller logs status and error information in the Event Log. To view the Event Log, Event Properties and Context Sensitive Event Help:

1. In the Controller view, click View > Diagnostics > Event Log to display the Event Log.
2. Double click an event in the Event Log to display the Event Properties dialog.
3. Click the Help button in the Event Properties dialog to display the Troubleshooting Tips dialog which provides a description of the event, an indication of what action is taken, and troubleshooting tips if appropriate.

Help Viewer iView On-line Help provides three additional ways of locating information. The Contents and Index tabs let you find general information. The Search tab lets you look up specific words or phrases.

To start iView On-line Help:

1. On the iView menu bar, click Help.
2. On the Help menu, click iView Help. The help viewer is displayed. Use the Contents, Index or Search tabs to locate the desired information.

iView On-line Help provides the following kinds of information:

- Using iView Help - A description of the many options, capabilities and ways of using iView On-line Help.
- Using iView - Provides information and instructions on how to use the iView graphical user interface.
- iView Windows and Tabs - Lists all of the iView windows and tabs and provides links to descriptions of the parameters on each tab.
- Message Reference - An alphabetical listing of iControl status and error messages. Each listing includes a description, an indication of what action is taken, and troubleshooting tips.
- Parameter Reference - a tab by tab listing of all of the Controller and System parameters including a description of each parameter.

iView Windows and Tabs

The *View* menu is used to navigate to the various windows and tabs in the Controller view and System view. Many tabs have subordinate tabs that are not shown here, but are documented in the Content Overview tables that follow.

Controller - Configuration Tabs

Controller parameter settings are displayed and may be changed on the Controller - Configuration tabs. The Configuration tabs may be accessed in one of two ways.

1. While in Controller view, select the desired tab from the View > Configuration menu.
2. Display all of the Configuration tabs by selecting *Configuration* from the View > Layouts menu. Then click the desired configuration tab.

Timer Tables	Security	IBox Configuration		Floor Heights	User Events	Custom Outputs	Destination Based Dispatching		
Operational Status		Pattern	Brake	Car Operation	General	Drive	Load Weigher	I/O Board	Terminal Switches

Controller - Diagnostic Tabs

The Controller - Diagnostic tabs contain information about the status and condition of the controller. The Diagnostic tabs can be accessed in one of two ways.

1. Select the desired tab from the View > Diagnostics menu.
2. Display all of the Diagnostic tabs by selecting *Diagnostics* from the View > Layouts menu. Then click the desired diagnostics tab.

Diagnostics						
Car Statistics	Diagnostic Flags	Event Log	Fault Bypass	Terminal Switches Status	Enhanced Diagnostics	Diagnostic Records

Controller - Setup Tabs

The Controller - Setup tabs are used to perform the iControl automatic and semi-automatic setup procedures. The Setup tabs can be accessed by selecting *Setup* from the View menu. Then click the desired calibration tab.

Setup									
Brake	Counterweight	Drive	Feed Forward Gain	Floor Heights	Load Weigher	Motor Field	Safety	Synthetic Speed	Terminal Switches

Additional Windows

Additional windows can be accessed from the View menu. They include:

- Data Trap
- Hoistway
- Outputs
- Safety Tests
- Virtual Oscilloscope

	Data Trap	
☒	Hoistway	Ctrl+H
	Outputs	
	Safety Tests	
	Virtual Oscilloscope	Ctrl+O

Using iView

Specific contents will vary depending on the hardware installed at your site and on the revision level of your iView and iBox software. Always refer first to the online help available within iView. Online help contains the most detailed and current information about your iView software. For detailed parameter or display descriptions, refer to iView on line help.

Table 5.2 lists the items on the *View* menu and tables 5.3 through 5.5 list the tabs found on the Configuration, Diagnostics and Setup menus. Click the “see page” links to jump to that page.

Table 8.4 Controller - View Menu

Window	Content
Configuration	Parameter settings are displayed and may be changed on the Configuration tabs. The tabs include Brake, Car Operation, Drive, General, I/O Board, Load Weigher, Motor Field, Pattern, Safety, Serial I/O Simplex Configuration, Simplex Security, Terminal Switches and Timer Tables.
Diagnostics	The Diagnostic tabs contain information about the status and condition of the controller. The tabs include Diagnostic Outputs, Event Log, Fault Bypass, Operational Status and Terminal Switches Status. Three additional diagnostic screens, Data Trap, Diagnostic Outputs and Virtual Oscilloscope, are displayed each in their own window. This allows them to be used with other windows.
Setup	The Setup tabs are used to perform the automatic and semi-automatic setup procedures. The tabs include Brake, Counterweight, Drive, Feed Forward Gain, Floor Heights, Floor Offsets, Load Weigher, Motor Field, Safety, Synthetic Speed and Terminal Switches.
Hoistway	A graphical representation of the car in the hoistway, including assigned car and hall calls. Shows the current mode of operation, direction preference, speed and actual floor height information.
Safety Tests	Automated control of acceptance test procedures.
Layouts	Pre-programmed screen layouts can be displayed. Custom screen layouts can be created and saved and displayed.

Table 8.5 Controller - Configuration Tabs

Tab	Sub-Tab	Content
Advanced	Custom Outputs	Allows existing inputs, outputs and internal flags to be combined in a logic equation which can then generate a custom output.
	User Events	Configure User Events
Brake	Control	Brake voltage, timer and filter settings.
	Configuration	Brake voltage, Output timer, and Current reference settings for braking progression at 10% increments (brake fine tuning).
Car Operation	Doors	Door motor protection timer settings, safe edge and photo eye bypass selections, plus front and rear door closing delay, etc.
	Devices	Hall and car gong settings, emergency alarm monitoring, serial fixture parameters and discrete PI outputs.
	Passenger	Anti-nuisance, nudging, exercise operation, automatic swing operation, and door operation settings for car in normal passenger service.
	Fire Service	Main and alternate recall, fire code selection, and door functionality for car in fire service operation.
	Independent Service	Door and call functionality for car on Independent service.

Table 8.5 Controller - Configuration Tabs

Tab	Sub-Tab	Content
Car Operation (continued)	Elevator Recall	Recall floor, call disposition, door operation, and override settings for car on recall operation
	Earthquake	Counterweight displacement sensor enable/disable, and earthquake code selection for car on earthquake operation.
	EMS	Emergency Medical Service settings (recall floor, switch, and doors etc.)
	Emergency Power	Includes recall, generator and door settings for car on Emergency Power operation.
	CFSS	Commandeer for Special Services. Parameters determine car behavior when operating in CFSS Recall and In-car modes
	Flood operation	Determines Flood operation floors, substitute Emergency Power and Fire recall floors, and Flood operation bypass settings
	Attendant service	Set front and rear door operation parameters used during Attendant Service operation.
	Auto stop	Parameters determine car behavior during Automatic Stop operation.
	Sabbath operation	Enable/disable, select floors and other parameters that determine car behavior while on Sabbath operation.
	Shuttle Service	Allows a car to provide express service for a subset of the building's floors.
	Heat Detectors	Parameters determine car behavior when heat detectors are activated.
	Jail Operation	Provides special control over elevator use.
	Passenger Distancing	Allows elevator to pass up hall calls when the user-programmed number of car calls is exceeded.
Destination Based Dispatching	General	Enable DBD, set door operation, anti-nuisance and floor settings parameters.
	Fixtures	Car assignment tone, hall fixtures, car fixtures, car ID display and floors with hall fixtures.
Drive	General	Drive type selection, speed reference selection, speed reference configuration, and system drive-related selections for drive.
	Safety	Speed reference and over-current settings.
	Control	Drive gain, current, PID, and error compensation settings.
	Filters	Drive notch and system filter settings.
	Dampening	Drive speed and current control settings.
	Pretorque	Pretorque enable/disable and option settings.
	Calibration	Drive offset settings.
Floor Heights	Configurations	Use to view the learned values for the floor heights.
	Floor Offsets	Use to view the learned values of the floor offsets.
General	General	Job information, car label, ID, simplex car and backup dispatcher options.
	Floors Data	Front and rear opening settings for all floors.
	Car Call Eligibility	Car Call eligibility settings for all floors. Default eligibility configurations to be used during special modes of operation, e.g. Independent service.
I/O Board	Configuration	Graphical display and organization of controller and cartop I/O boards including specific input and output assignment on connectors.
	Configurable outputs	Determines during which modes of operation the Door Enable Output, Automatic Closing Output and/or Hall Door Button Output are disabled.
iBox Configuration		IP information for iControl.
Load Weigher		Load Weigher configuration and threshold settings.

Using iView

Table 8.5 Controller - Configuration Tabs

Tab	Sub-Tab	Content
Pattern	Common	Display and edit parameters common to all pattern profiles. Position encoder resolution, leveling and releveled speeds, pattern scaling, dead zone distance, door pre-opening distance, and position synchronization by floor or terminal switches.
	Modes	Parameter settings for Standard, Earthquake, Emergency power, Emergency slowdown, Correction, Inspection, and Alternate 1-2 profiles.
Security		Configure car call inputs active and car call security enables
Terminal Switches		Position margin settings for up and down normal terminal and emergency terminal switches, and Overspeed 1 margin setting.
Timer Tables		Programming of timed operations (Sabbath, Swing and Auto stop operation).

Table 8.6 Controller - Diagnostics Tabs

Tab	Sub-Tab	Content
Car Statistics		Displays Odometer, Power Cycles, Motion Cycles, Door Cycles, Number of runs and relevs.
Data Trap		Use this tool to record and analyze controller data including input and output states, internal flags and parameter values.
Diagnostic Flags	Car Operation	Displays status of car operation input and output flags, including front and rear doors, e.g. car call above, car call below. Click arrow buttons to display dependent outputs.
	Motion	Displays the status of Passenger (automatic) and Inspection mode motion related inputs and outputs, e.g. Ready, Synchronization and Qualifier status.
	Drive	Displays the status of Drive related inputs and outputs, e.g. Up direction request, Pattern enable, and Motor run mode.
	Safety	Displays the status of Safety related inputs and outputs, e.g. Car top exit open, Governor open, and Safety (Car) open.
Diagnostic Outputs		Selection and display of up to sixteen system outputs for monitoring or diagnosis. Hundreds of outputs are available.
Diagnostic Records		Create a diagnostic record to be sent back to MCE or to view the internal debug log.
Enhanced Diagnostics		Selection and display of diagnostic messages used by MCE technical support.
Event Log		Display of recorded controller events.
Fault Bypass		Enable/disable selected system faults to facilitate adjustment and testing. Display of faults currently bypassed.
Terminal Switches Status		Displays the learned terminal switch speeds and positions, overspeed and position fault thresholds and last pass positions and speeds.
Virtual Oscilloscope		An on-board oscilloscope with software selection of test point signals to be monitored and customizable display.
Call Generator		Use this dialog to generate a new call list (script) or execute an existing script.

Table 8.7 Controller - Setup Tabs

Tab	Content
Brake	Calibrate the brake voltage settings (see page 2-38).
Counterweight	Learn the position where counterweight is adjacent to the car (see page 3-11).
Drive	Learn the values for the Drive Offsets (see page 2-25).
Feed Forward Gain	Determine a starting value for the Error Compensation parameter on the Configuration > Drive > Control tab. The objective is to determine the minimum value that should be used. The optimum value will be between 100% and 150% of calibrated value (see page 4-15).
Floor Heights	Learn the absolute floor positions (distance to each floor from the lowest landing). Also used to assist in measuring and entering the floor offsets (deviation of floor magnet position from actual floor stopping position) (see page 4-2 , page 4-30).
Load Weigher	Learn the car empty and full load weights (see page 4-41).
Safety	Verify that the configurations of the main and safety processors match. Perform the Inventory learn procedure.
Synthetic Speed	Determine the values for the Voltage safety calibration and Current safety calibration parameters (Calibration > Drive > Safety tab) which, in conjunction with the Following error and Tach failure parameters and Speed feedback, are used to determine when a Tach Failure fault should be generated (see page 4-14).
Terminal Switches	Learn the speeds and positions of the normal and emergency terminal switches (see page 4-12).

Table 8.8 Controller - Miscellaneous Dialogs/Controls

Tab	Content
Call Registration	Allows you to register car and hall calls. This control is accessed by clicking the Call Registration button on the button bar.
Firmware Update	Guides you through the process of updating iControl firmware. This control is accessed by selecting Firmware Update from the File menu (see page 8-25).
Refresh	Updates the information displayed on iView windows and tabs. This control is accessed by clicking the Refresh button on the button bar.

Using iView

Controller - Layouts

With iView, you can move and size tabs to suit the task to be performed. When you find a particular arrangement to be useful, you can save it as a custom layout (View > Layouts > Save as). You can then display that layout at any time by selecting your custom layout from the View > Layouts > Custom menu.

Some useful layouts have been pre-programmed and are supplied with iView. They include:

- **Configuration:** This layout displays all of the configuration tabs for easy selection.

Timer Tables	Security	IBox Configuration		Floor Heights	User Events	Custom Outputs	Destination Based Dispatching	
Operational Status	Pattern	Brake	Car Operation	General	Drive	Load Weigher	I/O Board	Terminal Switches

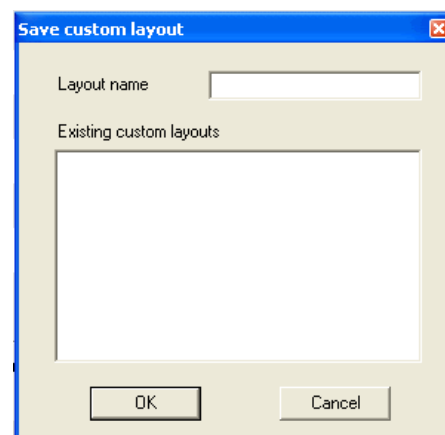
- **Diagnostics:** Displays all of the diagnostic tabs for easy selection.

Diagnostics						
Car Statistics	Diagnostic Flags	Event Log	Fault Bypass	Terminal Switches Status	Enhanced Diagnostics	Diagnostic Records

- **Default:** Displays the default (initial connection) layout.

- **Brake:** Used to perform the brake calibration procedure. Displays the Brake setup and configuration tabs plus the Hoistway pane.
- **Drive:** Used to perform the drive offsets calibration. Displays the Drive setup and configuration tabs plus the Hoistway pane ([see page 2-25](#)).
- **Floor Heights:** Used to perform the hoistway (floor heights) learn operation. Displays the Floor Heights setup and configuration tabs plus the Hoistway pane.
- **Load Weigher:** Used to perform the Load Weigher learn procedure. Displays the Load Weigher setup and configuration tabs plus the Hoistway pane.
- **Terminal Switches:** Used to perform the Terminal learn procedure. Displays the Terminal Switches setup, configuration and diagnostics tabs plus the Hoistway pane.

- **Custom:** Used to select a custom layout to be displayed. This is the listing of custom layouts created using View > Layouts > Save as.
- **Save As:** Used to create and save a custom layout.
 - Enter the name for the custom layout.
 - Click OK.



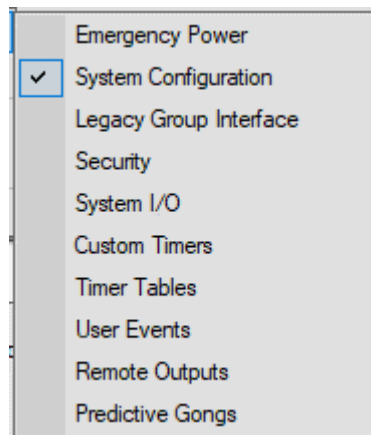
System View Windows and Tabs

Note that, if iView and iCue are on the same PC in a central dispatcher, Write Privilege is granted automatically to iView for that PC/Dispatcher/iCue.

System - Configuration Tabs

System parameter settings are displayed and may be changed on the System - Configuration tabs. The Configuration tabs may be accessed in one of two ways.

1. While in System view, select the desired tab from the View > Configuration menu.



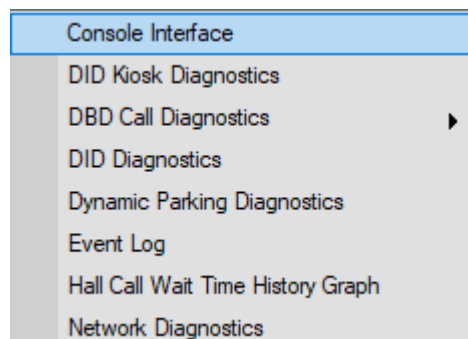
2. Display all of the Configuration tabs by selecting *Configuration* from the View > Layouts menu. Then click the desired configuration tab.



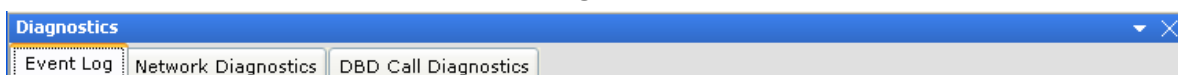
System - Diagnostic Tabs

The System - Diagnostic tabs contain information about the status and condition of the system. The Diagnostic tabs can be accessed in one of two ways.

1. Select the desired tab from the View > Diagnostics menu.



2. Display all of the Diagnostic tabs by selecting *Diagnostics* from the View > Layouts menu. Then click the desired diagnostics tab.



Using iView

Additional Windows

Additional windows can be accessed from the View menu. They include:

- Hoistway
- System Performance
- Layouts

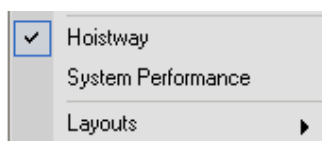


Table 8.9 System - View Menu

Window	Content
Configuration	System parameter settings are displayed and may be changed on the Configuration tabs. The tabs include Emergency Power, System Configuration, Legacy Group Interface, Security, System I/O, Timer Tables, User Inputs and User Outputs.
Diagnostics	The System Diagnostic tabs contain information about the status and condition of the system. The tabs include Event Log.
Hoistway	A graphical representation of the cars in the system hoistways, including assigned car and hall calls. Shows the current mode of operation, direction preference and current floor for each elevator.
System Performance	Graphical representation of system performance statistics.
Layouts	Use to load Configuration, Diagnostic or Custom layouts.

Table 8.10 System - Configuration Tabs

Tab	Sub-Tab	Content
Emergency Power		Use to indicate cars connected to each generator and define how switching to and from emergency power is handled.
System Configuration	Building	Floor definition and labeling. Car definition and labeling.
	CFSS	Definition of Commandeer For Special Services modes 1 and 2.
	Dispatching	Define system dispatching options and manually select dispatching configurations
	Hall Call Eligibility	Define up to eight Hall call eligibility configurations.
	Mode of Operation	Define up to eight dispatching Mode of Operation configurations.
	Parking	Define up to eight Parking configurations
	Parking Eligibility	Define up to eight Parking Eligibility configurations.
	Split Bank	This capability is only available through the Central Dispatcher.
	Management	Controls Remote Monitoring Authorization and Local Dispatcher - Resend system parameters command.
	Destination Based Dispatching	Enable DBD, set general DBD parameters, Destination Input Device parameters, Hallway configuration and special operations configuration parameters.
Legacy Group Interface		Select either Cross-cancellation or Cross-registration.
Security	General	Shows the status of System Security. Use these controls to configure car and hall call restrictions for a simplex or swing car or car assigned to be the backup or local dispatcher for a group.
	Hall Calls	
	Car Calls	

Table 8.10 System - Configuration Tabs

Tab	Sub-Tab	Content
System I/O	System	Configuration of system input/output settings.
	Bus	Serial bus troubleshooting.
Timer Tables		Use to configure timer tables to control system functions, e.g., Hall call eligibility, Parking, Parking eligibility, Mode of operation, Security, and User outputs 1 through 3.
Custom Timers		Define up to 4 input/output pairs so that if the input is activated, the corresponding output will activate after the configured time elapses.
User Events		Define User Events which, when assigned a hardware input, are logged on the System Event Log when activated and deactivated.
Remote Outputs	Configuration	Define and configure up to 32 Remote Outputs which can be wired to any input or other device as needed.
	Trigger	
Predictive Gongs		Parameters determine the behavior of predictive gongs.

Table 8.11 System - Diagnostic Tabs

Tab	Content
Console Interface	
Event Log	Display of recorded system events.
Network Diagnostics	Controller and Remote Client network information.
DID Kiosk Diagnostics	Displays information for each Kiosk
DID Diagnostics	Display information for each DID (Reader ID)
Dynamic Parking Diagnostics	Displays percentages of hall calls from each floor, per elevator bank.
Hall Call Wait Time History Graph	Displays average hall call wait time.
DBD Call Diagnostics	Destination Based Dispatching call diagnostics tool.

Table 8.12 System - Miscellaneous Dialogs/Controls

Tab	Content
Call Registration	Allows you to register car and hall calls. This control is accessed by clicking the Call Registration button on the button bar.
DBD Call Registration	Allows you to register DBD calls. This control is accessed by clicking the DBD Call Registration button on the button bar.
Refresh	Updates the information displayed on iView windows and tabs. This control is accessed by clicking the Refresh button on the button bar.

Using iView

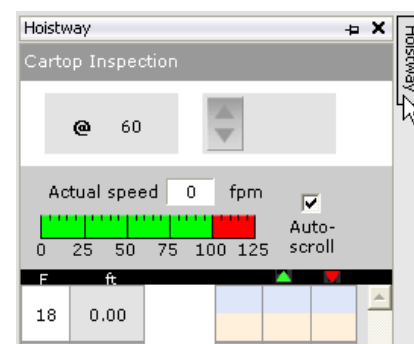
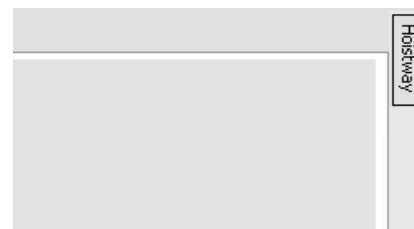
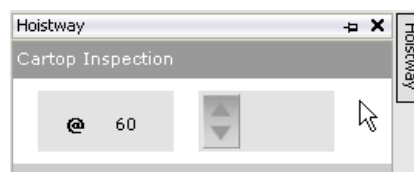
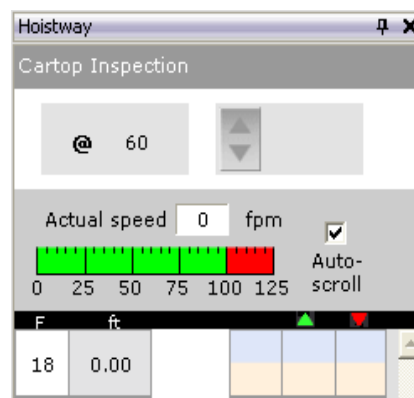
Pinning and Unpinning Windows

iView windows have a little push-pin icon in the upper right corner.

- When the pin is pointing down, the window is “pinned” in its designated position.
- If you click the pin icon, it points to the left and a button labeled Hoistway appears to the right of the window.
- The window remains in view if the window has focus (click the window title bar) or as long as the mouse cursor remains on the window or button.
- But if another window has focus and you move the mouse cursor off the window or button, the window collapses out of view.
- To temporarily bring the window into view again, place the mouse cursor over the button. The window slides into view and will remain in view if you click the window title bar or as long as the cursor remains on the button or window.

To permanently display the window again:

1. Bring the window into view by placing the cursor over the button.
2. Click the pin so that it is pointing down again.

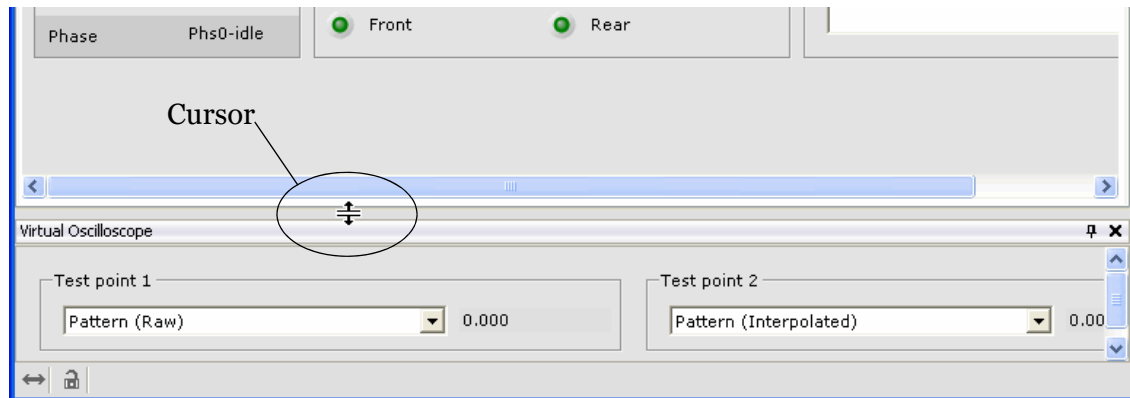


Resizing Windows

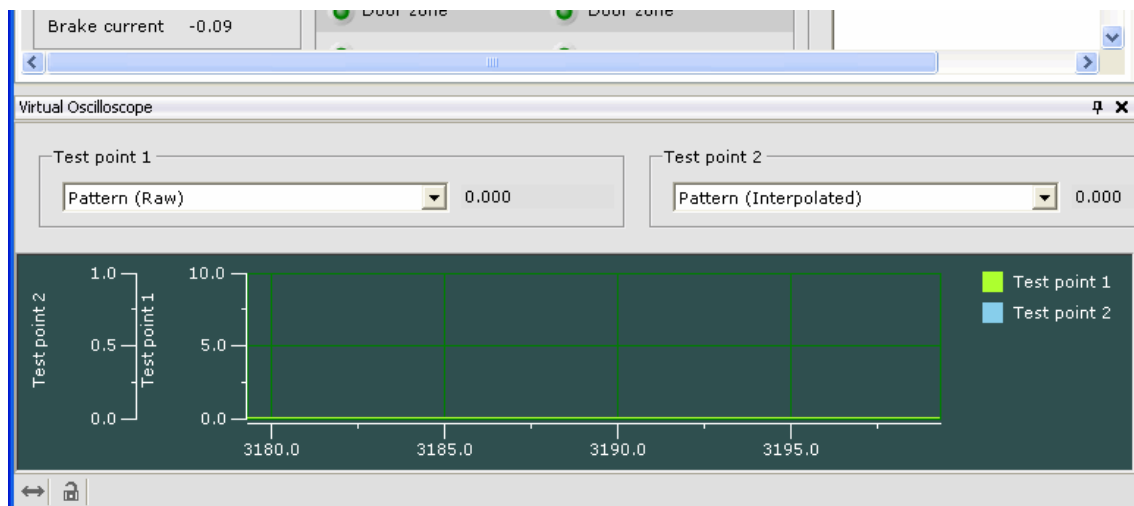
iView windows can be resize so that you see just the data you need to perform a test or task.

To resize a window:

1. Place the mouse cursor in the space between the windows.



2. When the cursor changes to a double line with arrows,  click and drag the window boundary and resize the window.



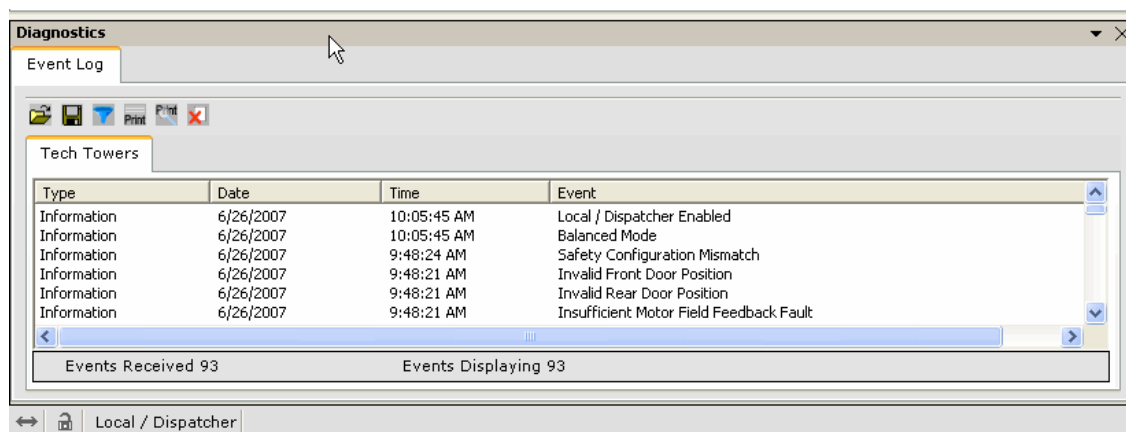
Using iView

Docking and Undocking Windows

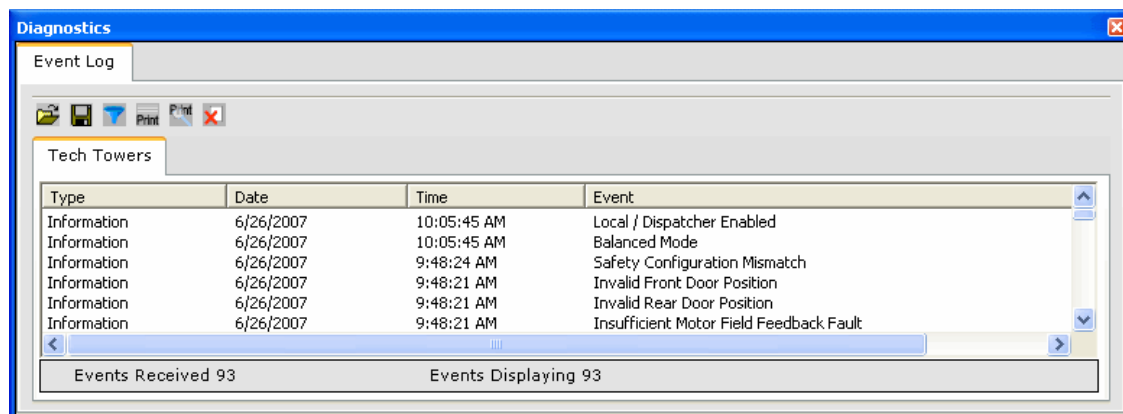
iView windows can be undocked from their assigned position and moved to another position on the screen.

To undock and move a window:

1. Notice that the Diagnostics window is positioned at the bottom of the screen (connection arrows at bottom left corner). Double click the window title bar.



2. The title bar and frame around the Diagnostics window change to a solid blue line indicating that the window is now undocked and can be moved.

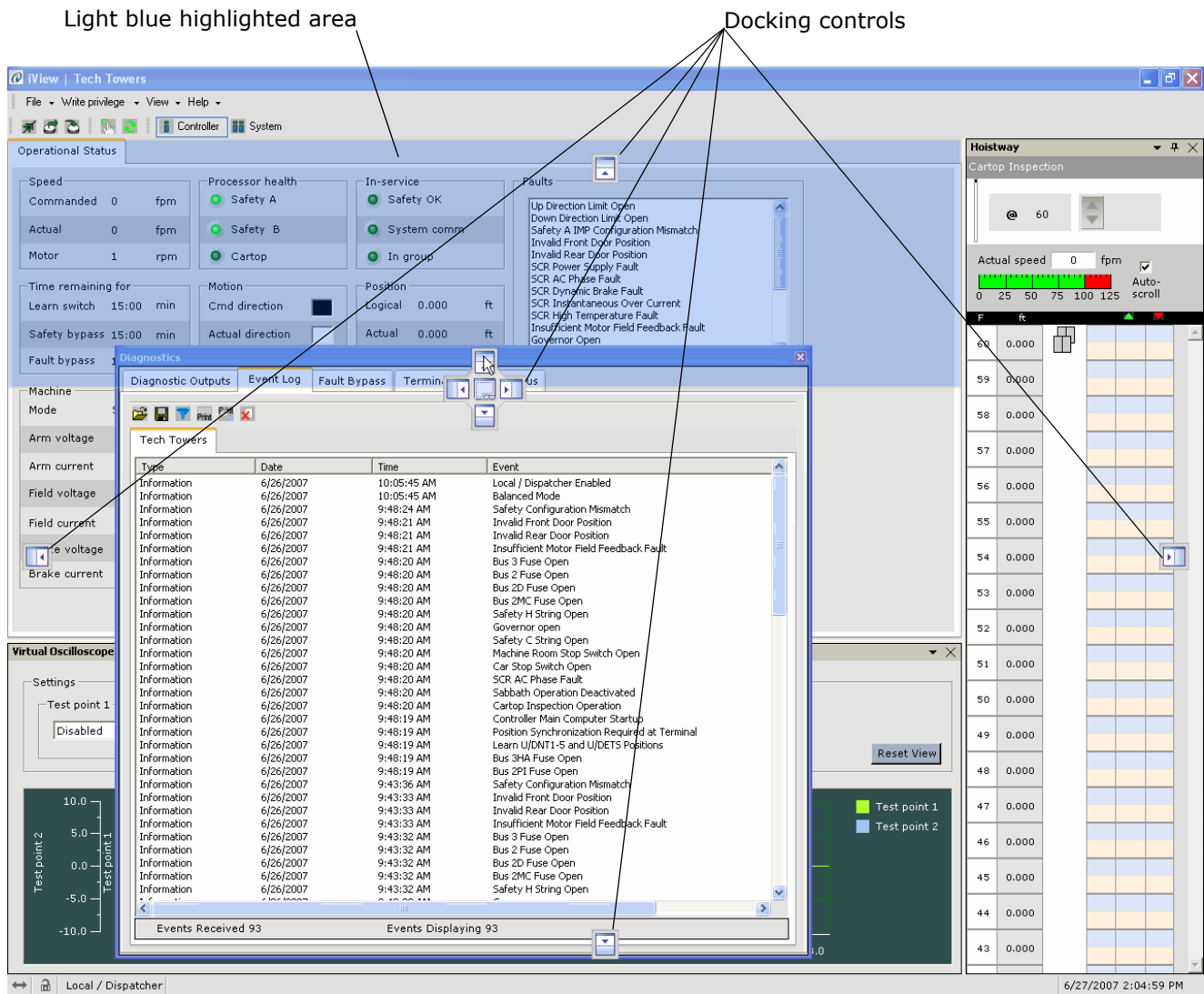


3. Click the title bar and drag (hold down the left mouse button while moving the mouse) the window to a new location.
4. Release the mouse button. The undocked window will appear in the new location, on top of what ever is in that location. You can tell that it is undocked because the solid blue frame remains.
5. You can quickly return the window to its original docked location by double-clicking in the window's title bar.

To dock a window in a new location:

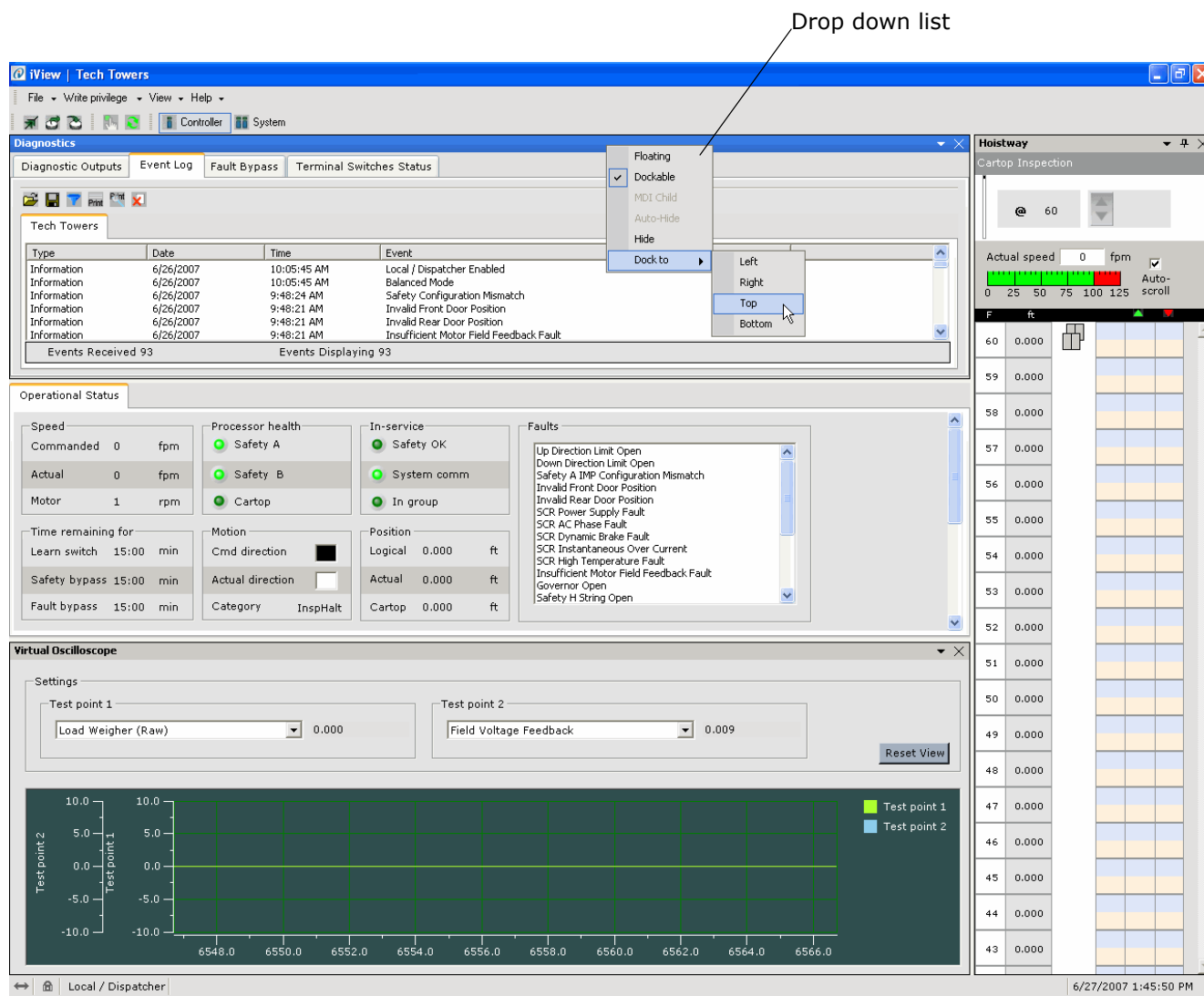
1. Notice that while moving an undocked window, docking controls appear near the center and at the top, bottom and sides of the screen. As you slide the cursor over the controls, a light blue highlight indicates the position to which the window will be moved. Release the mouse button and the window docks in the new location.

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Using iView

- An alternate method of moving a window is to right click the title bar of the window. In the drop down list that appears, select *Dock to* and click the desired location. In the example below, the Diagnostics window has been moved to the top of the screen.



- If you like this arrangement and would like to be able to easily display this arrangement in the future, you can save it as a Custom Layout. Please refer to “Controller - Layouts” on page 8-30.

Printing Screens

1. With the screen displayed, press the Print Screen key to send the entire screen to the clipboard (PC memory).
2. To send only the selected item (window or dialog) to the clipboard, press and hold the Alt key, then press the Print Screen key.

Items sent to the clipboard can be pasted into any of several applications. One that you should definitely have on your PC is Wordpad.

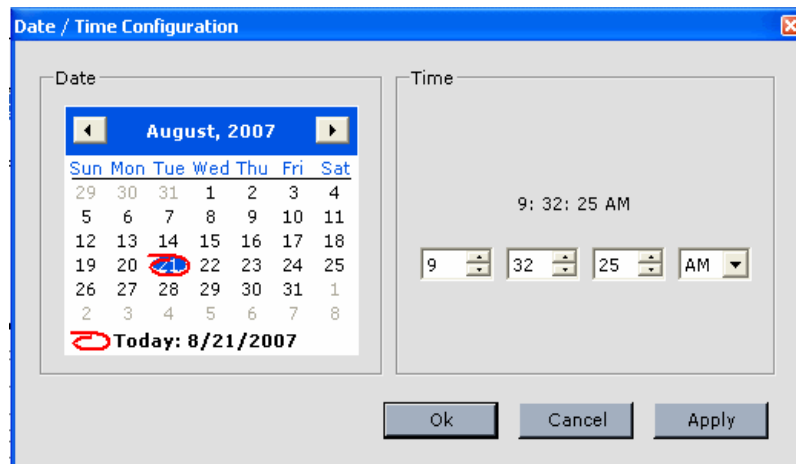
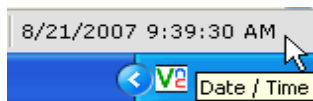
3. Open the Wordpad application (Start > All Programs > Accessories > Wordpad).
4. Select *Paste* from the *Edit* menu or press and hold the Ctrl key while pressing and releasing the “v” key to paste the captured screen into Wordpad.
5. Select *Print* from the *File* menu to print the screen.
6. Save the file if you want to keep a record of the screen on the PC hard drive.

Setting System Date and Time

The iControl system’s time and date can be set using the iView application connected to the Central Dispatcher (iCue PC), Local/Dispatcher or Simplex car controller. The dispatcher’s time and date are transferred to all local cars that are running (communicating) and all other cars as they power up.

To set the time and date:

1. Establish an iView connection to the system dispatcher or simplex car.
2. Double-click the time/date display at the bottom-right of the **status bar** (shown below). The **Date / Time Configuration** dialog will appear:



3. Use the controls to set the date and/or time and click Apply or OK. The date and time will be updated on all controllers communicating with the dispatcher.

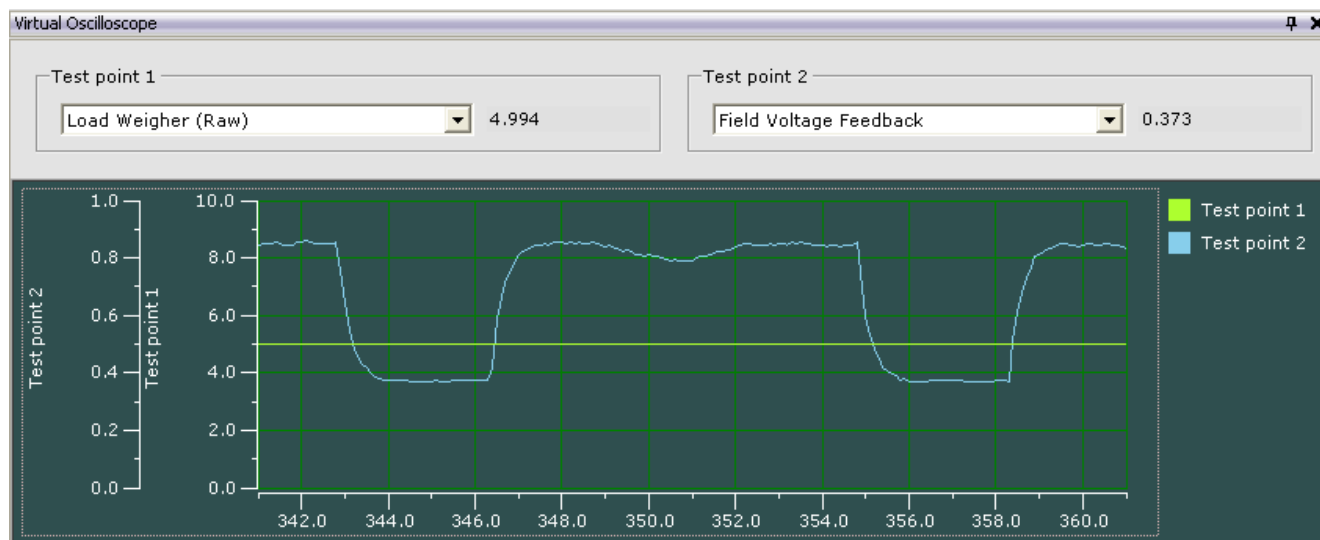
Note

The iView PC’s time, which is displayed at the very bottom-right corner of the screen, is not the same as the iControl system’s date and time. The iControl system’s date and time are displayed on the *iView status bar* and are set using the *Date / Time Configuration* dialog shown above.

Using iView

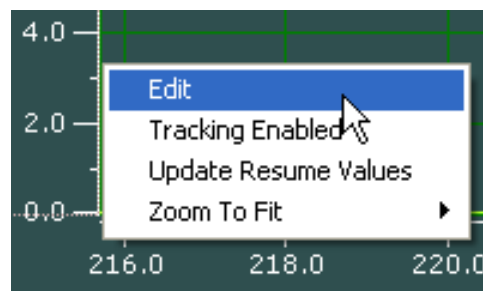
Editing Dynamic Displays

The virtual oscilloscope display is editable. You may easily modify labels, displays, animation, and more to suit your immediate display needs. When a display is closed, then re-opened, it reverts to its default values.

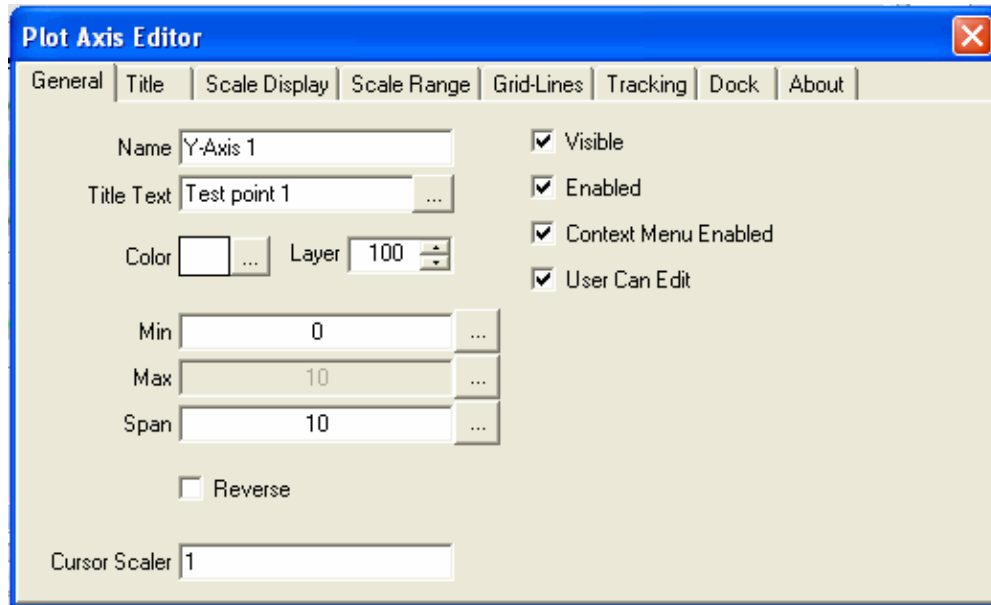


To edit a display:

1. Right-click on the graph or on one of the scales to reveal a popup menu. Select *Edit* from the menu.

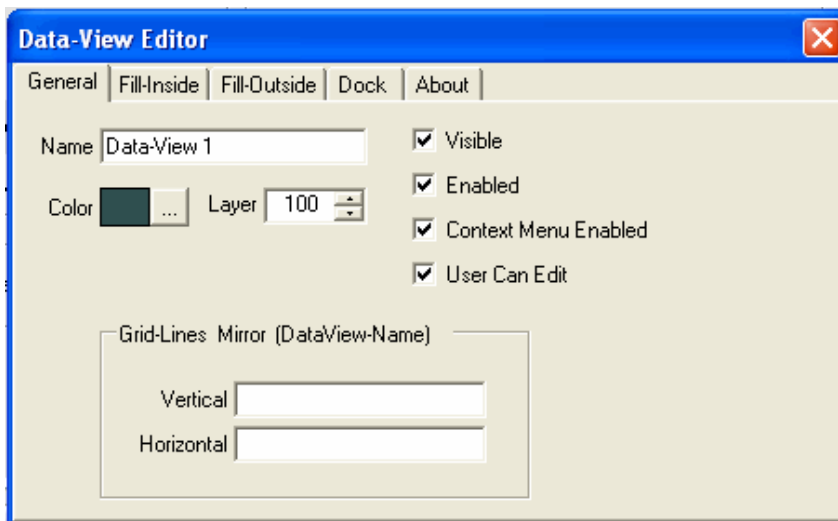


- Experiment with modifying the display to find the combinations that suit the signal types you are currently examining. The Edit menu is extensive:



8

- Several different editors are available depending on where you click in the graphic display.



Updating Controller Firmware

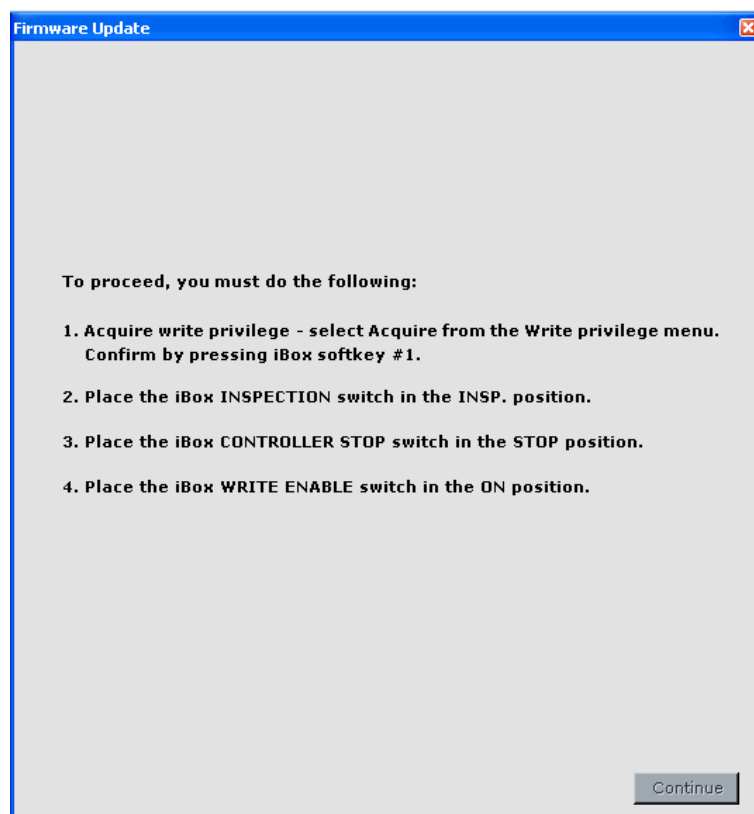
Warning! Do not attempt this procedure without first contacting MCE Technical Support. Failure to do so can result in catastrophic failure of the iBox.

Firmware Update allows you to install updated iControl operating software. It is likely that two firmware program files will be updated. They are:

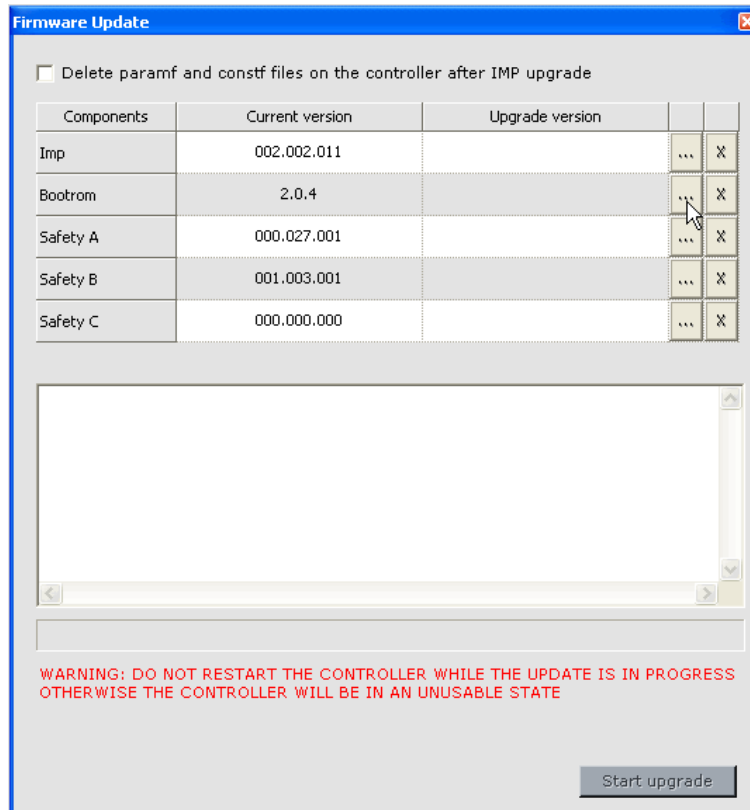
- Bootrom.mce, the iControl boot-up program.
- vxworks.mce, the iControl IMP computer program.

To update iControl firmware:

1. Copy the new Bootrom.mce (Bootrom folder) and vxworks.mce (IMP folder) files to the desktop of the computer being used to perform the firmware update.
2. Use iView to connect to the iBox on which the firmware is being updated.
3. If you want to save the configuration settings for later re-loading, select Save from the File > Configuration menu. In the Save Configuration File dialog, type a name in the File name: box and click Save. [Please refer to “Saving Current Parameters to a Configuration File” on page 8-21.](#)
4. Select Firmware Update from the File menu.
5. Click Yes in the dialog “This action will automatically deactivate all screens. Proceed?”



6. Follow instructions 1 through 4 in the Firmware Update dialog and then click Continue. The Firmware Update dialog will change to:



7. Update the Bootrom first. Double click the (...) in the Bootrom row.
8. Use the Open dialog to navigate to the computer's Desktop and double click the Bootrom.mce file. The bootrom file will load and the version will be indicated in the Upgrade version column.
9. Click Start upgrade. The upgrade progress will be indicated in the text window. When the upgrade is completed you will be instructed to close iView and press the iBox Computer Reset button.

Note

If an FrmFtp Login dialog appears asking for a User and Password, click OK. The user name and password are not used for this operation at this time.

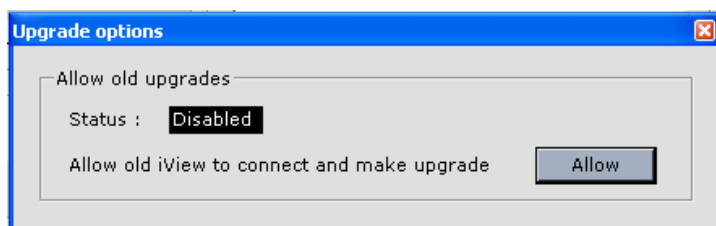
10. Use iView to connect to the iBox when it finishes the re-boot.
11. Repeat steps 4, 5 and 6.
12. Click the check box to "Delete the paramf and constf files on the controller after IMP upgrade"
13. Double click the (...) in the Imp row.

Using iView

14. Use the Open dialog to navigate to the computer's Desktop and double click the vxworks.mce file. The IMP application file will load and the version will be indicated in the Upgrade version column.
15. Click Start upgrade. The upgrade progress will be indicated in the text window. When the upgrade is completed you will be instructed to close iView and press the iBox Computer Reset button.
16. Use iView to connect to the iBox when it finishes the re-boot.
17. Select About iView from the Help menu and verify the version numbers for the IMP Application and IMP Bootrom.
18. If you want to restore the original parameter settings which were saved in step #3, first acquire write privilege and then select Load from the File > Configuration menu. [Please refer to "Loading Parameters from a Configuration File" on page 8-22.](#)
19. Select and Open or double click the desired file from the Open Configuration File dialog.
20. Select All screens or the Selected screens for which you wish to restore the original parameter settings, and click OK.

Upgrade Options

When upgrading firmware from a pre-December 2005 release to a later release, in the event that the Upgrade Wizard fails to properly load the parameters file, iView may not be able to connect to the upgraded controller. The Upgrade Options Dialog (File > Upgrade Options) can be used to enable iView to connect to the controller or iCue and complete the upgrade.

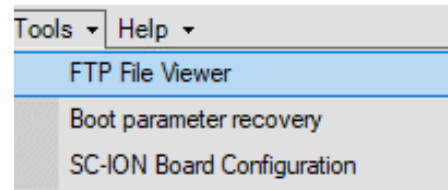


FTP File Viewer

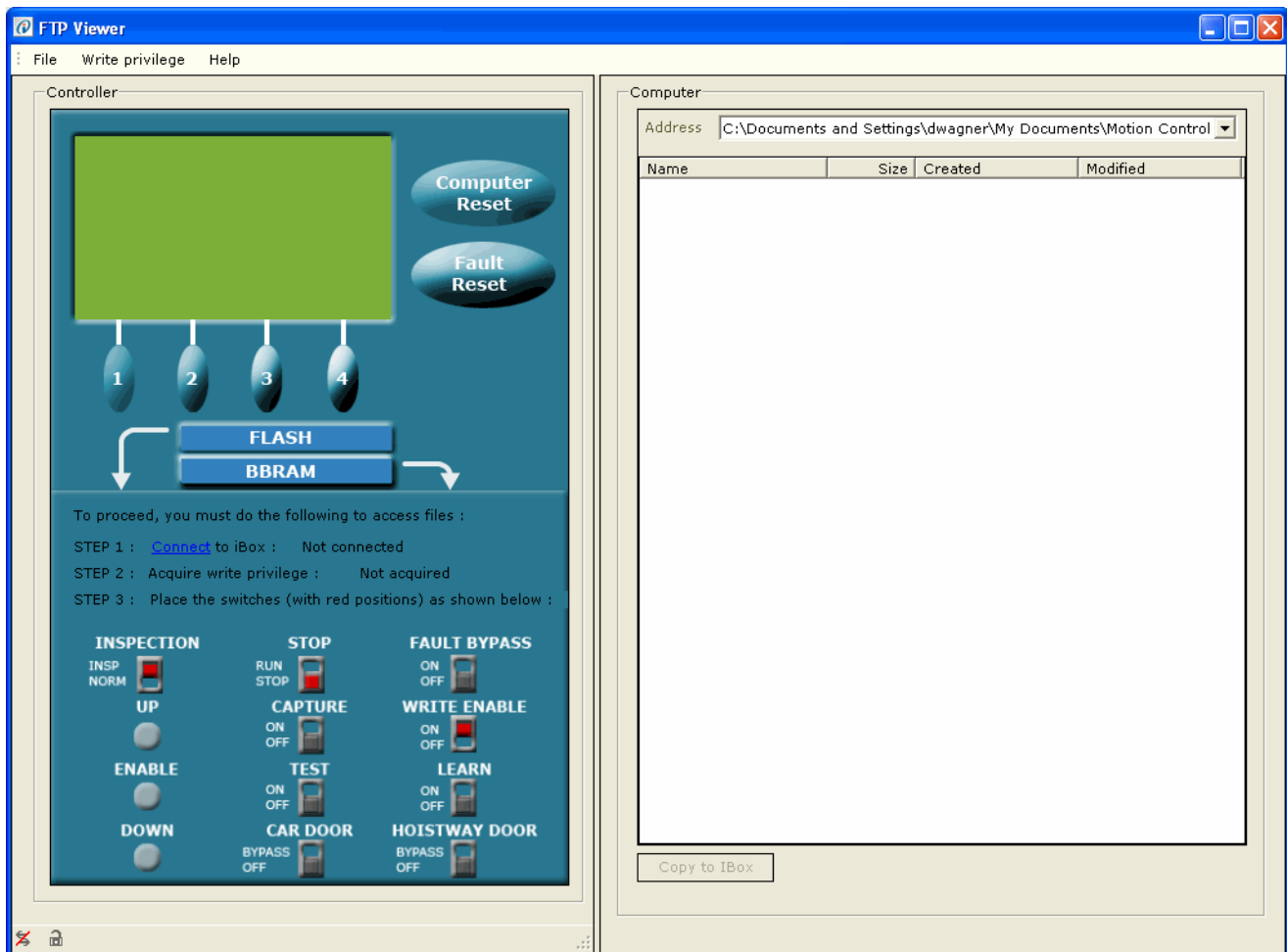
The FTP File Viewer is a very useful troubleshooting tool. It can be used to copy firmware files from an iBox to a PC, delete iBox firmware files or copy firmware files from a PC to an iBox. For example, the Controller's Event Log file could be copied from the iBox to the iView PC and then sent via e-mail to MCE for evaluation. Typically this would be done per instructions from MCE Tech Support.

Using the FTP File Viewer

1. From the iView *Tools* menu, click **FTP File Viewer**.

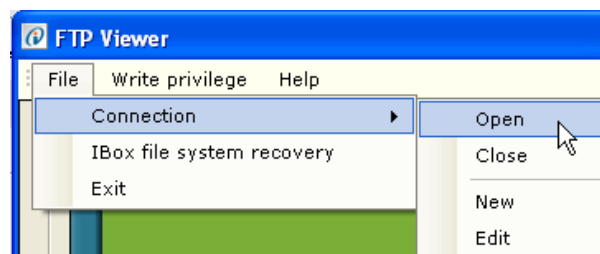


2. The FTP Viewer window opens.



Using iView

3. Connect the FTP File Viewer utility to a controller: **Select Connect** from the *File* menu and **click Open**



4. or **click Connect** next to STEP 1:

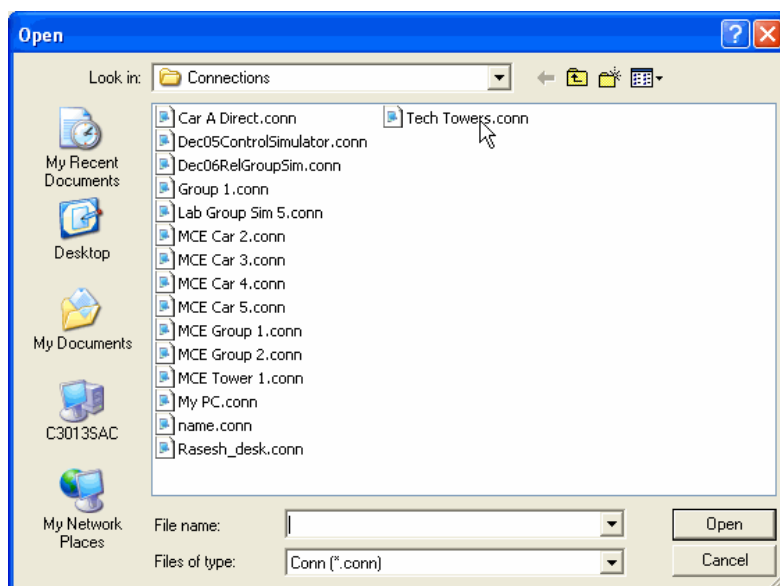
To proceed, you must do the following to access files :

STEP 1 : [Connect](#) to iBox : Not connected

STEP 2 : [Acquire](#) write privilege : Not acquired

STEP 3 : Place the switches (with red positions) as shown below :

5. The Open dialog appears. **Click the desired connection.**



6. Next acquire write privilege. **Click Acquire** next to STEP 2:

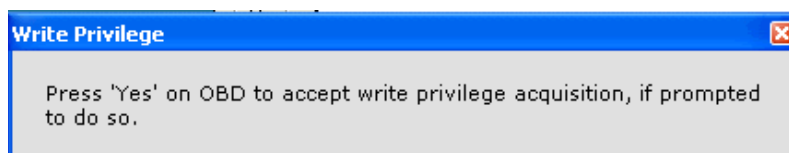
To proceed, you must do the following to access files :

STEP 1 : Connect to iBox : Connected

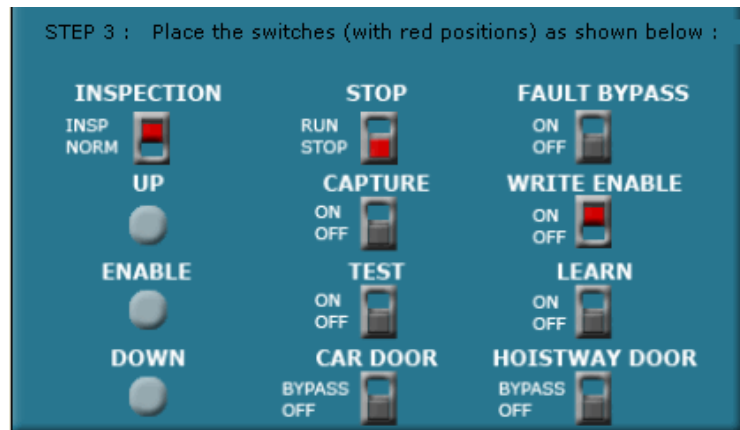
STEP 2 : [Acquire](#) write privilege : Not acquired

STEP 3 : Place the switches (with red positions) as shown below :

7. The Write Privilege dialog appears. **Press Yes (1)** on the iBox Onboard Display

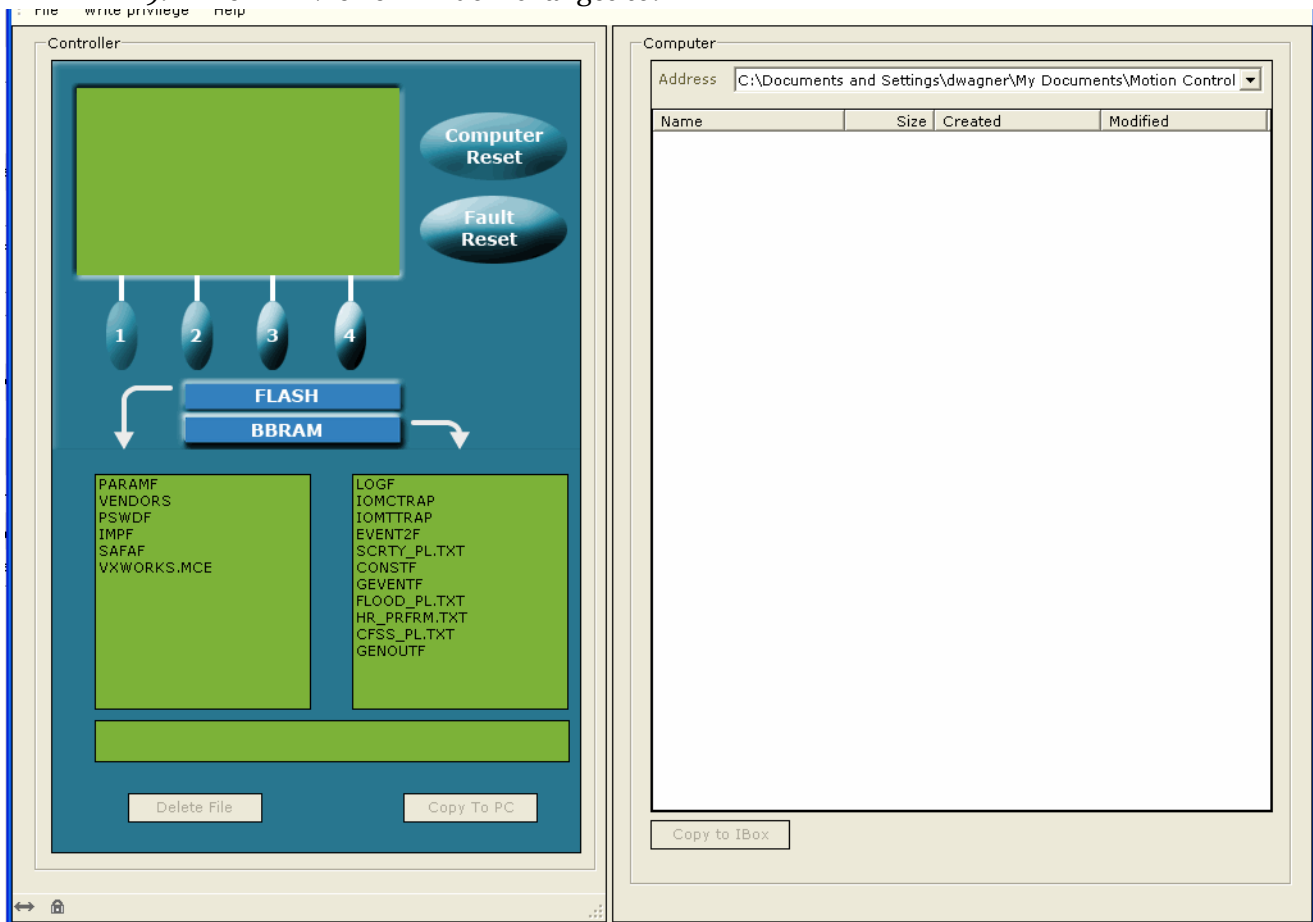


8. Set the iBox **INSPECTION**, **CONTROLLER STOP** and **WRITE ENABLE** switches as shown.



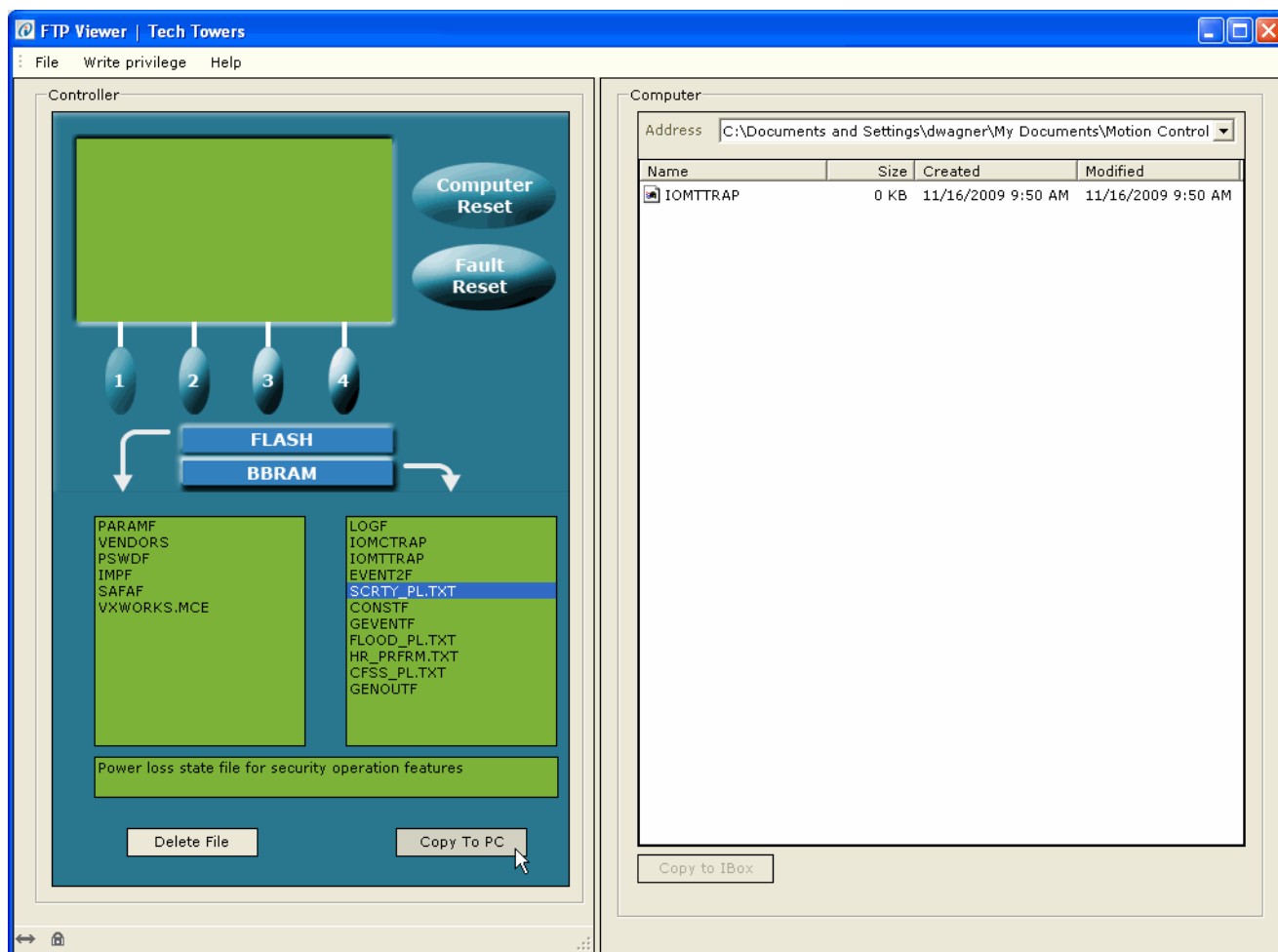
8

9. The FTP Viewer window changes to:



Using iView

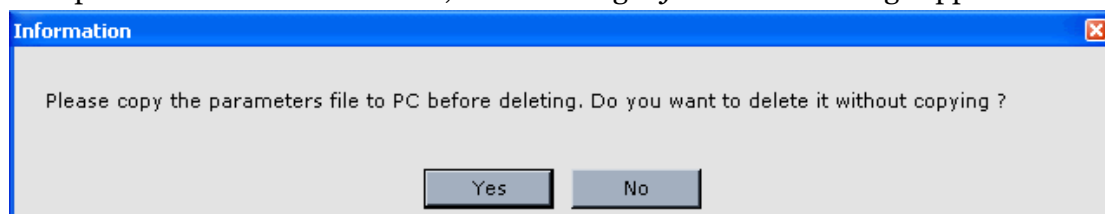
10. To copy a file from an iBox to a PC, select a file in the *Controller* FLASH or BBRAM list and then click **Copy to PC**. The default folder to which the files are copied is Documents and Settings*User's name*\My Documents\Motion Control Engineering\FTP Viewer. Note that a description of the file is shown in the list box below the lists.



11. To delete a file from the *iBox* FLASH or BBRAM lists, select a file and then click **Delete File**.

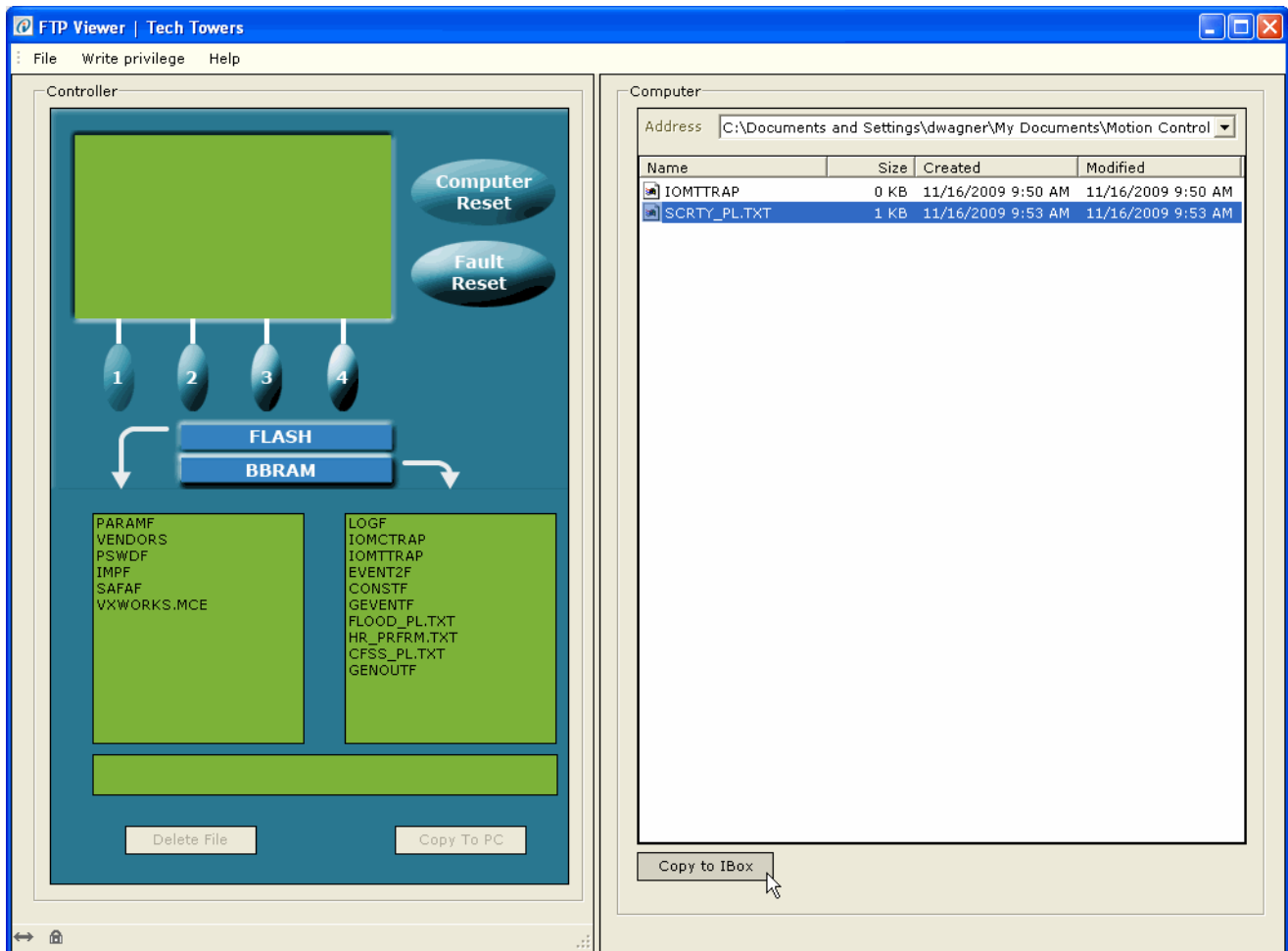
Note

If you attempt to delete the PARAMF file, the following *Information* message appears:



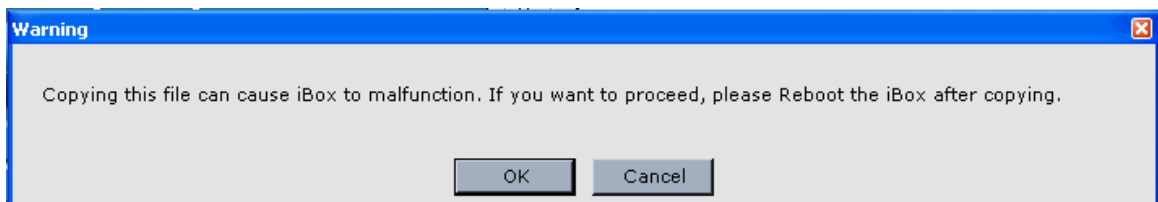
To copy a file from a PC to an iBox, select the file in the *Computer* list box and then click Copy to iBox.

8



Note

If you attempt to copy the VXWORKS file to the iBox, the following *Warning* message appears:

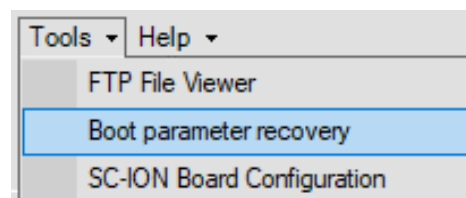


Using iView

Boot parameter recovery

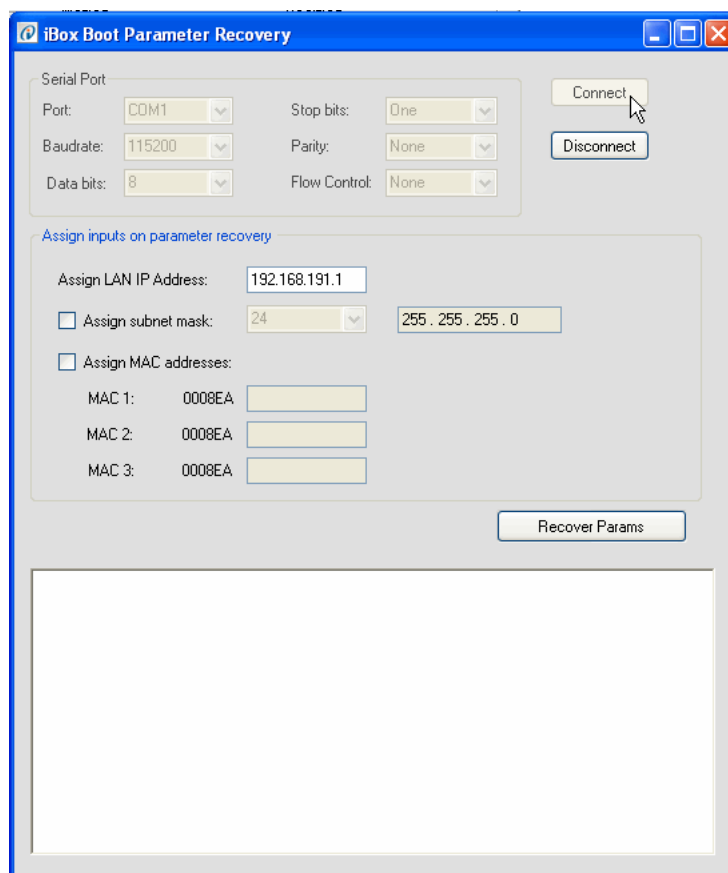
In very rare instances the iBox may refuse to bootup. This utility may be able to allow the iBox to recover from this state. Note: To use this tool, the iBox must have Boot Loader version 4.0 or greater.

1. An RS232 serial cable must be connected between a serial port on the PC and the RS232 PC port on the iBox.
2. Launch the Boot parameter recovery utility by selecting **Boot parameter recovery** from the iView *Tools* menu.
3. The iBox Boot Parameter Recovery dialog opens.
4. Click **Connect**.



Assign inputs on parameter recovery:

5. **Assign LAN IP Address:**
If you wish to assign a new LAN IP address as part of the boot parameter recovery, enter the new LAN IP Address for the iBox.
6. The default subnet mask is shown. If you need to change it, click **Assign subnet mask** and use the drop down list to select.
7. If you wish to assign new MAC addresses, click **Assign MAC addresses** and enter the new addresses
8. Click **Recover Params**.



9. The iBox will automatically reboot, set the boot parameters to their default values, and then reboot again.

Bootrom Recovery via OBD

In rare instances the iBox may refuse to bootup, usually after updating or backdating firmware. This utility on the OBD, may allow the iBox to be recovered. It is available on bootrom version 4.0.2 or greater. These options are meant for expert users or tech support only.

Begin by pressing and holding the ENTER button on the iBox. Momentarily press the COMPUTER RESET button.

Continue holding in the ENTER button until the **Boot Menu** is displayed.

Change IP Address - Use this option to change the IP address of the LAN Network port before bootup (see Default Boot Params). This is helpful if the boot parameters have been corrupted or the IP is not correct and you need to FTP into the iBox.

With the Boot Menu displayed, press soft switch #1: Use the left/right arrow keys to select the digit and the up/down arrows to make the correction. Press Enter to save the changed IP address.

Default Boot Params - This option allows the computer to reset all parameters to standard settings. With the Boot Menu displayed, press soft switch #2:

The Parameters Defaulted message is displayed to indicate that the parameters have been defaulted. Press Enter to return to the Boot Menu.

Warning: You will need to check the IP addresses and MAC addresses to make sure they match the job site.

Also, all of the configuration parameters will be set to their default values. If you have a saved configuration file you can load it once the iBox has booted.

Start FTP Server - available on iView 3.5.0 and above. With the Boot Menu displayed, press soft switch #3.

This option starts an FTP server on the iBox to allow access to the Flash and BBRAM file system. This is useful if the vxworks.mce image is corrupted or missing. Using the FTP Viewer in iView, the vxworks file can be replaced, the paramf file can be deleted, etc. Instructions for using the FTP File Viewer are in the April 2010 Release or later iControl User Guide.

Boot - This option causes the boot process to continue. Press soft switch #4.

```
iBox
Boot ROM
Version 4.0.2
```

```
System Booting
```

```
Boot Menu:
```

- 1: Change IP Address
- 2: Default Boot Prms
- 3: Start FTP server
- 4: Boot

```
IP Address
010.010.052.041
^
```

```
Mask:
FFFF0000
```

```
Use Arrows To Edit
Press Enter to Save
```

```
Parameters Defaulted
Press Enter
To Return
```

- ```
FTP Server Running..
To recover Controller
```
1. Open iView
  2. Launch FTP Viewer
  3. File > IBox File System Recovery
  4. Press Reset

---

## Using iView



## About this Section

This section contains detailed information about:

- **iControl DC Specifications** (see page 9-2).
- **Software Test Point Signals:** Descriptions of the signals that can be routed to hardware and software test points (see page 9-3).
- **iBox Field Connections:** Descriptions of field input and output connections on the left side of the iBox, including signal levels in active and inactive states (see [page 9-7](#)).
- **Terminal Field Connections** (see page 9-14).
- **System and LAN Ethernet:** Information about TCP/IP addresses (see [page 9-15](#)).
- **Quattro DC Drive Parameters Quick Reference:** A listing of Quattro DC Drive parameters and their default and typical settings (see [page 9-49](#)).

## Reference

# iControl DC Specifications

**Table 9.1 iControl DC Specifications**

| Parameter                   | Specification                                                                                                                                                                      |
|-----------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Car Speed                   | Up to 1800 fpm (9.14 m/s)                                                                                                                                                          |
| Jerk                        | 15 ft/sec <sup>3</sup> (7.62 m/sec <sup>3</sup> ) maximum<br>8 ft/sec <sup>3</sup> (2.44 m/sec <sup>3</sup> ) nominal<br>1 ft/sec <sup>3</sup> (0.305 m/sec <sup>3</sup> ) minimum |
| Acceleration                | 10 ft/sec <sup>2</sup> (3.04 m/sec <sup>2</sup> ) maximum<br>4 ft/sec <sup>2</sup> (1.52 m/sec <sup>2</sup> ) nominal<br>1 ft/sec <sup>2</sup> (0.31 m/sec <sup>2</sup> ) minimum  |
| Number of Stops             | Up to 96 (60 floors for Simplex)                                                                                                                                                   |
| Number of Cars in Group     | Up to 15                                                                                                                                                                           |
| Floor Leveling Accuracy     | +/- 0.25 inches (6.35mm) guaranteed<br>+/- 0.125 inches (3.18mm) typical                                                                                                           |
| Minimum Floor to Floor Time | 4.8 seconds for 12-foot (3.66m) floor heights if rotating equipment is capable of delivering the necessary torque.                                                                 |
| Environmental Limits        | 32 to 104 degrees F (0—40 degrees C) ambient<br>12,000 ft (3,658m) altitude<br>95% relative humidity (non-condensing)                                                              |



## Software Testpoint Signals

The iBox allows you to select any one of over fifty signals to display on-screen in iView or on the iBox LCD display at each of two “software test points.” A signal selected on a software test point (Test Point 1, Test Point 2) is also output on the corresponding iBox physical test point (STP 1, STP 2). For example, if you selected Brake Voltage on software Test Point 1, the Brake Voltage value would be displayed on screen and would also be output on iBox test point STP 1. Signals you can choose from are listed in the following table.

Raw signals are unprocessed signals directly from a source. They are frequently too “spikey” to use to read an average value but provide proof of activity and instantaneous reaction to changing conditions.

Filtered values represent the average, filtered value extrapolated from the raw signal to provide a viewable, “smoothed,” signal.

**Table 9.2 Test Point Signals**

| Test Signal                         | Description / Text References                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|-------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Acceleration (Command)              | Post-filter, acceleration command signal.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Acceleration (Directional)          | Directional acceleration signal.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Acceleration (Filtered)             | Pre-filtered acceleration signal.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Acceleration (Interpolated)         | Interpolated (smoothed) acceleration signal.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Acceleration (Raw)                  | Raw acceleration signal.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Acceleration (Slew)                 | Slew rate limited acceleration signal.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Armature Active Status              | High = armature control enabled.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Armature Command Control            | Filtered armature composite command.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Armature Command (Damped)           | Damped armature composite command.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Armature Command (Raw)              | Raw armature composite command.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Armature Composite Control          | The summation of Armature Command Control and Armature Feed forward Control.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Armature Control Set                | PID control sets that reflect standard, start (normal), stop (normal), steady-state (normal) and start (relevel) adjustment parameters.<br>Normal:<br>0 = Idle - before motor contactor picks [PID - Standard]<br>1 = Idle - after motor contactor picks [PID - Start (normal)]<br>2 = Acceleration [PID - Standard]<br>3 = Peak [PID - Steady-State (normal)]<br>4 = Deceleration [PID - Standard]<br>5 = Flare [PID - Stop (normal)]<br>6 = Leveling [PID - Standard]<br>7 = Idle - before motor contactor drops [PID - Standard]<br>Relevel:<br>8 = Idle - before motor contactor picks [PID - Standard]<br>9 = Idle - after motor contactor picks [PID - Start (relevel)]<br>10 = Acceleration - Leveling [PID - Standard] |
| Armature Current Dampen Feedback    | Armature current dampening signal.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Armature Current Signal             | Raw armature current feedback signal.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Armature Current Synthetic Feedback | Armature current synthetic speed signal used for internal speed reference and for current safety calibration.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Armature Differential Command       | Armature differential command.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Armature Differential Gain          | Armature differential gain.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |

## Reference

**Table 9.2 Test Point Signals**

| Test Signal                         | Description / Text References                                                                                                                                                                 |
|-------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Armature Error (Damped)             | Dampened armature error signal.                                                                                                                                                               |
| Armature Error (Raw)                | Raw armature error signal.                                                                                                                                                                    |
| Armature Feedforward (Control)      | Filtered armature feedforward command.                                                                                                                                                        |
| Armature Feedforward (Raw)          | Raw armature feedforward command.                                                                                                                                                             |
| Armature Integral Command           | Armature integral command.                                                                                                                                                                    |
| Armature Integral Gain              | Armature integral gain.                                                                                                                                                                       |
| Armature On Status                  | High = PID control enabled.                                                                                                                                                                   |
| Armature Proportional Command       | Armature proportional command.                                                                                                                                                                |
| Armature Proportional Gain          | Armature proportional gain.                                                                                                                                                                   |
| Armature Voltage Dampen Feedback    | Armature voltage dampening signal.                                                                                                                                                            |
| Armature Voltage Signal             | Raw armature voltage feedback signal. <a href="#">Please refer to "Armature Voltage (System 12 SCR Drive)" on page 4-9.</a>                                                                   |
| Armature Voltage Synthetic Feedback | Armature voltage synthetic speed signal used for internal speed reference and for voltage safety calibration.                                                                                 |
| Brake Contactor Status              | Indicates status (open/closed) of brake contactor. When the signal is high, the contacts are closed. When the contactor is closed AND the brake field module is enabled, the brake will lift. |
| Brake Current Feedback              | Filtered brake current feedback signal.                                                                                                                                                       |
| Brake Current Signal                | Raw brake current feedback signal.                                                                                                                                                            |
| Brake Enable Status                 | Indicates status of signal that enables the brake field module. When high, the module is enabled. When the module is enabled AND the contactor is closed, the brake will lift.                |
| Brake Voltage Feedback              | Filtered brake voltage feedback signal.                                                                                                                                                       |
| Brake Voltage Signal                | Raw brake voltage feedback signal.                                                                                                                                                            |
| DAC Offset Status                   | Indicates whether DAC signal offset is positive or negative.                                                                                                                                  |
| Drive Enable Status                 | Indicates status of signal that enables the motor field module. When high, the module is enabled. When the module is enabled AND the contactor is closed, the motor will run.                 |
| Drive IOS Limit                     | This signal represents the hard-coded threshold at which an Inspection Overspeed will be tripped. 150fpm.                                                                                     |
| Drive IOS Param Limit               | This signal represents the user-configurable threshold (Safety screen) at which an Inspection Overspeed will be tripped.                                                                      |
| Encoder Signal                      | Raw encoder speed signal.                                                                                                                                                                     |
| Field Active Status                 | High = motor field control enabled.                                                                                                                                                           |
| Field Command (Control)             | Motor field composite command.                                                                                                                                                                |
| Field Control Path                  | MCE internal diagnosis only.                                                                                                                                                                  |
| Field Current Feedback              | Filtered motor field current feedback signal.                                                                                                                                                 |
| Field Current Signal                | Raw motor field current feedback signal.                                                                                                                                                      |
| Field Error                         | Motor field error signal.                                                                                                                                                                     |
| Field Integral Command              | Motor field integral command.                                                                                                                                                                 |
| Field Integral Gain                 | Motor field integral gain.                                                                                                                                                                    |
| Field Proportional Command          | Motor field proportional command.                                                                                                                                                             |
| Field Proportional Gain             | Motor field proportional gain.                                                                                                                                                                |
| Field Voltage Feedback              | Filtered motor field voltage feedback signal.                                                                                                                                                 |
| Field Voltage Signal                | Raw motor field voltage feedback signal.                                                                                                                                                      |
| Load Weigher (Raw)                  | Analog load weigher signal, after amplification (adjusted by trimpot LW ADJ), at test point TP_LW on the CTP (cartop) board.                                                                  |
| Load Weigher (Signal)               | The controller's internal representation of the Load Weigher (Raw) signal.                                                                                                                    |

**Table 9.2 Test Point Signals**

| Test Signal                  | Description / Text References                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Load Weigher Balanced        | This signal is used to determine the amount of pretorque that the controller needs to provide to the motor to help prevent roll-back on takeoff. 0 = balanced load. <a href="#">Please refer to "Pretorque Adjustments - Balanced Mode Method" on page 4-23.</a>                                                                                                                                                                                                                                                                                                              |
| Load Weigher Feedback        | This signal represents the smoothed, processed Load Weigher (Signal), captured with doors closed, just before departure.                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Motor Contactor Status       | Indicates status (open/closed) of motor contactor. When the signal is high, the contacts are closed. When the contactor is closed AND the motor field module is enabled, the motor will run.                                                                                                                                                                                                                                                                                                                                                                                  |
| Over Current                 | Armature current signal used for Loop Over Current. Adjusted using Rated Loop Over Current and Loop Over Current Fault Time. <a href="#">Please refer to "Armature Overcurrent Overload Protection Adjustment (System 12 SCR Drive)" on page 4-50.</a>                                                                                                                                                                                                                                                                                                                        |
| Over Current Power           | Armature power accumulated. Used for Loop Over Current. Adjusted using Rated Loop Over Current and Loop Over Current Fault Time. <a href="#">Please refer to "Armature Overcurrent Overload Protection Adjustment (System 12 SCR Drive)" on page 4-50.</a>                                                                                                                                                                                                                                                                                                                    |
| Over Current Power Threshold | The armature power threshold above which a Loop Over Current fault is generated. Adjusted using Rated Loop Over Current and Loop Over Current Fault Time. <a href="#">Please refer to "Armature Overcurrent Overload Protection Adjustment (System 12 SCR Drive)" on page 4-50.</a>                                                                                                                                                                                                                                                                                           |
| Over Current Threshold       | Armature current signal threshold above which over current power is accumulated. Used for Loop Over Current. Adjusted using Rated Loop Over Current and Loop Over Current Fault Time. <a href="#">Please refer to "Armature Overcurrent Overload Protection Adjustment (System 12 SCR Drive)" on page 4-50.</a>                                                                                                                                                                                                                                                               |
| Pattern (Command)            | Post-filtered pattern command signal. <a href="#">Please refer to "Verify Pattern Command and Drive Speed Feedback" on page 2-43.</a> <a href="#">Please refer to "Verifying a One Floor Run" on page 4-4.</a> <a href="#">Please refer to "Pattern Scaling (System 12 SCR Drive)" on page 4-8.</a> <a href="#">Please refer to "Setting Pattern Parameters" on page 4-18.</a>                                                                                                                                                                                                |
| Pattern (Directional)        | Directional pattern signal.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Pattern (Filtered)           | Prefiltered pattern signal. <a href="#">Please refer to "Tach Error Tripping Threshold Adjustment" on page 2-44</a>                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Pattern (Interpolated)       | Interpolated (smoothed) pattern signal.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Pattern (Phase)              | The numbers displayed represent segments of the speed profile. <a href="#">Please refer to "Shaping the Speed Profile" on page 4-16.</a><br>0 = Idle<br>1 = Initial Jerk<br>2 = Acceleration<br>3 = Low Roll Jerk (during acceleration, high speed is reached)<br>4 = Peak (High Speed)<br>5 = High Roll Jerk (during acceleration, high speed not reached)<br>6 = High/Low Roll Jerk (during deceleration)<br>7 = Deceleration<br>8 = Flare Jerk (transition from deceleration to leveling)<br>9 = Approach Jerk (transition from deceleration to leveling)<br>10 = Leveling |
| Pattern (Raw)                | Raw pattern signal. <a href="#">Please refer to "Speed Loop Gains (System 12 SCR Drive)" on page 2-42</a>                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |

| <b>Test Signal</b>               | <b>Description / Text References</b>                                                                                                                                                                                                                                                                                                                                                                                                        |
|----------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Pattern (Region)                 | The numbers reflect a simplified representation of the speed profile in comparison to Pattern (Phase).<br>0 = Idle                                      3 = Deceleration<br>1 = Acceleration                          4 = Flare<br>2 = Peak                                        5 = Leveling                                                                                                                                             |
| Pattern (Slew Limited)           | Slew rate limited pattern signal.                                                                                                                                                                                                                                                                                                                                                                                                           |
| Position Bit                     | This signal represents car position/motion. It is abstracted from the motor velocity encoder or tach signal. The signal toggles low or high with every 32-inches of motor travel. Increasing frequency = increasing rate of position change.                                                                                                                                                                                                |
| Pre-Run Status                   | High = Pre-energizes motor field as doors are closing and demand occurs.                                                                                                                                                                                                                                                                                                                                                                    |
| Pretorque (Command)              | This is the actual pretorque signal sent to the drive and used to pretorque the motor. This is filtered representation of the raw pretorque "demand" signal, captured as the doors close and used to pretorque the motor as needed depending on the weight in the car.                                                                                                                                                                      |
| Pretorque (Raw)                  | This is a representation of the raw pretorque "demand" signal. It will react to car load changes (i.e., doors open, passengers loading/unloading).                                                                                                                                                                                                                                                                                          |
| SCR Current Sensor Offset Status | High = SCR current sensor signal offset positive.                                                                                                                                                                                                                                                                                                                                                                                           |
| SCR Intg Offset Status           | High = SCR integrator signal offset positive.                                                                                                                                                                                                                                                                                                                                                                                               |
| Speed Bit                        | When the car is still, this signal is high. When the car is traveling at a rate in excess of 40fpm, this signal is low.                                                                                                                                                                                                                                                                                                                     |
| Speed Feedback                   | Filtered speed feedback signal. Please refer to "Verify Pattern Command and Drive Speed Feedback" on page 2-43. Please refer to "Tach Failure Calibration (System 12 SCR Drive)" on page 2-45. Please refer to "Empty Car Tests" on page 3-13. Please refer to "Verifying a One Floor Run" on page 4-4. Please refer to "Setting Pattern Parameters" on page 4-18. Please refer to "Tach Error Tripping Threshold Adjustment" on page 4-49. |
| Sufficient Field Status          | High = sufficient motor field current has been achieved. Different percentage of forcing, depending on mode. Inspection = 60% of forcing. Other, 80% of forcing.                                                                                                                                                                                                                                                                            |
| Synthetic Signal                 | Speed signal synthesized from armature voltage and current. Please refer to "Tach Failure Calibration (System 12 SCR Drive)" on page 2-45.                                                                                                                                                                                                                                                                                                  |
| Tach Error Lower Limit           | This signal represents the lower margin of tach error allowed at contract speed before a tach fault is generated. Display with Speed Feedback signal to see the margin. If Speed Feedback crosses Tach Error Lower Limit the tach fault will be generated. Please refer to "Tach Error Tripping Threshold Adjustment" on page 2-44. Please refer to "Tach Error Tripping Threshold Adjustment" on page 4-49.                                |
| Tach Error Upper Limit           | This signal represents the upper margin of tach error allowed at contract speed before a tach fault is generated. Display with Speed Feedback signal to see the margin. If Speed Feedback crosses Tach Error Upper Limit the tach fault will be generated. Please refer to "Tach Error Tripping Threshold Adjustment" on page 2-44. Please refer to "Tach Error Tripping Threshold Adjustment" on page 4-49.                                |
| Tachometer Signal                | Raw tachometer signal. Please refer to "Speed Loop Gains (System 12 SCR Drive)" on page 2-42.                                                                                                                                                                                                                                                                                                                                               |

## iBox Field Connections

The majority of field connections to the iBox are made through plugable terminal strips along the left edge of the iBox (as you face it). Field connections are control and data connections to and from equipment external to the iBox. For example, connections through the traveler cable to car and hoistway equipment or connections to additional machine room equipment like rope grippers, velocity encoders, governors, etc. In this section, three tables describe connections — iBox connections, expansion board connections, and iControl terminal connections respectively.+++Controller Terminal Field Connections

**Table 9.3 iBox Field Connections**

| Source           | Connection | Signal Description                                                                                                                                             |
|------------------|------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| TACH             | TS         | Tach positive signal. Analog. 0 - 30 VDC (15 VDC @ 1000 RPM). <a href="#">Please refer to "Tachometer or Encoder Installation and Wiring" on page 2-11.</a>    |
|                  | TC         | Tach common (negative in respect to TS when car moving down)                                                                                                   |
|                  | SHLD       | Tach shield connection (connect at iBox-end only)                                                                                                              |
| POSITION         | DP1+       | Positive going, +15V, digital pulse stream from iLand to iLink to iBox (DP1 leads DP2 when car moves up).                                                      |
|                  | DP1-       | Negative going, -15V, digital pulse stream from iLand to iLink to iBox.                                                                                        |
|                  | SHLD       | Shield connection for twisted-pair DP1+/DP1-                                                                                                                   |
|                  | DP2+       | Positive going, +15V, digital pulse stream from iLand to iLink to iBox (DP2 leads DP1 when car moves down)                                                     |
|                  | DP2-       | Negative going, -15V, digital pulse stream from iLand to iLink to iBox                                                                                         |
|                  | SHLD       | Shield connection for twisted-pair DP2+/DP2-                                                                                                                   |
| VELOCITY ENCODER | A+         | Positive going, +12V, digital pulse from motor velocity encoder. <a href="#">Please refer to "Tachometer or Encoder Installation and Wiring" on page 2-11.</a> |
|                  | A-         | Negative going, -12V, digital pulse from motor velocity encoder.                                                                                               |
|                  | B+         | Positive going, +12V, digital pulse from motor velocity encoder.                                                                                               |
|                  | B-         | Negative going, -12V, digital pulse from motor velocity encoder.                                                                                               |
|                  | Z+         | Positive going, +12V, digital pulse from motor velocity encoder.                                                                                               |
|                  | Z-         | Negative going, -12V, digital pulse from motor velocity encoder.                                                                                               |
|                  | VE-        | Encoder power return                                                                                                                                           |
|                  | VE+        | +12 VDC power to encoder (relative to VE-)                                                                                                                     |

## Reference

**Table 9.3 iBox Field Connections**

| Source      | Connection | Signal Description                                                                                                                                                                                                                                          |
|-------------|------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| CARTOP LINK | TX+        | iBox transmit, positive going serial communication stream from iBox to iLink. <b>Connects to iLink ICE-CTP Board terminal RX+.</b> TX+ and TX- comprise a differential communications pair. <a href="#">Please refer to "Installing iLink" on page 3-2.</a> |
|             | TX-        | iBox transmit, negative going serial communication stream from iBox to iLink. <b>Connects to iLink ICE-CTP Board terminal RX-.</b>                                                                                                                          |
|             | SHLD       | Shield connection for twisted-pair TX+/TX-                                                                                                                                                                                                                  |
|             | RX+        | iBox receive, positive going serial communication stream from iLink to iBox. <b>Connects to iLink ICE-CTP board terminal TX+.</b> RX+ and RX- comprise a differential communications pair.                                                                  |
|             | RX-        | iBox receive, negative going serial communication stream from iLink to iBox. <b>Connects to iLink ICE-CTP board terminal TX-.</b>                                                                                                                           |
|             | SHLD       | Shield connection for twisted-pair RX+/RX-                                                                                                                                                                                                                  |
| CAR         | DZ         | Door Zone Sensor input. Activated = 110 VDC.                                                                                                                                                                                                                |
|             | ULM        | Up Leveling Marker Sensor input. Activated = 110 VDC.                                                                                                                                                                                                       |
|             | DLM        | Down Leveling Marker Sensor input. Activated = 110 VDC.                                                                                                                                                                                                     |
|             | INCT       | Cartop Inspection Station INSP/AUTO Switch input. Activated = 110 VDC.                                                                                                                                                                                      |
|             | ICTU       | Cartop Inspection Station UP Button input (includes SAF button). Activated = 110 VDC.                                                                                                                                                                       |
|             | ICTD       | Cartop Inspection Station DN Button input (includes SAF button). Activated = 110 VDC.                                                                                                                                                                       |
|             | INCP       | COP Inspection Station INSP/AUTO Switch input. Activated = 110 VDC.                                                                                                                                                                                         |
|             | ICPU       | COP Inspection Station UP Button input. Activated = 110 VDC.                                                                                                                                                                                                |
|             | ICPD       | COP Inspection Station DN Button input. Activated = 110 VDC.                                                                                                                                                                                                |
|             | INA        | Car Panel (Hoistway) Access Enable switch input. 0 VDC active signal level. Off = 110 VDC.                                                                                                                                                                  |
|             | ESC        | Car Panel Emergency Stop switch input. 0 VDC active signal level stops car. Off = 110 VDC.                                                                                                                                                                  |
|             | DCL        | Door Close Limit input. Door fully closed, input inactive, 0 VAC. Door not closed signal level, 120 VAC.                                                                                                                                                    |
|             | DOL        | Door Open Limit input. Door fully open, input inactive, 0 VAC. Door not open signal level, 120 VAC.                                                                                                                                                         |
|             | DPM        | Door Position Monitor input. Door closed, input inactive, 120 VAC. Door not closed, 0 VAC.                                                                                                                                                                  |

**Table 9.3 iBox Field Connections**

| Source        | Connection | Signal Description                                                                                           |
|---------------|------------|--------------------------------------------------------------------------------------------------------------|
| <b>LIMITS</b> | UNTD       | Up Normal Limit Direction switch input. 110 VDC = input on/switch closed. 0 VDC = input off/switch open.     |
|               | UNT5       | Up Slowdown Limit switch #5 input. 110 VDC = input on/switch closed. 0 VDC = input off/switch open.          |
|               | UNT4       | Up Slowdown Limit switch #4 input. 110 VDC = input on/switch closed. 0 VDC = input off/switch open.          |
|               | UNT3       | Up Slowdown Limit switch #3 input. 110 VDC = input on/switch closed. 0 VDC = input off/switch open.          |
|               | UNT2       | Up Slowdown Limit switch #2 input. 110 VDC = input on/switch closed. 0 VDC = input off/switch open.          |
|               | UETS       | Up Emergency Terminal Limit switch input. 110 VDC = input on/switch closed. 0 VDC = input off/switch open.   |
|               | UNT1       | Up Slowdown Limit switch #1 input. 110 VDC = input on/switch closed. 0 VDC = input off/switch open.          |
|               | DNT1       | Down Slowdown Limit switch #1 input. 110 VDC = input on/switch closed. 0 VDC = input off/switch open.        |
|               | DETS       | Down Emergency Terminal Limit switch input. 110 VDC = input on/switch closed. 0 VDC = input off/switch open. |
|               | DNT2       | Down Slowdown Limit switch #2 input. 110 VDC = input on/switch closed. 0 VDC = input off/switch open.        |
|               | DNT3       | Down Slowdown Limit switch #3 input. 110 VDC = input on/switch closed. 0 VDC = input off/switch open.        |
|               | DNT4       | Down Slowdown Limit switch #4 input. 110 VDC = input on/switch closed. 0 VDC = input off/switch open.        |
|               | DNT5       | Down Slowdown Limit switch #5 input. 110 VDC = input on/switch closed. 0 VDC = input off/switch open.        |
|               | DNTD       | Down Normal Limit Direction switch input. 110 VDC = input on/switch closed. 0 VDC = input off/switch open.   |



## Reference

**Table 9.3 iBox Field Connections**

| Source       | Connection | Signal Description                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|--------------|------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>H/WAY</b> | ATU        | Hoistway Access Top Up switch input. When the Car Panel Access Enable switch (INA input) is on, an active input (key switch closure) here (110 VDC) will cause the car to move up the hoistway. A hoistway limit switch electrically between the ATU input and the activating switch will open and stop the car after it has moved the required distance up the hoistway (if installed). Normal/Off state = 0 VDC. Refer also to the -MRW drawing in the job prints.          |
|              | ATD        | Hoistway Access Top Down switch input. When the Car Panel Access Enable switch (INA input) is on, an active input (key switch closure) here (110 VDC) will cause the car to move down the hoistway. A hoistway limit switch electrically between the ATD input and the activating switch will open and stop the car after it has moved the required distance down the hoistway (if installed). Normal/Off state = 0 VDC. Refer also to the -MRW drawing in the job prints.    |
|              | ABU        | Hoistway Access Bottom Up switch input. When the Car Panel Access Enable switch (INA input) is on, an active input (key switch closure) here (110 VDC) will cause the car to move up the hoistway. A hoistway limit switch electrically between the ABU input and the activating switch will open and stop the car after it has moved the required distance up the hoistway (if installed). Normal/Off state = 0 VDC. Refer also to the -MRW drawing in the job prints.       |
|              | ABD        | Hoistway Access Bottom Down switch input. When the Car Panel Access Enable switch (INA input) is on, an active input (key switch closure) here (110 VDC) will cause the car to move down the hoistway. A hoistway limit switch electrically between the ABD input and the activating switch will open and stop the car after it has moved the required distance down the hoistway (if installed). Normal/Off state = 0 VDC. Refer also to the -MRW drawing in the job prints. |

**Table 9.3 iBox Field Connections**

| Source                | Connection | Signal Description                                                                                                                                                                                                                                                                                                                                                                                                                          |
|-----------------------|------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>LOCKS/CONTACTS</b> | GS         | Gate Switch input. The gate switch makes up when the elevator doors close. When the switch is made, there will be 110 VDC on this input. When the switch is open, there will be 0 VDC on this input. The gate switch may be wired in series with other switches or locks on the elevator doors (as shown in the job prints) so that if any of the switches do not make, the GS input will remain low and the car will not run.              |
|                       | DLAT       | Door Lock Access Top input. When a top hoistway access is provided (see INA, ATU, and ATD), the hoistway door lock associated with that landing is connected between the #3 bus and this input. When the switch is made, there will be 110 VDC on this input. When the switch is open, there will be 0 VDC on this input and the car will not run unless INA is active and then only in response to the ATU or ATD input.                   |
|                       | DLMS       | Door Lock Main String input. If top and bottom hoistway access (see INA, ATU, ATD, ABU, and ABD) is not provided, all hoistway door locks are wired in series between the #3 bus and DLMS. When the switches are made, there will be 110 VDC on this input. When any switch is open, there will be 0 VDC on this input and the car will not run.                                                                                            |
|                       | DLAB       | Door Lock Access Bottom input. When a bottom hoistway access is provided (see INA, ABU, and ABD), the hoistway door lock associated with that landing is connected between the #3 bus and this input. When the switch is made, there will be 110 VDC on this input. When the switch is open, there will be 0 VDC on this input and the car will not run unless INA is active and then only in response to the ABU or ABD input.             |
|                       | DCAT       | Door Contact Access Top input. When a top hoistway access is provided (see INA, ATU, ATD, and DLAT), the hoistway door contact associated with that landing is connected between the #3 bus and this input. When the switch is made, there will be 110 VDC on this input. When the switch is open, there will be 0 VDC on this input and the car will not run unless INA is active and then only in response to the ATU or ATD input.       |
|                       | DCMS       | Door Contact Main String input. If top and bottom hoistway access (see INA, ATU, ATD, ABU, and ABD) is not provided, all hoistway door contacts are wired in series between the #3 bus and DCMS. When the switches are made, there will be 110 VDC on this input. When any switch is open, there will be 0 VDC on this input and the car will not run.                                                                                      |
|                       | DCAB       | Door Contact Access Bottom input. When a bottom hoistway access is provided (see INA, ABU, ABD, and DLAB), the hoistway door contact associated with that landing is connected between the #3 bus and this input. When the switch is made, there will be 110 VDC on this input. When the switch is open, there will be 0 VDC on this input and the car will not run unless INA is active and then only in response to the ABU or ABD input. |
|                       | GOV        | Governor input. The governor is connected between the #3 bus and this input. When the governor switch is made, there is 110 VDC on this input. If the governor switch trips/opens, there is 0 VDC on this input and the car will not run.                                                                                                                                                                                                   |
|                       | SP 1       | Spare input 1. If used, connect as shown in the job prints.                                                                                                                                                                                                                                                                                                                                                                                 |

## Reference

**Table 9.3 iBox Field Connections**

| Source        | Connection | Signal Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|---------------|------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>BRAKE</b>  | BD         | Brake Drive relay indicator. When relay BD (iBox IRB board) is closed to pick the brake, this LED is ON. Monitored by Safety Processor A.                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|               | TB         | Brake Triac active indicator. When the brake triac on the iBox IRB board is active (completes circuit for BD relay), this LED will light. Monitored by Safety Processor B.                                                                                                                                                                                                                                                                                                                                                                                                                   |
|               | BRD        | Brake Redundancy indicator. This LED lights when the main brake contactor drops out.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|               | BDRD       | Brake Drive Redundancy indicator. This LED lights when the BD relay drops out.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>DRIVE</b>  | MD         | Motor Drive relay indicator. When relay MD (iBox IRB board) is closed to enable the motor, this LED will light. Monitored by Safety Processor A.                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|               | TM         | Motor Triac active indicator. When the motor triac on the iBox IRB board is active (completes circuit for MD relay), this LED will light. Monitored by Safety Processor B.                                                                                                                                                                                                                                                                                                                                                                                                                   |
|               | MRD        | Motor Redundancy indicator. This LED lights when the main motor contactor drops out.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|               | MDRD       | Motor Drive Redundancy indicator. This LED lights when the MD relay drops out.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>SAFETY</b> | SAFC       | Safety Cartop input. Cartop safety relays and switches are wired in series between SAFH (Safety Hoistway) and SAFC. If any contact in the safety string opens, there will be 0 VDC on this input and the car will not run. If all safety contacts in the string are closed, there will be 110 VDC on this input.                                                                                                                                                                                                                                                                             |
|               | SAFH       | Safety Hoistway input. Hoistway safety relays and switches are wired in series between the #3 bus and SAFH. The path also includes the Governor switch, with the GOV connection providing access to the #3 bus via the governor switch. (#3 to GOV through governor switch, GOV to SAFH through hoistway safety relays and switches). The job prints for the job provide specific wiring instructions. If any contact in the safety string opens, there will be 0 VDC on this input and the car will not run. If all safety string contacts are closed, there will be 110 VDC on this input. |
| <b>SPARES</b> | SP1 D      | Optional input. Job prints will show if and how this is used on a per installation basis.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|               | SP2 D      | Optional Brake Pick Switch input. The "Switch" parameters on the Controller > Configuration > Brake > Control tab indicate the state of terminal SP2D (110VDC or 0V) used to indicate that the brake is picked                                                                                                                                                                                                                                                                                                                                                                               |
|               | SP2        | Optional input. Job prints will show if and how this is used on a per installation basis.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|               | SP3        | Optional input. Job prints will show if and how this is used on a per installation basis.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|               | SP4        | Optional input. Job prints will show if and how this is used on a per installation basis.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |

**Table 9.3 iBox Field Connections**

| Source         | Connection | Signal Description          |
|----------------|------------|-----------------------------|
| <b>COMMON</b>  | 1          | Common Bus connections. 0 V |
|                | 1          | Common Bus connections. 0 V |
|                | 1          | Common Bus connections. 0 V |
|                | 1          | Common Bus connections. 0 V |
| <b>120 VAC</b> | 2 PI       | 120 VAC. Fused, 2PI.        |
|                | 2 PI       | 120 VAC. Fused, 2PI.        |
|                | 2          | 120 VAC. Fused, F2.         |
|                | 2          | 120 VAC. Fused, F2.         |
| <b>110 VDC</b> | 3 HA       | 110 VDC. Fused, F3HA.       |
|                | 3 HA       | 110 VDC. Fused, F3HA.       |
|                | 3          | 110 VDC. Fused, F3.         |
|                | 3          | 110 VDC. Fused, F3.         |

**Table 9.4 Expansion Board Connections**

| Board                        | Connection     | Signal Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|------------------------------|----------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>MOR</b>                   | Out 1 - Out 32 | The MOR (Multiple Output Relay) board provides 32 outputs customers may use as needed for the particular job. Typical uses include activating chimes, buzzers, lights, etc. Each MOR board is configured according to the job survey for a particular job before the system is shipped. MOR boards may be installed in the iControl cabinet, in the iLink cartop box, or in the iCentral cabinet (for elevator group controller use). Output selection instructions are transmitted serially to the board. The 32 outputs are divided into five groups (1-4, 5-8, 9-16, 17-24, and 25-32). According to need, each group can be connected to provide the required output. Specific connections and output values are specified in the job prints. |
| <b>MIAC</b>                  | In 1 - In 32   | The MIAC (Multiple Input AC) board provides 32 inputs customers may use as needed for the particular job. MIAC boards may be installed in the iControl cabinet, in the iLink cartop box, or in the iCentral cabinet (for elevator group controller use). Typical uses include car call buttons, operating mode switches, etc. Specific connections are detailed in the job prints.                                                                                                                                                                                                                                                                                                                                                                |
| <b>SF<br/>Serial Fixture</b> | CAR 1          | Common connection. 0V.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|                              | CAR +24        | +24 VDC power to serial fixtures.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|                              | CAR CDATA      | Serial data stream to fixtures.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|                              | HALL 1         | Common connection. 0V.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|                              | HALL +24       | +24 VDC power to serial fixtures.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|                              | HALL HDATA     | Serial data stream to fixtures.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |

## Reference

**Table 9.4 Expansion Board Connections**

| Board                      | Connection | Signal Description                                                                                                                                                                      |
|----------------------------|------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>IEQ<br/>Earthquake</b>  | EQSP 1     | Earthquake spare sensor input.                                                                                                                                                          |
|                            | ESS        | Earthquake Seismic Switch input. Normally at 120 VAC. If seismic switch opens, 0 VDC. Press reset button on IEQ board to reset (after clearing any potential problems caused by quake). |
|                            | CW2        | Along with CW1, "ring and string" input from counterweight movement sensor. Normally at 24 VDC.                                                                                         |
|                            | CW1        | Along with CW2, "ring and string" input from counterweight movement sensor. Normally at 24 VDC.                                                                                         |
| <b>RG<br/>Rope Gripper</b> | RG1        | 24V DC power to rope gripper.                                                                                                                                                           |
|                            | RG2        | Common. 0 VDC.                                                                                                                                                                          |
|                            | RG5        | Rope gripper input. Normally at 120 VAC. If rope gripper manual operation is selected, or if rope gripper is triggered, 0 V.                                                            |
|                            | RG7        | 120 VAC from #2 bus to rope gripper switches.                                                                                                                                           |

Field connections are also made to terminal strips in the iControl cabinet. Terminal connections provided vary from job to job depending upon need. Power distribution connections, beyond the basic three system buses, are specified in the job prints and are not included here.

**Table 9.5 Controller Terminal Strip Connections**

| Label    | Signal Description                                                                                                                                                                                                                       |
|----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| B1, B2   | DC power to motor brake. Voltage across terminals will vary depending upon brake control method (Low Current Brake Board or iField Brake Module). See your job prints. Significant voltage may be present even when brake is not picked. |
| MF1, MF2 | DC power to motor field. Voltage across terminals will vary. Significant voltage may be present even if motor is not running.                                                                                                            |
| 15A      | Final Limit switch. Wired as shown in job prints. 110 VDC when switch is made. 0 VDC when switch in string opens.                                                                                                                        |
| 15B      | Pit/Final Limit switch. Wired as shown in job prints. 110 VDC when switch is made. 0 VDC when switch in string opens.                                                                                                                    |
| 1        | System common.                                                                                                                                                                                                                           |
| 2        | 120 VAC bus.                                                                                                                                                                                                                             |
| 3        | 110 VDC bus.                                                                                                                                                                                                                             |

## System and LAN Ethernet

Communication between iControl elevator controllers and iCentral group control uses Ethernet TCP/IP (Transmission Control Protocol/Internet Protocol) over the **System** network. Communication between iControl elevator controllers and/or the iCentral group control and personal computers running iView or other iControl applications is over the **LAN** (Local Area Network) network. Cables used in the two systems are color-coded for easy recognition. **System** cables are **orange**. **LAN** cables are **blue**.

The following tables provide in-depth addressing information for the iControl/iCentral system.

### MCE Direct-Connect Port (Links one iBox to one Laptop with iView)

| iBox Direct Connect Port |                     |               | " = same as above |                  |
|--------------------------|---------------------|---------------|-------------------|------------------|
|                          | IP                  | Subnet        | Gateway           | DNS              |
| Any iBox                 | 192.168.193.1       | 255.255.255.0 | Blank or 0.0.0.0  | Blank or 0.0.0.0 |
| Any PC / Laptop          | 192.168.193.2       | "             | "                 | "                |
| (MCE reserved)           | All other addresses | "             | "                 | "                |

## Reference

### Elevator LAN Network

Normally extends throughout a building and may span to other buildings, networks, or locations across the Internet/Intranet.

| LAN Network Hub (Blue cables)       |                                      |               | “= same as above<br>* = see Note #1 |                   |
|-------------------------------------|--------------------------------------|---------------|-------------------------------------|-------------------|
|                                     | IP                                   | Subnet        | Gateway                             | DNS               |
| (IEEE reserved)                     | 192.168.191.0                        | 255.255.255.0 | 192.168.191.254 *                   | 192.168.191.254 * |
| Group 1 – LAN Network (Blue cables) |                                      |               |                                     |                   |
|                                     | IP                                   | Subnet        | Gateway                             | DNS               |
| iBox – Car 1                        | 192.168.191.1                        | 255.255.255.0 | 192.168.191.254 *                   | 192.168.191.254 * |
| iBox – Car 2                        | 192.168.191.2                        | “             | “                                   | “                 |
| iBox – Car 3                        | 192.168.191.3                        | “             | “                                   | “                 |
| iBox – Car 4                        | 192.168.191.4                        | “             | “                                   | “                 |
| iBox – Car 5                        | 192.168.191.5                        | “             | “                                   | “                 |
| iBox – Car 6                        | 192.168.191.6                        | “             | “                                   | “                 |
| iBox – Car 7                        | 192.168.191.7                        | “             | “                                   | “                 |
| iBox – Car 8                        | 192.168.191.8                        | “             | “                                   | “                 |
| iBox – Car 9                        | 192.168.191.9                        | “             | “                                   | “                 |
| iBox – Car 10                       | 192.168.191.10                       | “             | “                                   | “                 |
| iBox – Car 11                       | 192.168.191.11                       | “             | “                                   | “                 |
| iBox – Car 12                       | 192.168.191.12                       | “             | “                                   | “                 |
| iBox – Car 13                       | 192.168.191.13                       | “             | “                                   | “                 |
| iBox – Car 14                       | 192.168.191.14                       | “             | “                                   | “                 |
| iBox – Car 15                       | 192.168.191.15                       | “             | “                                   | “                 |
| iBox – Car 16                       | 192.168.191.16                       | “             | “                                   | “                 |
| iBox – Car 17                       | 192.168.191.17                       | “             | “                                   | “                 |
| iBox – Car 18                       | 192.168.191.18                       | “             | “                                   | “                 |
| iBox – Car 19                       | 192.168.191.19                       | “             | “                                   | “                 |
| iBox – Car 20                       | 192.168.191.20                       | “             | “                                   | “                 |
| iView                               | 192.168.191.101 –<br>192.168.191.102 | “             | “                                   | “                 |
| iCue                                | 192.168.191.201 –<br>192.168.191.202 | “             | “                                   | “                 |
| Group 2 – LAN Network (Blue cables) |                                      |               |                                     |                   |
|                                     | IP                                   | Subnet        | Gateway                             | DNS               |
| iBox – Car 1                        | 192.168.191.21                       | 255.255.255.0 | 192.168.191.254 *                   | 192.168.191.254 * |
| iBox – Car 2                        | 192.168.191.22                       | “             | “                                   | “                 |
| iBox – Car 3                        | 192.168.191.23                       | “             | “                                   | “                 |
| iBox – Car 4                        | 192.168.191.24                       | “             | “                                   | “                 |
| iBox – Car 5                        | 192.168.191.25                       | “             | “                                   | “                 |
| iBox – Car 6                        | 192.168.191.26                       | “             | “                                   | “                 |
| iBox – Car 7                        | 192.168.191.27                       | “             | “                                   | “                 |
| iBox – Car 8                        | 192.168.191.28                       | “             | “                                   | “                 |
| iBox – Car 9                        | 192.168.191.29                       | “             | “                                   | “                 |
| iBox – Car 10                       | 192.168.191.30                       | “             | “                                   | “                 |
| iBox – Car 11                       | 192.168.191.31                       | “             | “                                   | “                 |
| iBox – Car 12                       | 192.168.191.32                       | “             | “                                   | “                 |



|                                            |                                      |               |                   |                   |
|--------------------------------------------|--------------------------------------|---------------|-------------------|-------------------|
| iBox – Car 13                              | 192.168.191.33                       | "             | "                 | "                 |
| iBox – Car 14                              | 192.168.191.34                       | "             | "                 | "                 |
| iBox – Car 15                              | 192.168.191.35                       | "             | "                 | "                 |
| iBox – Car 16                              | 192.168.191.36                       | "             | "                 | "                 |
| iBox – Car 17                              | 192.168.191.37                       | "             | "                 | "                 |
| iBox – Car 18                              | 192.168.191.38                       | "             | "                 | "                 |
| iBox – Car 19                              | 192.168.191.39                       | "             | "                 | "                 |
| iBox – Car 20                              | 192.168.191.40                       | "             | "                 | "                 |
| <b>iView</b>                               | 192.168.191.103 –<br>192.168.191.104 | "             | "                 | "                 |
| <b>iCue</b>                                | 192.168.191.203 –<br>192.168.191.204 | "             | "                 | "                 |
| <b>Group 3 – LAN Network (Blue cables)</b> |                                      |               |                   |                   |
|                                            | <b>IP</b>                            | <b>Subnet</b> | <b>Gateway</b>    | <b>DNS</b>        |
| iBox – Car 1                               | 192.168.191.41                       | 255.255.255.0 | 192.168.191.254 * | 192.168.191.254 * |
| iBox – Car 2                               | 192.168.191.42                       | "             | "                 | "                 |
| iBox – Car 3                               | 192.168.191.43                       | "             | "                 | "                 |
| iBox – Car 4                               | 192.168.191.44                       | "             | "                 | "                 |
| iBox – Car 5                               | 192.168.191.45                       | "             | "                 | "                 |
| iBox – Car 6                               | 192.168.191.46                       | "             | "                 | "                 |
| ...                                        | ...                                  | "             | "                 | "                 |
| iBox – Car 20                              | 192.168.191.60                       | "             | "                 | "                 |
| <b>iView</b>                               | 192.168.191.105 –<br>192.168.191.106 | "             | "                 | "                 |
| <b>iCue</b>                                | 192.168.191.205 –<br>192.168.191.206 | "             | "                 | "                 |
| <b>Group 4 – LAN Network (Blue cables)</b> |                                      |               |                   |                   |
|                                            | <b>IP</b>                            | <b>Subnet</b> | <b>Gateway</b>    | <b>DNS</b>        |
| iBox – Car 1                               | 192.168.191.61                       | 255.255.255.0 | 192.168.191.254 * | 192.168.191.254 * |
| iBox – Car 2                               | 192.168.191.62                       | "             | "                 | "                 |
| iBox – Car 3                               | 192.168.191.63                       | "             | "                 | "                 |
| iBox – Car 4                               | 192.168.191.64                       | "             | "                 | "                 |
| iBox – Car 5                               | 192.168.191.65                       | "             | "                 | "                 |
| iBox – Car 6                               | 192.168.191.66                       | "             | "                 | "                 |
| ...                                        | ...                                  | "             | "                 | "                 |
| iBox – Car 20                              | 192.168.191.80                       | "             | "                 | "                 |
| <b>iView</b>                               | 192.168.191.107 –<br>192.168.191.108 | "             | "                 | "                 |
| <b>iCue</b>                                | 192.168.191.207 –<br>192.168.191.208 | "             | "                 | "                 |
| <b>Group 5 – LAN Network (Blue cables)</b> |                                      |               |                   |                   |
|                                            | <b>IP</b>                            | <b>Subnet</b> | <b>Gateway</b>    | <b>DNS</b>        |
| iBox – Car 1                               | 192.168.191.81                       | 255.255.255.0 | 192.168.191.254 * | 192.168.191.254 * |
| iBox – Car 2                               | 192.168.191.82                       | "             | "                 | "                 |
| iBox – Car 3                               | 192.168.191.83                       | "             | "                 | "                 |
| iBox – Car 4                               | 192.168.191.84                       | "             | "                 | "                 |
| iBox – Car 5                               | 192.168.191.85                       | "             | "                 | "                 |
| iBox – Car 6                               | 192.168.191.86                       | "             | "                 | "                 |

## Reference

|                                            |                                      |               |                   |                   |
|--------------------------------------------|--------------------------------------|---------------|-------------------|-------------------|
| ...                                        | ...                                  | "             | "                 | "                 |
| iBox – Car 20                              | 192.168.191.100                      | "             | "                 | "                 |
| <b>iView</b>                               | 192.168.191.109 –<br>192.168.191.110 | "             | "                 | "                 |
| <b>iCue</b>                                | 192.168.191.209 –<br>192.168.191.210 | "             | "                 | "                 |
| <b>Group 6– LAN Network (Blue cables)</b>  |                                      |               |                   |                   |
|                                            | <b>IP</b>                            | <b>Subnet</b> | <b>Gateway</b>    | <b>DNS</b>        |
| iBox – Car 1                               | 192.168.191.121                      | 255.255.255.0 | 192.168.191.254 * | 192.168.191.254 * |
| iBox – Car 2                               | 192.168.191.122                      | "             | "                 | "                 |
| iBox – Car 3                               | 192.168.191.123                      | "             | "                 | "                 |
| iBox – Car 4                               | 192.168.191.124                      | "             | "                 | "                 |
| iBox – Car 5                               | 192.168.191.125                      | "             | "                 | "                 |
| iBox – Car 6                               | 192.168.191.126                      | "             | "                 | "                 |
| ...                                        | ...                                  | "             | "                 | "                 |
| iBox – Car 20                              | 192.168.191.140                      | "             | "                 | "                 |
| <b>iView</b>                               | 192.168.191.111 –<br>192.168.191.112 | "             | "                 | "                 |
| <b>iCue</b>                                | 192.168.191.211 –<br>192.168.191.212 | "             | "                 | "                 |
| <b>Group 7– LAN Network (Blue cables)</b>  |                                      |               |                   |                   |
|                                            | <b>IP</b>                            | <b>Subnet</b> | <b>Gateway</b>    | <b>DNS</b>        |
| iBox – Car 1                               | 192.168.191.141                      | 255.255.255.0 | 192.168.191.254 * | 192.168.191.254 * |
| iBox – Car 2                               | 192.168.191.142                      | "             | "                 | "                 |
| iBox – Car 3                               | 192.168.191.143                      | "             | "                 | "                 |
| iBox – Car 4                               | 192.168.191.144                      | "             | "                 | "                 |
| iBox – Car 5                               | 192.168.191.145                      | "             | "                 | "                 |
| iBox – Car 6                               | 192.168.191.146                      | "             | "                 | "                 |
| ...                                        | ...                                  | "             | "                 | "                 |
| iBox – Car 20                              | 192.168.191.160                      | "             | "                 | "                 |
| <b>iView</b>                               | 192.168.191.113 –<br>192.168.191.114 | "             | "                 | "                 |
| <b>iCue</b>                                | 192.168.191.213 –<br>192.168.191.214 | "             | "                 | "                 |
| <b>Group 8 – LAN Network (Blue cables)</b> |                                      |               |                   |                   |
|                                            | <b>IP</b>                            | <b>Subnet</b> | <b>Gateway</b>    | <b>DNS</b>        |
| iBox – Car 1                               | 192.168.191.161                      | 255.255.255.0 | 192.168.191.254 * | 192.168.191.254 * |
| iBox – Car 2                               | 192.168.191.162                      | "             | "                 | "                 |
| iBox – Car 3                               | 192.168.191.163                      | "             | "                 | "                 |
| iBox – Car 4                               | 192.168.191.164                      | "             | "                 | "                 |
| iBox – Car 5                               | 192.168.191.165                      | "             | "                 | "                 |
| iBox – Car 6                               | 192.168.191.166                      | "             | "                 | "                 |
| ...                                        | ...                                  | "             | "                 | "                 |
| iBox – Car 20                              | 192.168.191.180                      | "             | "                 | "                 |
| <b>iView</b>                               | 192.168.191.115 –<br>192.168.191.116 | "             | "                 | "                 |
| <b>iCue</b>                                | 192.168.191.215 –<br>192.168.191.216 | "             | "                 | "                 |

| Group 9 – LAN Network (Blue cables) |                                      |               |                   |                   |
|-------------------------------------|--------------------------------------|---------------|-------------------|-------------------|
|                                     | IP                                   | Subnet        | Gateway           | DNS               |
| iBox – Car 1                        | 192.168.191.181                      | 255.255.255.0 | 192.168.191.254 * | 192.168.191.254 * |
| iBox – Car 2                        | 192.168.191.182                      | "             | "                 | "                 |
| iBox – Car 3                        | 192.168.191.183                      | "             | "                 | "                 |
| iBox – Car 4                        | 192.168.191.184                      | "             | "                 | "                 |
| iBox – Car 5                        | 192.168.191.185                      | "             | "                 | "                 |
| iBox – Car 6                        | 192.168.191.186                      | "             | "                 | "                 |
| ...                                 | ...                                  | "             | "                 | "                 |
| iBox – Car 20                       | 192.168.191.200                      | "             | "                 | "                 |
| <b>iView</b>                        | 192.168.191.117 –<br>192.168.191.118 | "             | "                 | "                 |
| <b>iCue</b>                         | 192.168.191.217 –<br>192.168.191.218 | "             | "                 | "                 |

## Note

#1: This parameter may have a site-dependant value depending on the unique DSL service or Internet connection details. The default value shown can be used until a new value is identified. There may be more than one of these values provided.

## Summary

This is a summary of the entire LAN IP address space including MCE supplied equipment and non-MCE supplied equipment.

| LAN Network IP Address Summary Map For Network=192.168.191.*)                                        |                                   |
|------------------------------------------------------------------------------------------------------|-----------------------------------|
|                                                                                                      | IP                                |
| (IEEE non-usable)                                                                                    | 192.168.191.0                     |
| IBox (Groups 1, 2, 3 4, 5)                                                                           | 192.168.191.1 - 192.168.191.100   |
| iView                                                                                                | 192.168.191.101 - 192.168.191.120 |
| IBox (Groups 6, 7, 8, 9)                                                                             | 192.168.191.121 - 192.168.191.200 |
| ICue                                                                                                 | 192.168.191.201 - 192.168.191.220 |
| iMonitor                                                                                             | 192.168.191.221 - 192.168.191.222 |
| With Optional Third-party Access                                                                     |                                   |
| 3 <sup>rd</sup> -Party access address                                                                | 192.168.191.223                   |
| With Optional Firewall / Router / Modem Dial-in                                                      |                                   |
| DHCP addresses /<br>VPN Tunnel addresses /<br>Extra Dial-in addresses /<br>Extra Static IP addresses | 192.168.191.224 - 192.168.191.245 |
| Static IP addresses                                                                                  | 192.168.191.246 - 192.168.191.251 |
| First Dial-in address                                                                                | 192.168.191.252                   |
| MCE Reserved                                                                                         | 192.168.192.253                   |
| Firewall / Router                                                                                    | 192.168.191.254                   |
| (IEEE non-usable)                                                                                    | 192.168.191.255                   |

## Reference

### Summary by Group

Group #1 – Floors ( ) Machine Room Floor ( )

| Group #1 -iBox Direct Connect Port            |                                         |               | “= same as above |                  |
|-----------------------------------------------|-----------------------------------------|---------------|------------------|------------------|
|                                               | IP                                      | Subnet        | Gateway          | DNS              |
| Any iBox                                      | 192.168.193.1                           | 255.255.255.0 | Blank or 0.0.0.0 | Blank or 0.0.0.0 |
| Any PC / Laptop                               | 192.168.193.2                           | “             | “                | “                |
| Group #1 -MCE System Network (Orange cables)  |                                         |               |                  |                  |
| iBox – Car 1                                  | 192.168.192.1                           | “             | “                | “                |
| iBox – Car 2                                  | 192.168.192.2                           | “             | “                | “                |
| iBox – Car 3                                  | 192.168.192.3                           | “             | “                | “                |
| iBox – Car 4                                  | 192.168.192.4                           | “             | “                | “                |
| iBox – Car 5                                  | 192.168.192.5                           | “             | “                | “                |
| iBox – Car 6                                  | 192.168.192.6                           | “             | “                | “                |
| iBox – Car 7                                  | 192.168.192.7                           | “             | “                | “                |
| iBox – Car 8                                  | 192.168.192.8                           | “             | “                | “                |
| iBox – Car 9                                  | 192.168.192.9                           | “             | “                | “                |
| iBox – Car 10                                 | 192.168.192.10                          | “             | “                | “                |
| iBox – Car 11                                 | 192.168.192.11                          | “             | “                | “                |
| iBox – Car 12                                 | 192.168.192.12                          | “             | “                | “                |
| iBox – Car 13                                 | 192.168.192.13                          | “             | “                | “                |
| iBox – Car 14                                 | 192.168.192.14                          | “             | “                | “                |
| iBox – Car 15                                 | 192.168.192.15                          | “             | “                | “                |
| iBox – Car 16                                 | 192.168.192.16                          | “             | “                | “                |
| iBox – Car 17                                 | 192.168.192.17                          | “             | “                | “                |
| iBox – Car 18                                 | 192.168.192.18                          | “             | “                | “                |
| iBox – Car 19                                 | 192.168.192.19                          | “             | “                | “                |
| iBox – Car 20                                 | 192.168.192.20                          | “             | “                | “                |
| <b>iCue</b>                                   | 192.168.192.201<br>–<br>192.168.192.202 | “             | “                | “                |
| <b>Digi Hall Calls<br/>UDP 3000-<br/>3007</b> | 192.168.192.211<br>–<br>192.168.192.214 | “             | “                | “                |

| <b>Group #1 -LAN Network (Blue cables)</b> |                                   |               |                   |                   |
|--------------------------------------------|-----------------------------------|---------------|-------------------|-------------------|
| iBox – Car 1                               | 192.168.191.1                     | 255.255.255.0 | 192.168.191.254 * | 192.168.191.254 * |
| iBox – Car 2                               | 192.168.191.2                     | "             | "                 | "                 |
| iBox – Car 3                               | 192.168.191.3                     | "             | "                 | "                 |
| iBox – Car 4                               | 192.168.191.4                     | "             | "                 | "                 |
| iBox – Car 5                               | 192.168.191.5                     | "             | "                 | "                 |
| iBox – Car 6                               | 192.168.191.6                     | "             | "                 | "                 |
| iBox – Car 7                               | 192.168.191.7                     | "             | "                 | "                 |
| iBox – Car 8                               | 192.168.191.8                     | "             | "                 | "                 |
| iBox – Car 9                               | 192.168.191.9                     | "             | "                 | "                 |
| iBox – Car 10                              | 192.168.191.10                    | "             | "                 | "                 |
| iBox – Car 11                              | 192.168.191.11                    | "             | "                 | "                 |
| iBox – Car 12                              | 192.168.191.12                    | "             | "                 | "                 |
| iBox – Car 13                              | 192.168.191.13                    | "             | "                 | "                 |
| iBox – Car 14                              | 192.168.191.14                    | "             | "                 | "                 |
| iBox – Car 15                              | 192.168.191.15                    | "             | "                 | "                 |
| iBox – Car 16                              | 192.168.191.16                    | "             | "                 | "                 |
| iBox – Car 17                              | 192.168.191.17                    | "             | "                 | "                 |
| iBox – Car 18                              | 192.168.191.18                    | "             | "                 | "                 |
| iBox – Car 19                              | 192.168.191.19                    | "             | "                 | "                 |
| iBox – Car 20                              | 192.168.191.20                    | "             | "                 | "                 |
| <b>iView</b>                               | 192.168.191.101 – 192.168.191.102 | "             | "                 | "                 |
| <b>iCue</b>                                | 192.168.191.201 – 192.168.191.202 | "             | "                 | "                 |

## Reference

Group #2 – Floors ( ) Machine Room Floor ( )

| Group #2 – LAN Network (Blue cables) |                                   |               |                   |                   |
|--------------------------------------|-----------------------------------|---------------|-------------------|-------------------|
| iBox – Car 1                         | 192.168.191.21                    | 255.255.255.0 | 192.168.191.254 * | 192.168.191.254 * |
| iBox – Car 2                         | 192.168.191.22                    | "             | "                 | "                 |
| iBox – Car 3                         | 192.168.191.23                    | "             | "                 | "                 |
| iBox – Car 4                         | 192.168.191.24                    | "             | "                 | "                 |
| iBox – Car 5                         | 192.168.191.25                    | "             | "                 | "                 |
| iBox – Car 6                         | 192.168.191.26                    | "             | "                 | "                 |
| iBox – Car 7                         | 192.168.191.27                    | "             | "                 | "                 |
| iBox – Car 8                         | 192.168.191.28                    | "             | "                 | "                 |
| iBox – Car 9                         | 192.168.191.29                    | "             | "                 | "                 |
| iBox – Car 10                        | 192.168.191.30                    | "             | "                 | "                 |
| iBox – Car 11                        | 192.168.191.31                    | "             | "                 | "                 |
| iBox – Car 12                        | 192.168.191.32                    | "             | "                 | "                 |
| iBox – Car 13                        | 192.168.191.33                    | "             | "                 | "                 |
| iBox – Car 14                        | 192.168.191.34                    | "             | "                 | "                 |
| iBox – Car 15                        | 192.168.191.35                    | "             | "                 | "                 |
| iBox – Car 16                        | 192.168.191.36                    | "             | "                 | "                 |
| iBox – Car 17                        | 192.168.191.37                    | "             | "                 | "                 |
| iBox – Car 18                        | 192.168.191.38                    | "             | "                 | "                 |
| iBox – Car 19                        | 192.168.191.39                    | "             | "                 | "                 |
| iBox – Car 20                        | 192.168.191.40                    | "             | "                 | "                 |
| <b>iView</b>                         | 192.168.191.103 – 192.168.191.104 | "             | "                 | "                 |
| <b>iCue</b>                          | 192.168.191.203 – 192.168.191.204 | "             | "                 | "                 |

Group #3 – Floors (                      ) Machine Room Floor (    )

| Group #3 - LAN Network (Blue cables) |                                      |               |                   |                   |
|--------------------------------------|--------------------------------------|---------------|-------------------|-------------------|
| iBox – Car 1                         | 192.168.191.41                       | 255.255.255.0 | 192.168.191.254 * | 192.168.191.254 * |
| iBox – Car 2                         | 192.168.191.42                       | "             | "                 | "                 |
| iBox – Car 3                         | 192.168.191.43                       | "             | "                 | "                 |
| iBox – Car 4                         | 192.168.191.44                       | "             | "                 | "                 |
| iBox – Car 5                         | 192.168.191.45                       | "             | "                 | "                 |
| iBox – Car 6                         | 192.168.191.46                       | "             | "                 | "                 |
| ...                                  | ...                                  | "             | "                 | "                 |
| iBox – Car 20                        | 192.168.191.60                       | "             | "                 | "                 |
| <b>iView</b>                         | 192.168.191.105 –<br>192.168.191.106 | "             | "                 | "                 |
| <b>iCue</b>                          | 192.168.191.205 –<br>192.168.191.206 | "             | "                 | "                 |

Group 4 – Floors (                      ) Machine Room Floor (    )

| Group #4 - LAN Network (Blue cables) |                                      |               |                   |                   |
|--------------------------------------|--------------------------------------|---------------|-------------------|-------------------|
| iBox – Car 1                         | 192.168.191.61                       | 255.255.255.0 | 192.168.191.254 * | 192.168.191.254 * |
| iBox – Car 2                         | 192.168.191.62                       | "             | "                 | "                 |
| iBox – Car 3                         | 192.168.191.63                       | "             | "                 | "                 |
| iBox – Car 4                         | 192.168.191.64                       | "             | "                 | "                 |
| iBox – Car 5                         | 192.168.191.65                       | "             | "                 | "                 |
| iBox – Car 6                         | 192.168.191.66                       | "             | "                 | "                 |
| ...                                  | ...                                  | "             | "                 | "                 |
| iBox – Car 20                        | 192.168.191.80                       | "             | "                 | "                 |
| <b>iView</b>                         | 192.168.191.107 –<br>192.168.191.108 | "             | "                 | "                 |
| <b>iCue</b>                          | 192.168.191.207 –<br>192.168.191.208 | "             | "                 | "                 |

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## Reference

Group #5 – Floors ( ) Machine Room Floor ( )

| Group #5 - LAN Network (Blue cables) |                                   |               |                   |                   |
|--------------------------------------|-----------------------------------|---------------|-------------------|-------------------|
| iBox – Car 1                         | 192.168.191.81                    | 255.255.255.0 | 192.168.191.254 * | 192.168.191.254 * |
| iBox – Car 2                         | 192.168.191.82                    | "             | "                 | "                 |
| iBox – Car 3                         | 192.168.191.83                    | "             | "                 | "                 |
| iBox – Car 4                         | 192.168.191.84                    | "             | "                 | "                 |
| iBox – Car 5                         | 192.168.191.85                    | "             | "                 | "                 |
| iBox – Car 6                         | 192.168.191.86                    | "             | "                 | "                 |
| ...                                  | ...                               | "             | "                 | "                 |
| iBox – Car 20                        | 192.168.191.100                   | "             | "                 | "                 |
| <b>iView</b>                         | 192.168.191.109 – 192.168.191.110 | "             | "                 | "                 |
| <b>iCue</b>                          | 192.168.191.209 – 192.168.191.210 | "             | "                 | "                 |

Group #6 – Floors ( ) Machine Room Floor ( )

| Group #6 - LAN Network (Blue cables) |                                   |               |                   |                   |
|--------------------------------------|-----------------------------------|---------------|-------------------|-------------------|
| iBox – Car 1                         | 192.168.191.121                   | 255.255.255.0 | 192.168.191.254 * | 192.168.191.254 * |
| iBox – Car 2                         | 192.168.191.122                   | "             | "                 | "                 |
| iBox – Car 3                         | 192.168.191.123                   | "             | "                 | "                 |
| iBox – Car 4                         | 192.168.191.124                   | "             | "                 | "                 |
| iBox – Car 5                         | 192.168.191.125                   | "             | "                 | "                 |
| iBox – Car 6                         | 192.168.191.126                   | "             | "                 | "                 |
| ...                                  | ...                               | "             | "                 | "                 |
| iBox – Car 20                        | 192.168.191.140                   | "             | "                 | "                 |
| <b>iView</b>                         | 192.168.191.111 – 192.168.191.112 | "             | "                 | "                 |
| <b>iCue</b>                          | 192.168.191.211 – 192.168.191.212 | "             | "                 | "                 |

Group #7 – Floors (                      ) Machine Room Floor (    )

| Group #7 - LAN Network (Blue cables) |                                         |               |                   |                   |
|--------------------------------------|-----------------------------------------|---------------|-------------------|-------------------|
| iBox – Car 1                         | 192.168.191.141                         | 255.255.255.0 | 192.168.191.254 * | 192.168.191.254 * |
| iBox – Car 2                         | 192.168.191.142                         | "             | "                 | "                 |
| iBox – Car 3                         | 192.168.191.143                         | "             | "                 | "                 |
| iBox – Car 4                         | 192.168.191.144                         | "             | "                 | "                 |
| iBox – Car 5                         | 192.168.191.145                         | "             | "                 | "                 |
| iBox – Car 6                         | 192.168.191.146                         | "             | "                 | "                 |
| ...                                  | ...                                     | "             | "                 | "                 |
| iBox – Car 20                        | 192.168.191.160                         | "             | "                 | "                 |
| <b>iView</b>                         | 192.168.191.113<br>–<br>192.168.191.114 | "             | "                 | "                 |
| <b>iCue</b>                          | 192.168.191.213<br>–<br>192.168.191.214 | "             | "                 | "                 |

Group #8 – Floors (                      ) Machine Room Floor (    )

| Group #8 - LAN Network (Blue cables) |                                         |               |                   |                   |
|--------------------------------------|-----------------------------------------|---------------|-------------------|-------------------|
| iBox – Car 1                         | 192.168.191.161                         | 255.255.255.0 | 192.168.191.254 * | 192.168.191.254 * |
| iBox – Car 2                         | 192.168.191.162                         | "             | "                 | "                 |
| iBox – Car 3                         | 192.168.191.163                         | "             | "                 | "                 |
| iBox – Car 4                         | 192.168.191.164                         | "             | "                 | "                 |
| iBox – Car 5                         | 192.168.191.165                         | "             | "                 | "                 |
| iBox – Car 6                         | 192.168.191.166                         | "             | "                 | "                 |
| ...                                  | ...                                     | "             | "                 | "                 |
| iBox – Car 20                        | 192.168.191.180                         | "             | "                 | "                 |
| <b>iView</b>                         | 192.168.191.115<br>–<br>192.168.191.116 | "             | "                 | "                 |
| <b>iCue</b>                          | 192.168.191.215<br>–<br>192.168.191.216 | "             | "                 | "                 |

## Reference

Group #9 – Floors (                      ) Machine Room Floor (     )

| Group #9 - LAN Network (Blue cables) |                                      |               |                   |                   |
|--------------------------------------|--------------------------------------|---------------|-------------------|-------------------|
| iBox – Car 1                         | 192.168.191.181                      | 255.255.255.0 | 192.168.191.254 * | 192.168.191.254 * |
| iBox – Car 2                         | 192.168.191.182                      | "             | "                 | "                 |
| iBox – Car 3                         | 192.168.191.183                      | "             | "                 | "                 |
| iBox – Car 4                         | 192.168.191.184                      | "             | "                 | "                 |
| iBox – Car 5                         | 192.168.191.185                      | "             | "                 | "                 |
| iBox – Car 6                         | 192.168.191.186                      | "             | "                 | "                 |
| ...                                  | ...                                  | "             | "                 | "                 |
| iBox – Car 20                        | 192.168.191.200                      | "             | "                 | "                 |
| <b>iView</b>                         | 192.168.191.117 –<br>192.168.191.118 | "             | "                 | "                 |
| <b>iCue</b>                          | 192.168.191.217 –<br>192.168.191.218 | "             | "                 | "                 |

## TORQMAX F5 Drive v3.xx Parameters Table

Enter the settings you make while adjusting into the Field column of the following table.

**Table 9.6 TORQMAX F5 Drive, v3.21 LCD Parameter Settings**

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| Para                                                                                                                                                                    | Name                                     | Setting                                                                                        | Num | Range | Units | Default | Field Setting |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------|------------------------------------------------------------------------------------------------|-----|-------|-------|---------|---------------|
| <b>WARNING: Do not change drive parameters while the elevator is running. Incorrect drive parameter values can cause erratic operation.</b>                             |                                          |                                                                                                |     |       |       |         |               |
| <b>WARNING: Parameters with an asterisk (*) must be set correctly for your specific motor / machine / job. Refer to the adjustment manual for detailed information.</b> |                                          |                                                                                                |     |       |       |         |               |
| <b>CH</b>                                                                                                                                                               | <b>Configuration Handling Parameters</b> |                                                                                                |     |       |       |         |               |
| CH01                                                                                                                                                                    | Default Parameters                       | Off - No action taken                                                                          | 0   | -     | -     | Off     | Off           |
|                                                                                                                                                                         |                                          | <b>Factory Reset</b> -Will load defaults, as created by controller OEM                         | 1   |       |       |         |               |
| CH02                                                                                                                                                                    | Save Parameters                          | Off - No action taken                                                                          | 0   | -     | -     | Off     | Off           |
|                                                                                                                                                                         |                                          | <b>Save to Flash</b> -All current parameter settings are saved to keypad operator flash memory | 1   |       |       |         |               |
|                                                                                                                                                                         |                                          | This function is not available                                                                 | 2   |       |       |         |               |
|                                                                                                                                                                         |                                          | <b>Write to Drive</b> - Current keypad operator settings downloaded to drive                   | 3   |       |       |         |               |

## Reference

**Table 9.6 TORQMAX F5 Drive, v3.21 LCD Parameter Settings**

| Para | Name                  | Setting                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Num         | Range | Units  | Default | Field Setting |
|------|-----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|-------|--------|---------|---------------|
| CH03 | Restore Parameters    | <b>Off</b> - No action taken                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 0           | -     | -      | Off     | Off           |
|      |                       | <b>Restore from Flash</b> - Previously saved parameter settings are restored from internal keypad operator flash                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 1           | -     | -      |         |               |
|      |                       | <b>Load Parameters</b> - Select below MCE config file as per controller Type and AC machine.<br><b>ECLIMGLS.DW5 1828</b> - Element closed loop with Induction Gearless Machine<br><b>ECLIMGRD.DW5 1826</b> - Element closed loop with Induction Geared Machine<br><b>ECLPMGLS.DW5 1833</b> - Element closed loop with PM Gearless Machine<br><b>ECLPMGRD.DW5 1831</b> - Element closed loop with PM Geared Machine<br><b>EOLIMGRD.DW5 1811</b> - Element open loop with Induction Geared Machine<br><b>ICLIMGLS.DW5 1828</b> - iController closed loop with Induction Gearless Machine<br><b>ICLIMGRD.DW5 1826</b> - iController closed loop with Induction Geared Machine<br><b>ICLPMGLS.DW5 1832</b> - iController closed loop with PM Gearless Machine<br><b>ICLPMGRD.DW5 1830</b> - iController closed loop with PM Geared Machine<br><b>IOLIMGRD.DW5 1811</b> - iController open loop with Induction Geared Machine<br><b>MCLIMGLS.DW5 1828</b> - Motion closed loop with Induction Gearless Machine<br><b>MCLIMGRD.DW5 1826</b> - Motion closed loop with Induction Geared Machine<br><b>MCLPMGLS.DW5 1833</b> - Motion closed loop with PM Gearless Machine<br><b>MCLPMGRD.DW5 1831</b> - Motion closed loop with PM Geared Machine<br><b>MOLIMGRD.DW5 1811</b> - Motion open loop with Induction Geared Machine | 2           | -     | -      |         |               |
|      |                       | <b>Restore from Drive</b> - Current drive settings are uploaded from drive to keypad operator                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 3           | -     | -      |         |               |
|      |                       | <b>Load Motor Data</b> - Loads data from .dw5 stored to flash.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 4           | -     | -      |         |               |
|      |                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |             |       |        |         |               |
|      |                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |             |       |        |         |               |
| CH05 | Motor Type            | -                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | -           | 0-76  | -      | -       | -             |
| CH06 | Rope Ratio            | 1:1<br>2:1<br>4:1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 0<br>1<br>2 | -     | -      | 1:1     | -             |
| CH07 | Contract Speed        | See parameter description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | -           | 0-14  | ft/min | -       | -             |
| CH08 | Car Capacity          | See parameter description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | -           | 0-11  | lbs    | -       | -             |
| CH09 | Program the selection | Off<br>Program                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 0<br>1      | -     | -      | Off     | Off           |

**Table 9.6 TORQMAX F5 Drive, v3.21 LCD Parameter Settings**
**9**

| Para      | Name                                         | Setting                                  | Num    | Range             | Units | Default                 | Field Setting           |
|-----------|----------------------------------------------|------------------------------------------|--------|-------------------|-------|-------------------------|-------------------------|
| CH10      | Left LED Function                            | Default Normal Function                  | 0      | -                 | -     | Default Normal Function | Default Normal Function |
|           |                                              | Input Status (Dg01)                      | 1      |                   |       |                         |                         |
|           |                                              | Output Status (Dg11)                     | 2      |                   |       |                         |                         |
|           |                                              | Output Condition Status                  | 3      |                   |       |                         |                         |
|           |                                              | (Dg16) Lift App. Control Word            | 4      |                   |       |                         |                         |
|           |                                              | Inverter Control Word (Sy.50)            | 5      |                   |       |                         |                         |
|           |                                              | Field Bus Control Word                   | 6      |                   |       |                         |                         |
|           |                                              | CAN Bus Control Word Raw Memory Address  | 7<br>8 |                   |       |                         |                         |
| CH11      | Left LED Address                             | -                                        | -      | 0h-7FFFFFFF       | -     | 00000000h               | 00000000h               |
| CH12      | Left LED Bit Number                          | -                                        | -      | 0h-7FFFFFFF       | -     | 00000000h               | 00000000h               |
| CH13      | Right LED Function                           | Same as CH10                             | -      | 0h-7FFFFFFF       | -     | Default Normal Function | Default Normal Function |
| CH14      | Right LED Address                            | -                                        | -      | 0h-7FFFFFFF       | -     | 00000000h               | 00000000h               |
| CH15      | Right LED Bit Number                         | -                                        | -      | 0h-7FFFFFFF       | -     | 00000000h               | 00000000h               |
| <b>DG</b> | <b>Diagnostic Parameters (Combivis Only)</b> |                                          |        |                   |       |                         |                         |
| DG01      | Input Status                                 | None                                     | 0      | 0-255             | -     | -                       | -                       |
|           |                                              | I7                                       | 1      |                   |       |                         |                         |
|           |                                              | I8                                       | 2      |                   |       |                         |                         |
|           |                                              | I5                                       | 4      |                   |       |                         |                         |
|           |                                              | I6                                       | 8      |                   |       |                         |                         |
|           |                                              | I1                                       | 16     |                   |       |                         |                         |
|           |                                              | I2                                       | 32     |                   |       |                         |                         |
|           |                                              | I3                                       | 64     |                   |       |                         |                         |
|           |                                              | I4                                       | 128    |                   |       |                         |                         |
| DG02      | Inverter Status                              | See Section 6.16 of the KEB User Manual. | -      | 0-255             | -     | -                       | -                       |
| DG03      | Command Speed                                | Geared                                   | -      | -4000- 4000       | RPM   | 0                       | -                       |
|           |                                              | Gearless                                 | -      | -500.0- 500.0     |       | 0.0                     | -                       |
| DG04      | Elevator Position                            | -                                        | -      | -12000.0- 12000.0 | in.   | 0.00                    | -                       |
| DG05      | Actual Torque                                | Geared                                   | -      | -2214.0- 2214.0   | lb-ft | 0.0                     | -                       |
|           |                                              | Gearless                                 | -      | -22140- 22140     | lb-ft | 0                       | -                       |
| DG06      | Motor Current                                | -                                        | -      | -3200.0- 3200.0   | Amps  | 0.0                     | -                       |
| DG07      | Motor Speed                                  | Geared                                   | -      | -4000- 4000       | RPM   | 0                       | -                       |
|           |                                              | Gearless                                 | -      | -500.0- 500.0     | RPM   | 0.0                     | -                       |
| DG08      | DC Bus Voltage                               | -                                        | -      | 0-1000            | Volts | 0                       | -                       |
| DG09      | Magnetizing Current                          | -                                        | -      | -3200.0- 3200.0   | A     | 0.0                     | -                       |

## Reference

**Table 9.6 TORQMAX F5 Drive, v3.21 LCD Parameter Settings**

| Para | Name                   | Setting                                                                                                                      | Num                                            | Range                  | Units           | Default | Field Setting |
|------|------------------------|------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------|------------------------|-----------------|---------|---------------|
| DG10 | Modulation Grade       | -                                                                                                                            | -                                              | 0-110                  | %               | 0       | -             |
| DG11 | Output Status          | None<br>O1<br>O2<br>RLY1<br>RLY2                                                                                             | 0<br>1<br>2<br>4<br>8                          | 0                      | -               | 0       | -             |
| DG16 | Output Condition State | None<br>Condition 0<br>Condition 1<br>Condition 2<br>Condition 3<br>Condition 4<br>Condition 5<br>Condition 6<br>Condition 7 | 0<br>1<br>2<br>4<br>8<br>16<br>32<br>64<br>128 | 0                      | -               | 0       | -             |
| DG17 | Output Frequency       | -                                                                                                                            | -                                              | -400.0-400.0           | Hz              | 0.0     | -             |
| DG18 | Output Voltage         | -                                                                                                                            | -                                              | 0-1000                 | Volts           | 0       | -             |
| DG19 | Parameter Set          | -                                                                                                                            | -                                              | 0-7                    | -               | 0       | -             |
| DG20 | Raw Pattern            | -                                                                                                                            | -                                              | -10.00-10.00           | VDC             | 0.00    | -             |
| DG21 | Processed Pattern      | -                                                                                                                            | -                                              | -10.00-10.00           | VDC             | 0.00    | -             |
| DG30 | Peak DC Volts          | -                                                                                                                            | -                                              | 0-1500                 | Volts           | 0       | -             |
| DG31 | Peak Current           | -                                                                                                                            | -                                              | -3200.0-3200.0         | Amps            | 0.0     | -             |
| DG32 | Peak Speed             | -                                                                                                                            | -                                              | 0-2500                 | ft/min          | 0       | -             |
| DG33 | Raw Pretorque          | -                                                                                                                            | -                                              | -10.00-10.00           | VDC             | 0.00    | -             |
| DG34 | Post Pretorque         | -                                                                                                                            | -                                              | -10.00-10.00           | VDC             | 0.00    | -             |
| DG35 | Analog Output 1        | -                                                                                                                            | -                                              | -10.00-10.00           | VDC             | 0.00    | -             |
| DG36 | Analog Output 2        | -                                                                                                                            | -                                              | -10.00-10.00           | VDC             | 0.00    | -             |
| DG37 | Heatsink Temperature   | -                                                                                                                            | -                                              | 0-120                  | Degrees Celsius | 0       | -             |
| DG38 | Motor Temperature      | -                                                                                                                            | -                                              | 0: T1-T2<br>Closed-150 | Degrees Celsius | 0       | -             |
| DG39 | Carrier Frequency      | 2 kHz<br>4 kHz<br>8 kHz<br>12 kHz<br>16 kHz                                                                                  | 0<br>1<br>2<br>3<br>4                          | 2                      | kHz             | 0       | -             |
| DG40 | Electric Power         | -                                                                                                                            | -                                              | -320.0-320.0           | kW              | 0.0     | -             |
| DG41 | Motor Power            | -                                                                                                                            | -                                              | -320.0-320.0           | kW              | 0.0     | -             |



**Table 9.6 TORQMAX F5 Drive, v3.21 LCD Parameter Settings**

| Para | Name                 | Setting                   | Num | Range       | Units  | Default | Field Setting |
|------|----------------------|---------------------------|-----|-------------|--------|---------|---------------|
| DG42 | Braking Energy       | -                         | -   | 0-65535     | kWh    | 0       | -             |
| DG43 | Power On Counter     | -                         | -   | 0-65535     | hr     | 0       | -             |
| DG44 | Run Time Counter     | -                         | -   | 0-65535     | hr     | 0       | -             |
| DG45 | Overload Counter     | -                         | -   | 0-100       | %      | 0       | -             |
| DG46 | Drive Load           | -                         | -   | 0-500       | %      | 0       | -             |
| DG47 | Peak Load            | -                         | -   | 0-500       | %      | 0       | -             |
| DG50 | Elevator Speed       | -                         | -   | 0-2000      | ft/min | 0       | -             |
| DG51 | Mode                 | See Section 6.16          | -   | 0           | -      | 0       | -             |
| DG52 | Active Profile       | None                      | 0   | 0           | -      | 0       | -             |
|      |                      | Inspection                | 1   |             |        |         |               |
|      |                      | High Speed                | 2   |             |        |         |               |
|      |                      | One Floor                 | 4   |             |        |         |               |
|      |                      | Emergency                 | 8   |             |        |         |               |
|      |                      | Correction                | 16  |             |        |         |               |
| DG53 | Active Speed         | Emergency Slowdown        | 32  | 0           | -      | 0       | -             |
|      |                      | None                      | 0   |             |        |         |               |
|      |                      | Inspection Speed          | 32  |             |        |         |               |
|      |                      | Leveling Speed            | 64  |             |        |         |               |
|      |                      | Correction Speed          | 96  |             |        |         |               |
|      |                      | High Speed                | 128 |             |        |         |               |
|      |                      | Intermediate Speed 1      | 160 |             |        |         |               |
|      |                      | Earthquake Speed          | 256 |             |        |         |               |
|      |                      | Intermediate Speed 2      | 384 |             |        |         |               |
|      |                      | Emergency Generator Speed | 512 | 0           | -      | 0       | -             |
|      |                      | Intermediate Speed 3      | 640 |             |        |         |               |
|      |                      | UPS Speed                 | 768 |             |        |         |               |
| DG54 | Leveling Distance    | -                         | -   | 0.0-18.0    | in     | 0.0     | -             |
| DG55 | Target Floor         | -                         | -   | 0-64        | -      | 0       | -             |
| DG56 | Current Floor        | -                         | -   | 0-64        | -      | 0       | -             |
| DG57 | Next Available Floor | -                         | -   | 0-64        | -      | 0       | -             |
| DG58 | Car Load             | -                         | -   | -100- 100   | %      | 0       | -             |
| DG59 | Brake Release Time   | -                         | -   | 0.00-5.00   | sec    | 0.00    | -             |
| DG60 | Average Regen Power  | -                         | -   | 0.0- 3000.0 | kW     | 0.0     | -             |
| DG61 | Peak Regen Power     | -                         | -   | 0.0- 3000.0 | kW     | 0.0     | -             |
| DG62 | Runs Per Hour        | -                         | -   | 0-500       | -      | 0       | -             |
| DG63 | NTSD Speed 1 Up      | -                         | -   | -           | ft/min | -       | -             |
| DG64 | NTSD Speed 2 Up      | -                         | -   | -           | ft/min | -       | -             |

## Reference

**Table 9.6 TORQMAX F5 Drive, v3.21 LCD Parameter Settings**

| Para      | Name                        | Setting                                                       | Num                   | Range                 | Units  | Default | Field Setting |
|-----------|-----------------------------|---------------------------------------------------------------|-----------------------|-----------------------|--------|---------|---------------|
| DG65      | NTSD Speed 3 Up             | -                                                             | -                     | -                     | ft/min | -       | -             |
| DG66      | NTSD Speed 1 Down           | -                                                             | -                     | -                     | ft/min | -       | -             |
| DG67      | NTSD Speed 2 Down           | -                                                             | -                     | -                     | ft/min | -       | -             |
| DG68      | NTSD Speed 3 Down           | -                                                             | -                     | -                     | ft/min | -       | -             |
| DG69      | Total Runs                  | -                                                             | -                     | -                     | -      | 0       | -             |
| DG70      | Calculated Motor Pole       | -                                                             | -                     | -                     | -      | -       | -             |
| DG71      | Encoder Deviation           | -                                                             | -                     | -                     | -      | -       | -             |
| DG72      | Actual Position             | -                                                             | -                     | -                     | -      | 0       | -             |
| DG73      | Lift App Control Word       | -                                                             | -                     | -                     | -      | -       | -             |
| <b>FB</b> | <b>Field Bus Parameters</b> |                                                               |                       |                       |        |         |               |
| FB01      | Field Bus Control Word      | -                                                             | -                     | 0h-FFFFh              | -      | -       | -             |
| FB02      | Field Bus Speed             | -                                                             | -                     | -32767-32767          | -      | -       | -             |
| FB03      | Field Bus Pretorque         | -                                                             | -                     | -100- 100             | %      | -       | -             |
| FB04      | Field Bus Target Position   | -                                                             | -                     | -214748365+214748365  | -      | -       | -             |
| FB05      | Fb Control Word Mask        | -                                                             | -                     | 0h-FFFFh              | -      | FFFFh   | FFFFh         |
| FB06      | Speed Scale Multiplier      | -                                                             | -                     | 0-65535               | -      | 1       | 1             |
| FB07      | Speed Scale Right Shift     | -                                                             | -                     | 0-15                  | -      | 0       | 0             |
| FB08      | Position Scale Multiplier   | -                                                             | -                     | 0-65535               | -      | 1       | 1             |
| FB09      | Position Scale Right Shift  | -                                                             | -                     | 0-15                  | -      | 0       | 0             |
| FB10      | DIN66019 Fb Node ID         | -                                                             | -                     | 1-128                 | -      | 1       | 1             |
| FB11      | DIN66019 Fb Baud Rate       | 9600 bps<br>19200 bps<br>38400 bps<br>55500 bps<br>115200 bps | 0<br>1<br>2<br>3<br>4 | -                     | -      | 38400   | 3             |
| FB12      | DIN66019 Fb Watchdog        | -                                                             | -                     | 20-1000               | ms     | 50      | 50            |
| FB13      | PDO1 Map Assignment         | -                                                             | -                     | 11810101h - 11COFF04h | -      | -       | 11820104h     |
| FB14      | PDO2 Map Assignment         | -                                                             | -                     | 11810101h - 11COFF04h | -      | -       | 11B10102h     |

**Table 9.6 TORQMAX F5 Drive, v3.21 LCD Parameter Settings**

| Para | Name                  | Setting                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Num                                                                                                                         | Range                 | Units | Default     | Field Setting |
|------|-----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------|-----------------------|-------|-------------|---------------|
| FB15 | PDO3 Map Assignment   | -                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | -                                                                                                                           | 11810101h - 11C0FF04h | -     | -           | 11850102h     |
| FB16 | PDO4 Map Assignment   | -                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | -                                                                                                                           | 11810101h - 11C0FF04h | -     | -           | -             |
| FB17 | PDI1 Map Assignment   | -                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | -                                                                                                                           | 12810102h - 1284FF04h | -     | -           | 12820102h     |
| EB18 | PDI2 Map Assignment   | -                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | -                                                                                                                           | 12810102h - 1284FF04h | -     | -           | 12810102h     |
| FB19 | PDI3 Map Assignment   | -                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | -                                                                                                                           | 12810102h - 1284FF04h | -     | -           | 12830102h     |
| FB20 | PDI4 Map Assignment   | -                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | -                                                                                                                           | 12810102h - 1284FF04h | -     | -           | -             |
| FB21 | Fb Special Function 1 | No Function*<br>UPS Operation*<br>Reduced Torque*<br>Emergency Profile*<br>Emergency Generator Speed*<br>Fault Reset<br>External Fault<br>Brake Release Confirm.<br>Main Contactor Check<br>Earthquake Speed<br>Emergency Slowdown (ESD)<br>Position Selection<br>Position Deviation Reset<br>Teach Value<br>Up Direction<br>Down Direction<br>Speed Selection<br>ETS (Emergency Terminal Slowdown)<br>NTS1 (Normal Terminal Slowdown)<br>NTS2<br>NTS3<br>Inspection Speed<br>*Can be selected together | 0<br>1<br>2<br>4<br>8<br>16<br>17<br>18<br>19<br>20<br>21<br>22<br>23<br>24<br>25<br>26<br>27<br>28<br>29<br>30<br>31<br>32 | -                     | -     | No Function | 1             |
| FB22 | Fb Special Function 2 | Same as FB21                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | -                                                                                                                           | -                     | -     | No Function | 2             |
| FB23 | Fb Special Function 3 | Same as FB21                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | -                                                                                                                           | -                     | -     | No Function | No Function   |
| FB24 | Fb Special Function 4 | Same as FB21                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | -                                                                                                                           | -                     | -     | No Function | 32            |
| FB25 | Fb Special Function 5 | Same as FB21                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | -                                                                                                                           | -                     | -     | No Function | No Function   |
| FB26 | Fb Special Function 6 | Same as FB21                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | -                                                                                                                           | -                     | -     | No Function | No Function   |
| FB27 | Fb Special Function 7 | Same as FB21                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | -                                                                                                                           | -                     | -     | No Function | No Function   |
| FB30 | PDO1 Data             | -                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | -                                                                                                                           | 80000000h - 7FFFFFFFh | -     | -           | -             |

## Reference

**Table 9.6 TORQMAX F5 Drive, v3.21 LCD Parameter Settings**

| Para                            | Name                    | Setting                                                | Num                             | Range                     | Units | Default     | Field Setting |
|---------------------------------|-------------------------|--------------------------------------------------------|---------------------------------|---------------------------|-------|-------------|---------------|
| FB31                            | PDO2 Data               | -                                                      | -                               | 80000000h - 7FFFFFFFh     | -     | -           | -             |
| FB32                            | PDO3 Data               | -                                                      | -                               | 80000000h - 7FFFFFFFh     | -     | -           | -             |
| FB33                            | PDO4 Data               | -                                                      | -                               | 80000000h - 7FFFFFFFh     | -     | -           | -             |
| FB34                            | PDI1 Data               | -                                                      | -                               | 80000000h - 7FFFFFFFh     | -     | -           | -             |
| FB35                            | PDI2 Data               | -                                                      | -                               | 80000000h - 7FFFFFFFh     | -     | -           | -             |
| FB36                            | PDI3 Data               | -                                                      | -                               | 80000000h - 7FFFFFFFh     | -     | -           | -             |
| FB37                            | PDI4 Data               | -                                                      | -                               | 80000000h - 7FFFFFFFh     | -     | -           | -             |
| FB50                            | Temp DIN Com Err. Cnt.  | -                                                      | -                               | 0-65535                   | -     | 0           | 0             |
| FB51                            | Temp DIN Com Err. Serv. | -                                                      | -                               | 0-128                     | -     | 0           | 0             |
| FB52                            | Temp DIN Com Err. Ack.  | -                                                      | -                               | -32768 - 32768            | -     | 0           | 0             |
| FB53                            | Temp DIN Com Err. Val.  | -                                                      | -                               | - 2147483647 - 2147483647 | -     | 0           | 0             |
| FB54                            | RS485 Mode              | Full Duplex<br>Half Duplex                             | -                               | 0-1                       | -     | Full Duplex | Full Duplex   |
| FB55                            | Software Filter         | -                                                      | -                               | 0-255                     | ms    | 0:Off       | 0             |
| <b>LA Analog I/O Parameters</b> |                         |                                                        |                                 |                           |       |             |               |
| LA01                            | AnIn1 Noise Filter      | Off<br>2 ms<br>4 ms<br>8 ms<br>16 ms<br>32 ms<br>64 ms | 0<br>1<br>2<br>3<br>4<br>5<br>6 | -                         | ms    | 16          | <b>16</b>     |
| LA04                            | AnIn1 Dead Band         | -                                                      | -                               | -10.0- +10.0              | %     | 0.0         | 0.0           |
| LA05                            | AnIn1 Gain              | -                                                      | -                               | -200- +200                | %     | 100         | 100           |
| LA06                            | AnIn1 X Offset          | -                                                      | -                               | -100.0- +100.0            | %     | 0.0         | 0.0           |
| LA07                            | AnIn1 Y Offset          | -                                                      | -                               | -100.0- +100.0            | %     | 0.0         | 0.0           |
| LA14                            | AnIn2 Dead Band         | -                                                      | -                               | -10.0- +10.0              | %     | 0.0         | 0.0           |
| LA15                            | AnIn2 Gain              | -                                                      | -                               | -255- +255                | %     | 100         | 100           |
| LA16                            | AnIn2 X Offset          | -                                                      | -                               | -100.0- +100.0            | %     | 0.0         | 0.0           |
| LA17                            | AnIn2 Y Offset          | -                                                      | -                               | -100.0- +100.0            | %     | 0.0         | 0.0           |

**Table 9.6 TORQMAX F5 Drive, v3.21 LCD Parameter Settings**
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| Para                                  | Name                         | Setting                       | Num | Range             | Units | Default                          | Field Setting         |
|---------------------------------------|------------------------------|-------------------------------|-----|-------------------|-------|----------------------------------|-----------------------|
| LA31                                  | AnOut1 Function              | Absolute Actual Speed         | 0   | -                 | -     | Actual Speed                     | 2                     |
|                                       |                              | Absolute Command Speed        | 1   |                   |       |                                  |                       |
|                                       |                              | Actual Speed                  | 2   |                   |       |                                  |                       |
|                                       |                              | Command Speed                 | 3   |                   |       |                                  |                       |
|                                       |                              | Output Voltage                | 4   |                   |       |                                  |                       |
|                                       |                              | DC Bus Voltage                | 5   |                   |       |                                  |                       |
|                                       |                              | Phase Current                 | 6   |                   |       |                                  |                       |
|                                       |                              | Actual Torque                 | 7   |                   |       |                                  |                       |
| LA33                                  | AnOut1 Gain                  | -                             | -   | -2000-<br>+2000   | %     | 100                              | 100                   |
| LA34                                  | AnOut1 X Offset              | -                             | -   | -100.0-<br>+100.0 | %     | 0.0                              | 0.0                   |
| LA35                                  | AnOut1 Y Offset              | -                             | -   | -100.0-<br>+100.0 | %     | 0.0                              | 0.0                   |
| LA36                                  | AnOut2 Function              | Same as LA31                  | -   | -                 | -     | Actual Torque                    | Actual Torque         |
| LA38                                  | AnOut2 Gain                  | -                             | -   | -2000-<br>+2000   | %     | 100                              | 100                   |
| LA39                                  | AnOut2 X Offset              | -                             | -   | -100.0-<br>+100.0 | %     | 0.0                              | 0.0                   |
| LA40                                  | AnOut2 Y Offset              | -                             | -   | -100.0-<br>+100.0 | %     | 0.0                              | 0.0                   |
| <b>LC Control Settings Parameters</b> |                              |                               |     |                   |       |                                  |                       |
| LC01                                  | Control Mode                 | Open Loop V/Hz                | 0   | -                 | -     | Closed Loop<br>Digital Pretorque | (if analog interface) |
|                                       |                              | Open Loop Vector              | 1   |                   |       |                                  | 3                     |
|                                       |                              | Closed Loop FOC               | 2   |                   |       |                                  | (if serial interface) |
|                                       |                              | Closed Loop Analog Pretorque  | 3   |                   |       |                                  | 4                     |
|                                       |                              | Closed Loop Digital Pretorque | 4   |                   |       |                                  |                       |
|                                       |                              | Closed Loop Synth. Pretorque  | 5   |                   |       |                                  |                       |
| LC02                                  | Speed Gain Optimization      | -                             | -   | 0-25              | -     | 0                                | -                     |
| LC03                                  | KP Speed Acceleration        | -                             | -   | 1-50000           | -     | 3000                             | -                     |
| LC04                                  | KP Speed Deceleration        | -                             | -   | 1-50000           | -     | 3000                             | -                     |
| LC05                                  | KP Speed Pretorque           | -                             | -   | 1-50000           | -     | 3000                             | -                     |
| LC08                                  | KI Speed Acceleration        | -                             | -   | 1-25000           | -     | 250                              | -                     |
| LC09                                  | KI Speed Deceleration        | -                             | -   | 1-25000           | -     | 250                              | -                     |
| LC10                                  | KI Speed Pretorque           | -                             | -   | 1-30000           | -     | 500                              | -                     |
| LC11                                  | KI Speed Offset Accel        | -                             | -   | 0-20000           | -     | 3000                             | -                     |
| LC12                                  | KI Speed Offset Deceleration | -                             | -   | 0-20000           | -     | 1000                             | -                     |

## Reference

**Table 9.6 TORQMAX F5 Drive, v3.21 LCD Parameter Settings**

| Para | Name                          | Setting                                                         | Num    | Range        | Units              | Default  | Field Setting |
|------|-------------------------------|-----------------------------------------------------------------|--------|--------------|--------------------|----------|---------------|
| LC13 | Speed for max KI Accel        | -                                                               | -      | 1-50         | ft/min             | 4        | -             |
| LC14 | Speed for min KI Deceleration | -                                                               | -      | 1-200        | ft/min             | 16       | -             |
| LC15 | Speed for max KI Accel        | -                                                               | -      | 1-50         | ft/min             | 8        | -             |
| LC16 | Speed for max KI Deceleration | -                                                               | -      | 1-200        | ft/min             | 24       | -             |
| LC20 | Gain Profile Mode             | Variable Resonant                                               | 0<br>1 | -            | -                  | Variable | -             |
| LC21 | KP Speed Resonance Accel      | -                                                               | -      | 0-5000       | %                  | 50       | -             |
| LC22 | Speed at Resonance Accel      | -                                                               | -      | 1-2000       | ft/min             | 4        | -             |
| LC23 | KP Speed Resonance Decel      | -                                                               | -      | 0-5000       | %                  | 50       | -             |
| LC24 | Speed at Resonance Decel      | -                                                               | -      | 0-2000       | ft/min             | 4        | -             |
| LC25 | KP Speed High                 | -                                                               | -      | 0-400        | -                  | 100      | -             |
| LC30 | Maximum Torque                | Typically set between 200% and 250% (150% during commissioning) | -      | 0-500        | %                  | 150      | -             |
| LC31 | Reduced Maximum Torque        |                                                                 | -      | 0-500        | %                  | 100      |               |
| LC32 | Low Speed Torque Boost        | Induction Geared, Gearless                                      | -      | 025.5        | %                  | 5.0      | -             |
|      |                               | PM Geared, Gearless                                             |        | N/A          |                    |          | -             |
| LC33 | Auto Gain Boost               | Induction Geared, Gearless                                      | -      | 025.5        | -                  | 0.00     | -             |
|      |                               | PM Geared, Gearless                                             | -      | N/A          |                    | N/A      | -             |
| LC34 | Digital Pretorque             | -                                                               | -      | -100.0-100.0 | %                  | 0.0      | 0             |
| LC40 | Acceleration Torque           | -                                                               | -      | 0-12036      | lb-ft              | 0        | 0             |
| LC41 | System Inertia                | Induction Geared, Gearless                                      | -      | 0-65501      | lb-in <sup>2</sup> | 0        | -             |
|      |                               | PM Geared, Gearless                                             | -      | 0.0-1073.7   | lb-yd <sup>2</sup> | 0.0      | -             |

**Table 9.6 TORQMAX F5 Drive, v3.21 LCD Parameter Settings**
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| Para | Name                      | Setting                                                                       | Num | Range      | Units   | Default           | Field Setting |
|------|---------------------------|-------------------------------------------------------------------------------|-----|------------|---------|-------------------|---------------|
| LC42 | FFTC Filter               | Off                                                                           | 0   | -          | Hz      | Off               | -             |
|      |                           | 250 Hz                                                                        | 1   |            |         |                   |               |
|      |                           | 125 Hz                                                                        | 2   |            |         |                   |               |
|      |                           | 63 Hz                                                                         | 3   |            |         |                   |               |
|      |                           | 31 Hz                                                                         | 4   |            |         |                   |               |
|      |                           | 16 Hz                                                                         | 5   |            |         |                   |               |
|      |                           | 8.0 Hz                                                                        | 6   |            |         |                   |               |
|      |                           | 4.0 Hz                                                                        | 7   |            |         |                   |               |
|      |                           | 2.0 Hz                                                                        | 8   |            |         |                   |               |
|      |                           | 1.0 Hz                                                                        | 9   |            |         |                   |               |
| LC43 | FFTC Gain                 | -                                                                             | -   | 0-200      | %       | 0                 | -             |
| LC44 | Torque Command Filter     | Off                                                                           | 0   | -          | Hz      | 2000              | -             |
|      |                           | 2000 Hz                                                                       | 1   |            |         |                   |               |
|      |                           | 1000 Hz                                                                       | 2   |            |         |                   |               |
|      |                           | 500 Hz                                                                        | 3   |            |         |                   |               |
|      |                           | 250 Hz                                                                        | 4   |            |         |                   |               |
|      |                           | 125 Hz                                                                        | 5   |            |         |                   |               |
|      |                           | 63 Hz                                                                         | 6   |            |         |                   |               |
|      |                           | 31 Hz                                                                         | 7   |            |         |                   |               |
| LE   | Encoder Data Parameters   |                                                                               |     |            |         |                   |               |
| LE01 | Encoder 1 Interface (X3A) | -                                                                             | -   | -          | -       | Read-Only         | -             |
| LE02 | Encoder 1 Pulse Number    | For Incle and SinCo<br>=Customer data<br>For Hyper = 1024<br>For Endat = 2048 | -   | 256 -16384 | ppr     | 1024              | -             |
| LE03 | Swap Encoder 1 Channels   | Not Inverted                                                                  | 0   | -          | -       | Not Inverted      | -             |
|      |                           | A-B Swapped                                                                   | 1   |            |         |                   |               |
|      |                           | Inverted Rotation                                                             | 2   |            |         |                   |               |
|      |                           | A-B Swapped & Inv. Rotation                                                   | 3   |            |         |                   |               |
| LE04 | Sample Rate for Encoder 1 | 0.5 ms (2kHz)                                                                 | 0   | -          | ms (Hz) | (4) 8 ms<br>125Hz | -             |
|      |                           | 1 ms (1kHz)                                                                   | 1   |            |         |                   |               |
|      |                           | 2 ms (500Hz)                                                                  | 2   |            |         |                   |               |
|      |                           | 4 ms (250Hz)                                                                  | 3   |            |         |                   |               |
|      |                           | 8 ms (125Hz)                                                                  | 4   |            |         |                   |               |
|      |                           | 16 ms (63Hz)                                                                  | 5   |            |         |                   |               |
|      |                           | 32 ms (31Hz)                                                                  | 6   |            |         |                   |               |
| LE05 | Encoder 1 Multiplier      | 2 for Geared mode                                                             | 2   | 0-13       | -       | 2 Geared          | 2 Geared      |
|      |                           | 8 for Gearless mode                                                           | 8   |            |         | 8 Gearless        | 8 Gearless    |
| LE06 | Encoder 1 Pole Position   | Induction Geared, Gearless                                                    |     | N/A        | -       | N/A               | N/A           |
|      |                           | PM Geared, Gearless                                                           |     | Learned    |         | Learned           | Learned       |
| LE07 | Rotor Detection Mode      | Off                                                                           | 0   | -          | -       | 0                 | 0             |
|      |                           | NOP                                                                           | 1   |            |         |                   |               |
|      |                           | Power On                                                                      | 2   |            |         |                   |               |
|      |                           | NOP+Power On                                                                  | 3   |            |         |                   |               |
|      |                           | After Reset                                                                   | 4   |            |         |                   |               |
|      |                           | NOP+After Reset                                                               | 5   |            |         |                   |               |
|      |                           | Power On+After Reset                                                          | 6   |            |         |                   |               |
|      |                           | NOP+Power On+After Reset                                                      | 7   |            |         |                   |               |



## Reference

**Table 9.6 TORQMAX F5 Drive, v3.21 LCD Parameter Settings**

| Para      | Name                       | Setting                                                                                                      | Num                             | Range                            | Units   | Default      | Field Setting |
|-----------|----------------------------|--------------------------------------------------------------------------------------------------------------|---------------------------------|----------------------------------|---------|--------------|---------------|
| LE08      | Encoder Scaling            | Off<br>Reserved<br>LE02 x LE09 / LE10                                                                        | 0<br>1<br>2                     | -                                | -       | Off          | Off           |
| LE09      | Enc1 Numerator             | -                                                                                                            | -                               | 1-1073741823                     | -       | 1            | 1             |
| LE10      | Enc1 Denominator           | -                                                                                                            | -                               | -1073741823<br>to<br>+1073741823 | -       | 1            | 1             |
| LE11      | Serial Encoder 1 Type      | -                                                                                                            | -                               | N/A                              | N/A     | Read-Only    | -             |
| LE12      | Serial Encoder 1 Status    | -                                                                                                            | -                               | N/A                              | N/A     | Read-Only    | -             |
| LE13      | UVW Enc. Commutation       | PM only<br>(0) = Motor Pairs of Poles                                                                        |                                 | 0                                | -       | 0            | 0             |
| LE14      | Serial Enc1 Selection      | PM only<br>EnDat 2.2<br>BiSS Hengstler Acuro<br>BiSS C-Mode                                                  | 0<br>1<br>2                     | -                                | -       | EnDat 2.2    | EnDat 2.2     |
| LE15      | Encoder 1 PT1 Time         | -                                                                                                            |                                 | 0-255                            | ms      | 0            | 0             |
| LE16      | SSi Data Format            | Binary<br>Gray Scale                                                                                         | 0<br>1                          | -                                | -       | Binary       | Binary        |
| LE17      | SSi Data Resolution        | -                                                                                                            |                                 | 0-13                             |         | 10           | 10            |
| LE31      | Encoder 2 Interface (X3B)- | -                                                                                                            |                                 | -                                | -       | Read-Only    | -             |
| LE32      | Encoder 2 Pulse Number     | -                                                                                                            |                                 | 1-65535                          | ppr     | 1024         | 1024          |
| LE33      | Encoder 2 Rotation         | Not Inverted<br>A-B Swapped<br>Inverted Rotation<br>A-B Swapped & Inv. Rotation                              | 0<br>1<br>2<br>3                | -                                | -       | Not Inverted | Not Inverted  |
| LE34      | Sample Rate for Encoder 2  | 0.5 ms (2kHz)<br>1 ms (1kHz)<br>2 ms (500Hz)<br>4 ms (250Hz)<br>8 ms (125Hz)<br>16 ms (63Hz)<br>32 ms (31Hz) | 0<br>1<br>2<br>3<br>4<br>5<br>6 | -                                | ms (Hz) | 4 (250)      | 4             |
| <b>LI</b> | <b>Input Parameters</b>    |                                                                                                              |                                 |                                  |         |              |               |
| LI01      | Type of Input              | PNP<br>NPN                                                                                                   | 0<br>1                          | -                                | -       | PNP          | PNP           |
| LI02      | Digital Input Filter       | -                                                                                                            | -                               | 10-100                           | msec    | 20           | 20            |

**Table 9.6 TORQMAX F5 Drive, v3.21 LCD Parameter Settings**

| Para | Name                            | Setting                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Num                                                                                                                         | Range | Units | Default                                | Field Setting                                      |
|------|---------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------|-------|-------|----------------------------------------|----------------------------------------------------|
| LI03 | Speed Input Decoding (not used) | US04 Control Type = <u>Binary Speed Selection</u>                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 0<br>1<br>2<br>3                                                                                                            | -     | -     | (0); B (Level -Correct - Inspection)   | 0                                                  |
|      |                                 | US04 Control Type = <u>Digital Speed Selection</u>                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 0<br>4<br>8                                                                                                                 | -     | -     | +D (Level -Correct- High - Inspection) | 0                                                  |
| LI04 | Input 1 Function (I1)           | No Function*<br>UPS Operation*<br>Reduced Torque*<br>Emergency Profile*<br>Emergency Generator Speed*<br>Fault Reset<br>External Fault<br>Brake Release Confirm.<br>Main Contactor Check<br>Earthquake Speed<br>Emergency Slowdown (ESD)<br>Position Selection<br>Position Deviation<br>Reset Teach Value<br>Up Direction<br>Down Direction<br>Speed Selection<br>ETS (Emergency Terminal Slowdown)<br>NTS1 (Normal Terminal Slowdown)<br>NTS2<br>NTS3<br>Inspection Speed Regen Fault<br>*Can be selected together | 0<br>1<br>2<br>4<br>8<br>16<br>17<br>18<br>19<br>20<br>21<br>22<br>23<br>24<br>25<br>26<br>27<br>28<br>29<br>30<br>31<br>32 | -     | -     | No Function                            | (if analog interface) 1<br>(if serial interface) 0 |
| LI05 | Input 2 Function (I2)           | Same as LI04                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | "                                                                                                                           | -     | -     | No Function                            | (if analog) 2<br>(if serial) 0                     |
| LI06 | Input 3 Function (I3)           | Same as LI04                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | "                                                                                                                           | -     | -     | No Function                            | No Function                                        |
| LI07 | Input 4 Function (I4)           | Same as LI04                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | "                                                                                                                           | -     | -     | No Function                            | No Function                                        |
| LI08 | Input 5 Function (I5)           | Same as LI04                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | "                                                                                                                           | -     | -     | No Function                            | (if analog) 25<br>(if serial) 0                    |
| LI09 | Input 6 Function (I6)           | Same as LI04                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | "                                                                                                                           | -     | -     | No Function                            | No Function                                        |
| LI11 | Input 8 Function (I8)           | Same as LI04                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | "                                                                                                                           | -     | -     | No Function                            | (if analog) 16<br>(if serial) 0                    |

## Reference

**Table 9.6 TORQMAX F5 Drive, v3.21 LCD Parameter Settings**

| Para      | Name                         | Setting                           | Num | Range      | Units  | Default                      | Field Setting |
|-----------|------------------------------|-----------------------------------|-----|------------|--------|------------------------------|---------------|
| LI15      | Direction Selection Inputs   | <u>Direction Selection</u>        |     |            |        |                              |               |
|           |                              | Up and Down Inputs                | 0   | -          | -      | (0); Up and Down Inputs      | 0             |
|           |                              | Down Input Only                   | 1   |            |        |                              |               |
|           |                              | Up & Down AND Serial Control Word | 2   |            |        |                              |               |
|           |                              | <u>Brake Function</u>             |     |            |        |                              |               |
|           |                              | Function by Direction Inputs      | 0   | -          | -      | Function by Direction Inputs | 0             |
|           |                              | Function by Speed Selection       | 4   |            |        |                              |               |
| LI16      | Custom Input Decoding        | -                                 | -   | 00000000h  | -      | 00000000h                    | 00000000h     |
| LI20      | Brake Switch Function        | General Reset                     | 0   |            |        |                              |               |
|           |                              | 3 Auto Resets                     | 1   | -          | -      | General Reset                | 0             |
|           |                              | Forced Reset                      | 2   |            |        |                              |               |
| <b>LL</b> | <b>Tune Parameters</b>       |                                   |     |            |        |                              |               |
| LL01      | Motor Tuning                 | Off                               | 0   | -          | -      | Off                          | Off           |
|           |                              | Start                             | 1   |            |        |                              |               |
| LL02      | Tuning Current               | Induction Geared, Gearless        | 0   | N/A        | %      | 100                          | N/A           |
|           |                              | PM Geared, Gearless               | 1   | 10-100     |        |                              | 100           |
| LL05      | SPI                          | Induction Geared, Gearless        | 0   | N/A        | -      | N/A                          | N/A           |
|           |                              | PM Geared, Gearless               | 1   | Off, Start |        | Off                          | Off           |
| LL06      | Encoder Pole Position Learn  | Induction Geared, Gearless        | 0   | N/A        | -      | N/A                          | N/A           |
|           |                              | PM Geared, Gearless               | 1   | Off, Start |        | Off                          | Off           |
| LL07      | Encoder Synchronization      | Off                               | 0   | -          | -      | Off                          | Off           |
|           |                              | Start                             | 1   |            |        |                              |               |
| LL10      | Inertia Learn                | Off                               | 0   | -          | -      | Off                          | Off           |
|           |                              | Start                             | 1   |            |        |                              |               |
| LL15      | Overspeed Test               | Off                               | 0   | -          | -      | Off                          | Off           |
|           |                              | Start                             | 1   |            |        |                              |               |
| LL16      | Overspeed Test Speed         | -                                 |     | 0-2400     | ft/min | 0                            | -             |
| LL17      | Safety Release               | Off                               | 0   | -          | -      | Off                          | Off           |
|           |                              | Start                             | 1   |            |        |                              |               |
| LL18      | NTSD Tune Mode               | Off                               | 0   | -          | -      | Off                          | Off           |
|           |                              | Start                             | 1   |            |        |                              |               |
| <b>LM</b> | <b>Motor Data Parameters</b> |                                   |     |            |        |                              |               |
| LM01      | Motor Power                  | Induction                         | -   | 0.5-299.5  | HP     | 10                           | -             |
|           |                              | PM Read Only                      | -   | 0.5-299.5  | HP     | Calculated                   | -             |
| LM02      | Motor Speed                  | Induction                         | -   | 20-4000    | rpm    | 1164                         | -             |
|           |                              | Induction Gearless                | -   | 20.0-500.0 | rpm    | 100.0                        |               |
|           |                              | PM                                | -   | 400-4000   | rpm    | 1000                         |               |
|           |                              | PM Gearless                       | -   | 20.0-500.0 | rpm    | 100.0                        |               |
| LM03      | Motor Current                | -                                 | -   | 1.0-1000   | Amps   | 1.0                          | -             |
| LM04      | Motor Frequency              | Induction geared/gearless         | -   | 4.0-200.0  | Hz     | 60.0                         | -             |
|           |                              |                                   |     | 4.0-200.0  | Hz     | 50.0                         |               |
|           |                              | PM geared/gearless                | -   | 4.0-200.0  | Hz     | 50.0                         |               |

**Table 9.6 TORQMAX F5 Drive, v3.21 LCD Parameter Settings**
**9**

| Para | Name                              | Setting                       | Num    | Range               | Units          | Default    | Field Setting |
|------|-----------------------------------|-------------------------------|--------|---------------------|----------------|------------|---------------|
| LM05 | Motor Voltage                     | Induction geared/gearless     | -      | 10-32000            | V              | 400        | -             |
|      |                                   | PM geared/gearless            | -      | 10-500              | V              | 100        |               |
| LM06 | Motor Power Factor                | Induction                     | -      | 0.5-1.00            | -              | 0.90       | -             |
| LM07 | Motor Torque                      | Induction Geared, read only   | -      | 0.0-479.7           | lb-ft          | Calculated | -             |
|      |                                   | Induction Gearless, read only | -      | 0.1-4947.0          |                |            |               |
|      |                                   | PM Geared                     | -      | 0.0-479.7           | lb-ft          | 0.0        | -             |
|      |                                   | PM Gearless                   | -      | 0-4797              |                | 0          |               |
| LM08 | Electric Motor Protection         | Off<br>On                     | 0<br>1 | -                   | -              | On         | On            |
| LM09 | Electric Motor Protection Current | Induction Geared, Gearless    | -      | 1.0-1000            | Amps           | 0.90       | -             |
|      |                                   | PM Geared, Gearless           | -      | N/A                 |                | N/A        | N/A           |
| LM10 | Motor Over-heat Temp.             | 140                           | -      | 50-240              | Degree Celsius | 140        | -             |
| LM11 | Peak Motor Current Factor         | PM                            | -      | 100                 | %              | 200        | -             |
| LM20 | Motor Ls                          | Induction Geared, Gearless    | -      | 0.01-655.35         | mH             | 10.00      | -             |
|      |                                   | PM Geared, Gearless           | -      | 0.01-500.00         | mH             | 0.01       | -             |
| LM21 | Motor Rs                          | Induction Geared, Gearless    | -      | 0.000-68.535        | Ohm            | 1.000      | -             |
|      |                                   | PM Geared, Gearless           | -      |                     |                |            |               |
| LM22 | Motor Rr                          | Induction Geared, Gearless    | -      | 0.000-65.535        | Ohm            | 1.000      | -             |
|      |                                   | PM Geared, Gearless           | -      | N/A                 |                | N/A        | N/A           |
| LM23 | Motor Lm                          | Induction Geared, Gearless    | -      | 0.1-3276.7          | mH             | 100.0      | -             |
|      |                                   | PM Geared, Gearless           | -      | N/A                 |                | N/A        | N/A           |
| LM24 | Field Weakening Corner            | Induction Geared, Gearless    | -      | 1-4000              | rpm            | Calculated | -             |
|      |                                   | PM Geared, Gearless           | -      | N/A                 |                | N/A        | N/A           |
| LM25 | Field Weakening Speed             | Induction Geared, Gearless    | -      | 1-4000              | rpm            | Calculated | -             |
|      |                                   | PM Geared, Gearless           | -      | N/A                 |                | N/A        | N/A           |
| LM26 | Motor Ls Max.                     | Induction Geared, Gearless    | -      | 0.01-500.00         | mH             | N/A        | N/A           |
|      |                                   | PM Geared, Gearless           | -      | N/A                 |                | 0.01       | -             |
| LM27 | Motor Inductance Mode             | Induction Geared, Gearless    | -      | N/A                 | -              | N/A        | N/A           |
|      |                                   | PM Geared, Gearless           | -      | Ld <> Lq<br>Ld = Lq | 0<br>1         | Ld <> Lq   | 0             |

## Reference

**Table 9.6 TORQMAX F5 Drive, v3.21 LCD Parameter Settings**

| Para      | Name                           | Setting                                                                                                                                                                                                                                             | Num                                                                                | Range                                                                                                                         | Units      | Default          | Field Setting |
|-----------|--------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------|------------|------------------|---------------|
| LM30      | Motor Control                  | Induction Geared, Gearless                                                                                                                                                                                                                          | 0<br>1<br>2<br>4<br>8<br>10                                                        | Off<br>Motor Model<br>Vmax<br>Regulation<br>Flux Control<br>Flux Proofing<br>Zero Speed<br>Model<br>*Can be selected together | -          | +Vmax Regulation | -             |
|           |                                | PM Geared, Gearless                                                                                                                                                                                                                                 | 0<br>1<br>2                                                                        | Off<br>Motor Model<br>Vmax<br>Regulation<br>*Can be selected together                                                         | -          | +Vmax Regulation | -             |
| LM31      | Vmax Regulation                | 97                                                                                                                                                                                                                                                  | -                                                                                  | 0-110                                                                                                                         | %          | 97               | 97            |
| LM32      | KP Current                     | -                                                                                                                                                                                                                                                   | -                                                                                  | 1-32767                                                                                                                       | -          | Calculated       | -             |
| LM33      | KI Current                     | -                                                                                                                                                                                                                                                   | -                                                                                  | 1-32767                                                                                                                       | -          | Calculated       | -             |
| <b>LN</b> | <b>Machine Data Parameters</b> |                                                                                                                                                                                                                                                     |                                                                                    |                                                                                                                               |            |                  |               |
| LN01      | Traction Sheave Diameter       | -                                                                                                                                                                                                                                                   | -                                                                                  | 3.94-62.99                                                                                                                    | in         | 24.00            | -             |
| LN02      | Gear Reduction Ratio           | <b>Program LN02 = LN05</b> (For iProduct, M4000, and Element)                                                                                                                                                                                       |                                                                                    | -                                                                                                                             | 1.00250.00 | x:1              | 30.00         |
| LN03      | Roping Ratio                   | -                                                                                                                                                                                                                                                   | -                                                                                  | 1-4                                                                                                                           | x:1        | 1                | -             |
| LN04      | Load                           | -                                                                                                                                                                                                                                                   | -                                                                                  | 0-30000                                                                                                                       | lb         | 0                | -             |
| LN05      | Estimated Gear Reduction       | -                                                                                                                                                                                                                                                   | -                                                                                  | 0.00                                                                                                                          | x:1        | Calculated       | -             |
| <b>LO</b> | <b>Output Parameters</b>       |                                                                                                                                                                                                                                                     |                                                                                    |                                                                                                                               |            |                  |               |
| LO01      | Output Inversion               | None<br>/O1<br>/O2<br>/O1 + /O2<br>/RLY1<br>/RLY1 + /O1<br>/RLY1 + /O2<br>/RLY1 + /O1 + /O2<br>/RLY2<br>/RLY2 + /O1<br>/RLY2 + /O2<br>/RLY2 + /O1 + /O2<br>/RLY2 + /RLY1<br>/RLY1 + /RLY2 + /O1<br>/RLY1 + /RLY2 + /O2<br>/RLY1 + /RLY2 + /O1 + /O2 | 0<br>1<br>2<br>3<br>4<br>5<br>6<br>7<br>8<br>9<br>10<br>11<br>12<br>13<br>14<br>15 | -                                                                                                                             | -          | None             | 0             |

**Table 9.6 TORQMAX F5 Drive, v3.21 LCD Parameter Settings**

| Para       | Name                          | Setting                    | Num | Range            | Units | Default       | Field Setting |
|------------|-------------------------------|----------------------------|-----|------------------|-------|---------------|---------------|
| LO05       | Output Function O1            | Off                        | 0   | -                | -     | At Speed      | 2             |
|            |                               | Fault                      | 1   |                  |       |               |               |
|            |                               | Drive Ready                | 2   |                  |       |               |               |
|            |                               | Drive On                   | 3   |                  |       |               |               |
|            |                               | Brake Control              | 4   |                  |       |               |               |
|            |                               | At Speed                   | 5   |                  |       |               |               |
|            |                               | High Speed                 | 6   |                  |       |               |               |
|            |                               | Deceleration Active        | 7   |                  |       |               |               |
|            |                               | Speed for Door Pre-Opening | 8   |                  |       |               |               |
|            |                               | Leveling Zone              | 9   |                  |       |               |               |
|            |                               | Main Contact Control       | 10  |                  |       |               |               |
|            |                               | Motor Overheat             | 11  |                  |       |               |               |
|            |                               | Cabinet Fan On             | 12  |                  |       |               |               |
|            |                               | Condition 1                | 13  |                  |       |               |               |
|            |                               | NTSD Output                | 14  |                  |       |               |               |
| LO10       | Output Function O2            | Same as LO05               | "   | -                | -     | Fault         | 3             |
| LO15       | Output Function RLY1          | Same as LO05               | "   | -                | -     | Off           | 2             |
| LO20       | Output Function RLY2          | Same as LO05               | "   | -                | -     | Brake Control | 3             |
| LO30       | Data Value 1                  | -                          | -   | 1-62             | -     | -             | -             |
| LO31       | Condition 1                   | <                          | 0   | -                | -     | >             | -             |
|            |                               | <=                         | 1   |                  |       |               |               |
|            |                               | =                          | 2   |                  |       |               |               |
|            |                               | >=                         | 3   |                  |       |               |               |
|            |                               | >                          | 4   |                  |       |               |               |
|            |                               | < (AbsVal)                 | 5   |                  |       |               |               |
|            |                               | = (AbsVal)                 | 6   |                  |       |               |               |
| > (AbsVal) | 7                             |                            |     |                  |       |               |               |
| LO32       | Comparison Level 1            | -                          | -   | -32000.0-32000.0 | -     | 0.0           | -             |
| LP         | Positioning Parameters        |                            |     |                  |       |               |               |
| LP01       | Positioning Control           | Off                        | 0   | -                | -     | Off           | Off           |
|            |                               | Posi One Floor             | 1   |                  |       |               |               |
|            |                               | Learn Slowdown             | 2   |                  |       |               |               |
|            |                               | Position Value Reset       | 3   |                  |       |               |               |
| LP02       | Minimum Slowdown Distance     | -                          | -   | 0.00-600.00      | in    | 0.00          | 0.00          |
| LP03       | High Speed Slowdown Dist.     | -                          | -   | 0.00-600.00      | in    | 0.00          | 0.00          |
| LP04       | Short Floor Slowdown Distance | -                          | -   | 0.00-600.00      | in    | 0.00          | 0.00          |
| LP05       | Correction Distance           | -                          | -   | 0.00-25.00       | in    | 0.00          | 0.00          |
| LP06       | Scaling Increments High       | -                          | -   | 0-9999           | -     | 0             | 0             |

## Reference

**Table 9.6 TORQMAX F5 Drive, v3.21 LCD Parameter Settings**

| Para                               | Name                     | Setting                                                                         | Num         | Range       | Units  | Default       | Field Setting |
|------------------------------------|--------------------------|---------------------------------------------------------------------------------|-------------|-------------|--------|---------------|---------------|
| LP07                               | Scaling Increments Low   | -                                                                               | -           | 0-9999      | -      | 0             | 0             |
| LP08                               | Scaling Distance         | -                                                                               | -           | 0.00-600.00 | in     | 0.00          | 0.00          |
| LP10                               | Floor Number             | Not yet implemented                                                             | -           | 1-30        | -      | 1             | 1             |
| LP11                               | Floor Enable             | Not yet implemented<br>Disabled<br>Enabled                                      | 0<br>1      | -           | -      | Disabled      | 0             |
| LP12                               | Floor Position           | Not yet implemented                                                             | -           | 0.0-6553.5  | in     | 0.0           | 0.00          |
| LP13                               | Correction Distance Up   | Not yet implemented                                                             | -           | 0.0-25.0    | in     | 0.0           | 0.00          |
| LP14                               | Correction Distance Down | Not yet implemented                                                             | -           | 0.0-25.0    | in     | 0.0           | 0.00          |
| LP15                               | Max Floor Speed          | Not yet implemented                                                             | -           | 0-1600      | ft/min | 0.0           | 0.00          |
| LP16                               | Floor Label              | Not yet implemented                                                             | -           | 1-65535     | -      | 1             | 1             |
| LP18                               | Leveling Distance        | Not yet implemented                                                             | -           | 0.0-12.0    | in     | 0.0           | 0.00          |
| LP19                               | Re-leveling Distance     | Not yet implemented                                                             | -           | 0.0-3.0     | in     | 0.0           | 0.00          |
| LP20                               | Position Feedback Source | Not yet implemented<br>Motor Encoder<br>Absolute Hoistway Encoder<br>Serial Bus | 0<br>1<br>2 | -           | -      | Motor Encoder | 0             |
| LP21                               | Reference Floor          | Not yet implemented                                                             | -           | 0-30        | -      | 1             | 1             |
| LP22                               | Reference Direction      | Not yet implemented<br>Up<br>Down<br>Up + Down                                  | 0<br>1<br>2 | -           | -      | Up            | 0             |
| LP23                               | Reference Speed          | Not yet implemented                                                             | -           | 0-1600      | ft/min | 0             | 0             |
| <b>LS Speed Profile Parameters</b> |                          |                                                                                 |             |             |        |               |               |
| LS01                               | Leveling Speed           | -                                                                               | -           | 0-25        | ft/min | 4             | 4             |
| LS02                               | High Speed               | (set to Contract Speed)                                                         | -           | 0-1600      | ft/min | 0             | -             |
| LS03                               | Inspection Speed         | (Set to 150 or Contract Speed which ever is less)                               | -           | 0-150       | ft/min | 30            | -             |
| LS04                               | Correction Speed         | -                                                                               | -           | 0-50        | ft/min | 0             | 0             |
| LS05                               | Intermediate Speed 1     | -                                                                               | -           | 0-1600      | ft/min | 0             | 0             |
| LS06                               | Intermediate Speed 2     | -                                                                               | -           | 0-1600      | ft/min | 0             | 0             |
| LS07                               | Intermediate Speed 3     | -                                                                               | -           | 0-1600      | ft/min | 0             | 0             |
| LS08                               | Earthquake Speed         | -                                                                               | -           | 0-150       | ft/min | 0             | 0             |



**Table 9.6 TORQMAX F5 Drive, v3.21 LCD Parameter Settings**

| Para | Name                    | Setting                                          | Num              | Range      | Units               | Default                        | Field Setting |
|------|-------------------------|--------------------------------------------------|------------------|------------|---------------------|--------------------------------|---------------|
| LS09 | Emergency Power Speed   | (set to Contract Speed)                          | -                | 0-1600     | ft/min              | 0                              | -             |
| LS10 | Battery Operation Speed | (Set to 50 or Contract Speed which ever is less) | -                | 0-50       | ft/min              | 50                             | -             |
| LS15 | High Speed Profile      | <u>Profile Setting</u><br>Custom                 | 0                | -          | -                   | (0); Custom + External Profile | 0             |
|      |                         | Medium                                           | 1                |            |                     |                                |               |
|      |                         | Soft                                             | 2                |            |                     |                                |               |
|      |                         | Hard                                             | 3                |            |                     |                                |               |
|      |                         | <u>Profile Source</u><br>External Profile        | 0                |            |                     |                                | 0             |
|      |                         | Internal Profile                                 | 4                |            |                     |                                |               |
| LS16 | One Floor Profile       | Custom<br>Medium<br>Soft<br>Hard                 | 0<br>1<br>2<br>3 | -          | -                   | Custom                         | 0             |
| LS17 | Emergency Profile       | Same as LS16                                     | "                | -          | -                   | Custom                         | 0             |
| LS20 | Acceleration High Speed | -                                                | -                | 0.3-12.00  | ft/sec <sup>2</sup> | 2.30                           | 2.3           |
| LS21 | Start Jerk High Speed   | -                                                | -                | 0.3-32.00  | ft/sec <sup>3</sup> | 2.30                           | 2.30          |
| LS22 | Accel. Jerk High Speed  | -                                                | -                | 0.3-12.00  | ft/sec <sup>3</sup> | 2.30                           | 2.30          |
| LS23 | Deceleration High Speed | -                                                | -                | 0.3-32.00  | ft/sec <sup>2</sup> | 2.30                           | 2.30          |
| LS24 | Decel. Jerk High Speed  | -                                                | -                | 0.3-32.00  | ft/sec <sup>3</sup> | 2.30                           | 2.30          |
| LS25 | Stop Jerk High Speed    | -                                                | -                | 0.3-32.00  | ft/sec <sup>3</sup> | 2.30                           | 2.30          |
| LS27 | High Speed Correction   | -                                                | -                | 00-6.00    | ft/min              | 0.0                            | 0.0           |
| LS30 | Acceleration One Floor  | -                                                | -                | 0.30-12.00 | ft/sec <sup>2</sup> | 3.00                           | 3.00          |
| LS31 | Start Jerk One Floor    | -                                                | -                | 0.30-32.00 | ft/sec <sup>3</sup> | 3.00                           | 3.00          |
| LS32 | Accel. Jerk One Floor   | -                                                | -                | 0.30-32.00 | ft/sec <sup>3</sup> | 3.00                           | 3.00          |
| LS33 | Deceleration One Floor  | -                                                | -                | 0.30-12.00 | ft/sec <sup>2</sup> | 3.00                           | 3.00          |
| LS34 | Decel. Jerk One Floor   | -                                                | -                | 0.30-32.00 | ft/sec <sup>3</sup> | 3.00                           | 3.00          |
| LS35 | Stop Jerk One Floor     | -                                                | -                | 0.30-32.00 | ft/sec <sup>3</sup> | 3.00                           | 3.00          |
| LS37 | Int. Speed 1 Correction | -                                                | -                | 00-6.0     | in                  | 0.0                            | 0.0           |

## Reference

**Table 9.6 TORQMAX F5 Drive, v3.21 LCD Parameter Settings**

| Para      | Name                    | Setting | Num | Range      | Units               | Default | Field Setting |
|-----------|-------------------------|---------|-----|------------|---------------------|---------|---------------|
| LS38      | Int. Speed 2 Correction | -       | -   | 00-6.0     | in                  | 0.0     | 0.0           |
| LS40      | Acceleration Emergency  | -       | -   | 0.30-12.00 | ft/sec <sup>3</sup> | 1.50    | 1.50          |
| LS41      | Start Jerk Emergency    | -       | -   | 0.30-32.00 | ft/sec <sup>3</sup> | 1.50    | 1.50          |
| LS42      | Accel. Jerk Emergency   | -       | -   | 0.30-32.00 | ft/sec <sup>3</sup> | 1.50    | 1.50          |
| LS43      | Deceleration Emergency  | -       | -   | 0.30-12.00 | ft/sec <sup>2</sup> | 1.50    | 1.50          |
| LS44      | Decel. Jerk Emergency   | -       | -   | 0.30-32.00 | ft/sec <sup>3</sup> | 1.50    | 1.50          |
| LS45      | Stop Jerk Emergency     | -       | -   | 0.30-32.00 | ft/sec <sup>3</sup> | 1.50    | 1.50          |
| LS47      | Int. Speed 3 Correction | -       | -   | 0.0-6.0    | in                  | 0.0     | 0.0           |
| LS48      | ESD/ETS Deceleration    | -       | -   | 0.30-12.00 | ft/sec <sup>2</sup> | 4.00    | 4.00          |
| LS49      | ESD/ETS Jerk            | -       | -   | 0.30-32.00 | ft/sec <sup>3</sup> | 4.00    | 4.00          |
| LS50      | Acceleration Inspection | -       | -   | 0.30-12.00 | ft/sec <sup>2</sup> | 2.00    | 2.00          |
| LS51      | Start Jerk Inspection   | -       | -   | 0.30-32.00 | ft/sec <sup>3</sup> | 2.00    | 2.00          |
| LS52      | Accel. Jerk Inspection  | -       | -   | 0.30-32.00 | ft/sec <sup>3</sup> | 2.00    | 2.00          |
| LS53      | Deceleration Inspection | -       | -   | 0.30-12.00 | ft/sec <sup>2</sup> | 2.00    | 2.00          |
| LS54      | Decel. Jerk Inspection  | -       | -   | 0.30-32.00 | ft/sec <sup>3</sup> | 2.00    | 2.00          |
| LS55      | Stop Jerk Inspection    | -       | -   | 0.30-32.00 | ft/sec <sup>3</sup> | 2.00    | 2.00          |
| <b>LT</b> | <b>Timer Parameters</b> |         |     |            |                     |         |               |
| LT01      | Brake Release Delay     | -       | -   | 0.00-1.00  | sec                 | 0.05    | 0.00          |
| LT02      | Control Hold Off        | -       | -   | 0.00-1.00  | sec                 | 0.40    | 0.40          |
| LT03      | Speed Start Delay       | -       | -   | 0.00-3.00  | sec                 | 0.70    | 10.0          |
| LT10      | Brake Drop Delay        | -       | -   | 0.00-1.00  | sec                 | 0.10    | 0.00          |
| LT12      | Current Hold Time       | -       | -   | 0.00-2.00  | sec                 | 0.50    | 00            |
| LT13      | Current Ramp Down Time  | -       | -   | 0.10-0.50  | sec                 | 0.30    | -             |

**Table 9.6 TORQMAX F5 Drive, v3.21 LCD Parameter Settings**

| Para      | Name                                | Setting                                                                                           | Num                                  | Range         | Units  | Default                | Field Setting                                                           |
|-----------|-------------------------------------|---------------------------------------------------------------------------------------------------|--------------------------------------|---------------|--------|------------------------|-------------------------------------------------------------------------|
| <b>LX</b> | <b>Special Functions Parameters</b> |                                                                                                   |                                      |               |        |                        |                                                                         |
| LX01      | Auto Reset                          |                                                                                                   | -                                    | 0-10          | -      | 5                      | 10                                                                      |
| LX02      | Switching Frequency                 | 8 kHz<br>12 kHz<br>16 kHz                                                                         | 0<br>1<br>2                          | -             | kHz    | 8                      | 8                                                                       |
| LX06      | Function Test                       | Off<br>Fans On                                                                                    | 0<br>1                               | -             | -      | Off                    | Off                                                                     |
| LX08      | Phase Current Check                 | Mag. Current Check<br>Phase Current Check                                                         | 0<br>1                               | -             | -      | Phase Current Check    | 1                                                                       |
| LX09      | Watchdog Time                       | -                                                                                                 | -                                    | Off (0)-10.00 | sec    | 1.00                   | 1.00                                                                    |
| LX10      | EdOH Function                       | Off<br>On                                                                                         | 0<br>1                               | -             | -      | Off                    | Off                                                                     |
| LX11      | Reference Splitting                 | -                                                                                                 | -                                    | 0-127         | msec   | -                      | <b>0 msec</b> If analog interface<br><b>40 msec</b> If Serial interface |
| LX12      | Baud Rate                           | 1200 bps<br>2400 bps<br>4800 bps<br>9600 bps<br>19200 bps<br>38400 bps<br>55500 bps<br>115200 bps | 0<br>1<br>2<br>3<br>4<br>5<br>6<br>7 | -             | bps    | 38400                  | 5                                                                       |
| LX13      | Speed Following Error               | Warning - Digital Output<br>On with Error % Contract Spd<br>On with Error % Command Speed         | 0<br>1<br>2                          | -             | -      | Warning-Digital Output | 1                                                                       |
| LX14      | Speed Difference                    | -                                                                                                 | -                                    | 1-50          | %      | 10                     | 10                                                                      |
| LX15      | Speed for Pre-Opening               | -                                                                                                 | -                                    | 1-100         | ft/min | 59                     | 59                                                                      |
| LX16      | Decel Confirmation Speed            | -                                                                                                 | -                                    | 0-1600        | ft/min | 0                      | 0                                                                       |
| LX17      | ETS Speed                           | -                                                                                                 | -                                    | 0-1600        | ft/min | 0                      | 0                                                                       |
| LX18      | Braking Resistance                  | -                                                                                                 | -                                    | 0.0-200.0     | Ohm    | 0.0                    | -                                                                       |
| LX21      | Unintended Motion                   | Off<br>On                                                                                         | 0<br>1                               | -             | -      | Off                    | Off                                                                     |
| LX22      | Encoder Deviation Value             | -                                                                                                 | -                                    | 0-25000       | -      | 5000                   | 5000                                                                    |
| LX23      | Encoder Deviation Enable            | Off<br>On with Error                                                                              | 0<br>1                               | -             | -      | Off                    | Off                                                                     |

## Reference

**Table 9.6 TORQMAX F5 Drive, v3.21 LCD Parameter Settings**

| Para                                   | Name               | Setting                                                                                                                                                                                                                                                                      | Num                                                  | Range  | Units  | Default                | Field Setting                                                |
|----------------------------------------|--------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------|--------|--------|------------------------|--------------------------------------------------------------|
| <b>TS Terminal Slowdown Parameters</b> |                    |                                                                                                                                                                                                                                                                              |                                                      |        |        |                        |                                                              |
| TS01                                   | NTSD Mode          | External<br>Threshold 1<br>Threshold 2, Binary Encoded<br>Threshold 3, Binary Encoded<br>One switch per threshold                                                                                                                                                            | 0<br>1<br>2<br>3<br>4                                | 0      | -      | External               | 0                                                            |
| TS02                                   | NTSD Target Speed  | -                                                                                                                                                                                                                                                                            | -                                                    | 0-1600 | ft/min | 0                      | 0                                                            |
| TS03                                   | NTSD Speed 1 Up    | -                                                                                                                                                                                                                                                                            | -                                                    | 0-1600 | ft/min | 0                      | 0                                                            |
| TS04                                   | NTSD Speed 2 Up    | -                                                                                                                                                                                                                                                                            | -                                                    | 0-1600 | ft/min | 0                      | 0                                                            |
| TS05                                   | NTSD Speed 3 Up    | -                                                                                                                                                                                                                                                                            | -                                                    | 0-1600 | ft/min | 0                      | 0                                                            |
| TS06                                   | NTSD Speed 1 Down  | -                                                                                                                                                                                                                                                                            | -                                                    | 0-1600 | ft/min | 0                      | 0                                                            |
| TS07                                   | NTSD Speed 2 Down  | -                                                                                                                                                                                                                                                                            | -                                                    | 0-1600 | ft/min | 0                      | 0                                                            |
| TS08                                   | NTSD Speed 3 Down  | -                                                                                                                                                                                                                                                                            | -                                                    | 0-1600 | ft/min | 0                      | 0                                                            |
| <b>US Basic Setup Parameters</b>       |                    |                                                                                                                                                                                                                                                                              |                                                      |        |        |                        |                                                              |
| US02                                   | System Units       | m/sec<br>ft/min                                                                                                                                                                                                                                                              | 0<br>1                                               | -      | ft/min | ft/min                 | 1                                                            |
| US03                                   | Motor Type         | Induction Geared<br>Induction Gearless<br>PM Synchronous Geared PM<br>Synchronous Gearless                                                                                                                                                                                   | 0<br>1<br>2<br>3                                     | -      | -      | Induction Geared       | -                                                            |
| US04                                   | Control Type       | Digital Speed Selection<br>Binary Speed Selection<br>Absolute Analog Speed<br>Bi-Polar Analog Speed<br>Serial Spd DIN66019, Serv.49<br>Serial Spd DIN66019, Serv.50<br>Serial Binary Spd DIN66019, Serv.50                                                                   | 0<br>1<br>2<br>3<br>4<br>5<br>6                      | -      | -      | Binary Speed Selection | 3<br>(if analog interface)<br><br>5<br>(if serial interface) |
| US05                                   | Load Configuration | Not Configured<br>Configuration OK<br>Write Config. to Drive<br>Read Config. from Drive<br>Write Config. to Flash<br>Read Config. from Flash<br>Write Config. to SD Card<br>Read Config. from SD Card<br>Create OEM Defaults<br>Restore OEM Defaults<br>Restore KEB Defaults | 0<br>1<br>2<br>3<br>4<br>5<br>6<br>7<br>8<br>9<br>10 | -      | -      | Not Configured         | -                                                            |
| US06                                   | Contract Speed     | m/s<br>ft/min                                                                                                                                                                                                                                                                | 0<br>1                                               | 0-1600 | ft/min | ft/min                 | -                                                            |

## Quattro DC Drive DC Parameters Quick Reference

This section includes quick reference information for the Quattro DC Drive parameters. Please refer to the Quattro DC Elevator Drive Technical Manual provided with the drive for a detailed explanation.

**Table 9.7 Quattro DC Drive Parameters Quick Reference**
**9**

| Menu | Parameter        | Units             | Range           | Default | Factory Setting |
|------|------------------|-------------------|-----------------|---------|-----------------|
| A1   | CONTRACT CAR SPD | fpm               | 0.0 – 1500.0    | 100.0   | * _____         |
|      |                  | m/s               | 0.000 – 8.000   | 2.000   |                 |
| A1   | CONTRACT MTR SPD | RPM               | 30.0 – 3000.0   | 50.0    | * _____         |
| A1   | RESPONSE         | rad/sec           | 1.0 – 20.0      | 5.0     | 1.0             |
| A1   | INERTIA          | sec               | 0.25 – 50.00    | 2.00    | 2.00            |
| A1   | INNER LOOP XOVER | rad/sec           | 0.1 – 20.0      | 2.0     | 1.0             |
| A1   | CURRENT LIMIT    | %                 | 0.0 – 275.0     | 250.0   | 250.0           |
| A1   | GAIN REDUCE MULT | %                 | 10 – 100        | 100     | 100             |
| A1   | GAIN CHNG LEVEL  | % of rated spd    | 0.0 – 100.0     | 100.0   | 100.0           |
| A1   | TACH FILTER BW   | rad/sec           | 1 – 100         | 100     | 100             |
| A1   | TACH RATE GAIN   | none              | 0.0 – 30.0      | 0.0     | 0.0             |
| A1   | SPD PHASE MARGIN | degrees           | 45 – 90         | 80      | 80              |
| A1   | RAMPED STOP TIME | sec               | 0.00 – 2.50     | 0.20    | 0.20            |
| A1   | CONTACT FLT TIME | sec               | 0.10 – 5.00     | 0.50    | 0.50            |
| A1   | BRAKE PICK TIME  | sec               | 0.00 – 5.00     | 1.00    | 1.00            |
| A1   | BRAKE HOLD TIME  | sec               | 0.00 – 5.00     | 0.50    | 0.50            |
| A1   | OVERSPEED LEVEL  | % of contract spd | 90.0 – 150.0    | 115.0   | 115.0           |
| A1   | OVERSPEED TIME   | sec               | 0.00 – 9.99     | 0.10    | 1.00            |
| A1   | OVERSPEED MULT   | %                 | 100.0 – 150.0   | 125.0   | 125.0           |
| A1   | ENCODER PULSES   | PPR               | 600 – 20000     | 5000    | * _____         |
| A1   | ENC RATIO MULT   | none              | 0.001 – 32.000  | 1.000   | 1.000           |
| A1   | SPD DEV LO LEVEL | % of contract spd | 0.1 – 20.0      | 10.0    | 10.0            |
| A1   | SPD DEV TIME     | sec               | 0.00 – 9.99     | 0.50    | 1.50            |
| A1   | SPD DEV HI LEVEL | % of contract spd | 0.0 – 99.9      | 10.0    | 10.0            |
| A1   | SPD COMMAND BIAS | volts             | 0.00 – 6.00     | 0.00    | 0.00            |
| A1   | SPD COMMAND MULT | none              | 0.90 – 5.00     | 1.00    | 1.00            |
| A1   | EXT TORQUE BIAS  | volts             | -6.00 – +6.00   | 0.00    | 0.00            |
| A1   | EXT TORQUE MULT  | none              | -10.00 – +10.00 | 1.00    | 1.00            |
| A1   | PRE TORQUE TIME  | sec               | 0.00 – 10.00    | 0.00    | ?               |
| A1   | ZERO SPEED LEVEL | % of contract spd | 0.00 – 99.99    | 1.00    | 1.00            |
| A1   | ZERO SPEED TIME  | sec               | 0.00 – 9.99     | 0.10    | 0.10            |
| A1   | UP/DWN THRESHOLD | % of contract spd | 0.00 – 9.99     | 1.00    | 1.00            |
| A1   | ANA 1 OUT OFFSET | %                 | -99.9 – +99.9   | 0.0     | 0.0             |
| A1   | ANA 2 OUT OFFSET | %                 | -99.9 – +99.9   | 0.0     | 0.0             |
| A1   | ANA 1 OUT GAIN   | none              | 0.0 – 10.0      | 1.0     | 1.0             |
| A1   | ANA 2 OUT GAIN   | none              | 0.0 – 10.0      | 1.0     | 1.0             |
| A1   | FLT RESET DELAY  | sec               | 0 – 120         | 5       | 5               |
| A1   | FLT RESETS/HOUR  | faults            | 0 – 10          | 3       | 3               |
| A1   | UP TO SPD. LEVEL | % of contract spd | 0.00 – 110.00   | 90.00   | 90.00           |
| A1   | RUN DELAY TIMER  | sec               | 0.00 – 0.99     | 0.00    | 0.00            |
| A1   | AB ZERO SPD LEV  | %                 | 0.00 – 2.00     | 1.00    | 1.00            |
| A1   | AB OFF DELAY     | sec               | 0.00 – 9.99     | 0.00    | 0.00            |
| A1   | CONTACTOR DO DLY | sec               | 0.00 – 5.00     | 0.00    | 0.00            |
| A1   | TRQ LIM MSG DLY  | sec               | 0.00 – 10.00    | 0.50    | 0.50            |

## Reference

**Table 9.7 Quattro DC Drive Parameters Quick Reference**

|    |                  |      |         |    |    |
|----|------------------|------|---------|----|----|
| A1 | ROLLBACK GAIN    | none | 1 – 99  | 1  | 1  |
| A1 | NOTCH FILTER FRQ | Hz   | 5 – 60  | 20 | 20 |
| A1 | NOTCH FILT DEPTH | %    | 0 – 100 | 0  | 0  |
| A1 | STNDBY FLD TIME  | sec  | 0 – 999 | 5  | 30 |
| A1 | DSPR TIME        | min  | 0 – 500 | 10 | 10 |
| A1 | FullFIdFaultTime | min  | 0 – 99  | 1  | 1  |

| Menu      | Parameter                  | Units             | Range         | Default | Factory Setting |
|-----------|----------------------------|-------------------|---------------|---------|-----------------|
| <b>A2</b> | <b>S-Curves A2 Submenu</b> |                   |               |         |                 |
| A2        | ACCEL RATE 0               | ft/s <sup>2</sup> | 0.00 – 7.99   | 7.99    | 7.99            |
|           |                            | m/s <sup>2</sup>  | 0.000 – 3.999 | 2.000   |                 |
| A2        | DECEL RATE 0               | ft/s <sup>2</sup> | 0.00 – 7.99   | 7.99    | 7.99            |
|           |                            | m/s <sup>2</sup>  | 0.000 – 3.999 | 2.000   |                 |
| A2        | ACCEL JERK IN 0            | ft/s <sup>3</sup> | 0.0 – 29.9    | 0.0     | 0.0             |
|           |                            | m/s <sup>3</sup>  | 0.00 – 9.99   | 0.00    |                 |
| A2        | ACCEL JERK OUT 0           | ft/s <sup>3</sup> | 0.0 – 29.9    | 0.0     | 0.0             |
|           |                            | m/s <sup>3</sup>  | 0.00 – 9.99   | 0.00    |                 |
| A2        | DECEL JERK IN 0            | ft/s <sup>3</sup> | 0.0 – 29.9    | 0.0     | 0.0             |
|           |                            | m/s <sup>3</sup>  | 0.00 – 9.99   | 0.00    |                 |
| A2        | DECEL JERK OUT 0           | ft/s <sup>3</sup> | 0.0 – 29.9    | 0.0     | 0.0             |
|           |                            | m/s <sup>3</sup>  | 0.00 – 9.99   | 0.00    |                 |
| A2        | ACCEL RATE 1               | ft/s <sup>2</sup> | 0.00 – 7.99   | 7.00    | 7.00            |
|           |                            | m/s <sup>2</sup>  | 0.000 – 3.999 | 0.090   |                 |
| A2        | DECEL RATE 1               | ft/s <sup>2</sup> | 0.00 – 7.99   | 3.00    | 3.00            |
|           |                            | m/s <sup>2</sup>  | 0.000 – 3.999 | 0.090   |                 |
| A2        | ACCEL JERK IN 1            | ft/s <sup>3</sup> | 0.0 – 29.9    | 8.0     | 8.0             |
|           |                            | m/s <sup>3</sup>  | 0.00 – 9.99   | 2.40    |                 |
| A2        | ACCEL JERK OUT 1           | ft/s <sup>3</sup> | 0.0 – 29.9    | 8.0     | 8.0             |
|           |                            | m/s <sup>3</sup>  | 0.00 – 9.99   | 2.40    |                 |
| A2        | DECEL JERK IN 1            | ft/s <sup>3</sup> | 0.0 – 29.9    | 8.0     | 8.0             |
|           |                            | m/s <sup>3</sup>  | 0.00 – 9.99   | 2.40    |                 |
| A2        | DECEL JERK OUT 1           | ft/s <sup>3</sup> | 0.0 – 29.9    | 8.0     | 8.0             |
|           |                            | m/s <sup>3</sup>  | 0.00 – 9.99   | 2.40    |                 |
| A2        | ACCEL RATE 2               | ft/s <sup>2</sup> | 0.00 – 7.99   | 3.00    | 3.0             |
|           |                            | m/s <sup>2</sup>  | 0.000 – 3.999 | 0.090   |                 |
| A2        | DECEL RATE 2               | ft/s <sup>2</sup> | 0.00 – 7.99   | 3.00    | 3.0             |
|           |                            | m/s <sup>2</sup>  | 0.000 – 3.999 | 0.090   |                 |
| A2        | ACCEL JERK IN 2            | ft/s <sup>3</sup> | 0.0 – 29.9    | 8.0     | 8.0             |
|           |                            | m/s <sup>3</sup>  | 0.00 – 9.99   | 2.40    |                 |
| A2        | ACCEL JERK OUT 2           | ft/s <sup>3</sup> | 0.0 – 29.9    | 8.0     | 8.0             |
|           |                            | m/s <sup>3</sup>  | 0.00 – 9.99   | 2.40    |                 |
| A2        | DECEL JERK IN 2            | ft/s <sup>3</sup> | 0.0 – 29.9    | 8.0     | 8.0             |
|           |                            | m/s <sup>3</sup>  | 0.00 – 9.99   | 2.40    |                 |
| A2        | DECEL JERK OUT 2           | ft/s <sup>3</sup> | 0.0 – 29.9    | 8.0     | 8.0             |
|           |                            | m/s <sup>3</sup>  | 0.00 – 9.99   | 2.40    |                 |
| A2        | ACCEL RATE 3               | ft/s <sup>2</sup> | 0.00 – 7.99   | 3.00    | 3.0             |
|           |                            | m/s <sup>2</sup>  | 0.000 – 3.999 | 0.090   |                 |
| A2        | DECEL RATE 3               | ft/s <sup>2</sup> | 0.00 – 7.99   | 3.00    | 3.0             |
|           |                            | m/s <sup>2</sup>  | 0.000 – 3.999 | 0.090   |                 |

|    |                  |       |             |      |     |
|----|------------------|-------|-------------|------|-----|
| A2 | ACCEL JERK IN 3  | ft/s3 | 0.0 – 29.9  | 8.0  | 8.0 |
|    |                  | m/s3  | 0.00 – 9.99 | 2.40 |     |
| A2 | ACCEL JERK OUT 3 | ft/s3 | 0.0 – 29.9  | 8.0  | 8.0 |
|    |                  | m/s3  | 0.00 – 9.99 | 2.40 |     |
| A2 | DECEL JERK IN 3  | ft/s3 | 0.0 – 29.9  | 8.0  | 8.0 |
|    |                  | m/s3  | 0.00 – 9.99 | 2.40 |     |
| A2 | DECEL JERK OUT 3 | ft/s3 | 0.0 – 29.9  | 8.0  | 8.0 |

| Menu      | Parameter                       | Units  | Range             | Default | Factory Setting |
|-----------|---------------------------------|--------|-------------------|---------|-----------------|
| <b>A3</b> | <b>Multistep Ref A3 Submenu</b> |        |                   |         |                 |
| A3        | SPEED COMMAND 1                 | ft/min | -3000.0 – +3000.0 | 0.0     | 0.0             |
|           |                                 | m/sec  | -16.000 – +16.000 | 0.000   |                 |
| A3        | SPEED COMMAND 2                 | ft/min | -3000.0 – +3000.0 | 0.0     | 0.0             |
|           |                                 | m/sec  | -16.000 – +16.000 | 0.000   |                 |
| A3        | SPEED COMMAND 3                 | ft/min | -3000.0 – +3000.0 | 0.0     | 0.0             |
|           |                                 | m/sec  | -16.000 – +16.000 | 0.000   |                 |
| A3        | SPEED COMMAND 4                 | ft/min | -3000.0 – +3000.0 | 0.0     | 0.0             |
|           |                                 | m/sec  | -16.000 – +16.000 | 0.000   |                 |
| A3        | SPEED COMMAND 5                 | ft/min | -3000.0 – +3000.0 | 0.0     | 0.0             |
|           |                                 | m/sec  | -16.000 – +16.000 | 0.000   |                 |
| A3        | SPEED COMMAND 6                 | ft/min | -3000.0 – +3000.0 | 0.0     | 0.0             |
|           |                                 | m/sec  | -16.000 – +16.000 | 0.000   |                 |
| A3        | SPEED COMMAND 7                 | ft/min | -3000.0 – +3000.0 | 0.0     | 0.0             |
|           |                                 | m/sec  | -16.000 – +16.000 | 0.000   |                 |
| A3        | SPEED COMMAND 8                 | ft/min | -3000.0 – +3000.0 | 0.0     | 0.0             |
|           |                                 | m/sec  | -16.000 – +16.000 | 0.000   |                 |
| A3        | SPEED COMMAND 9                 | ft/min | -3000.0 – +3000.0 | 0.0     | 0.0             |
|           |                                 | m/sec  | -16.000 – +16.000 | 0.000   |                 |
| A3        | SPEED COMMAND 10                | ft/min | -3000.0 – +3000.0 | 0.0     | 0.0             |
|           |                                 | m/sec  | -16.000 – +16.000 | 0.000   |                 |
| A3        | SPEED COMMAND 11                | ft/min | -3000.0 – +3000.0 | 0.0     | 0.0             |
|           |                                 | m/sec  | -16.000 – +16.000 | 0.000   |                 |
| A3        | SPEED COMMAND 12                | ft/min | -3000.0 – +3000.0 | 0.0     | 0.0             |
|           |                                 | m/sec  | -16.000 – +16.000 | 0.000   |                 |
| A3        | SPEED COMMAND 13                | ft/min | -3000.0 – +3000.0 | 0.0     | 0.0             |
|           |                                 | m/sec  | -16.000 – +16.000 | 0.000   |                 |



## Reference

|    |                  |        |                   |       |     |
|----|------------------|--------|-------------------|-------|-----|
| A3 | SPEED COMMAND 14 | ft/min | -3000.0 – +3000.0 | 0.0   | 0.0 |
|    |                  | m/sec  | -16.000 – +16.000 | 0.000 |     |
| A3 | SPEED COMMAND 15 | ft/min | -3000.0 – +3000.0 | 0.0   | 0.0 |
|    |                  | m/sec  | -16.000 – +16.000 | 0.000 |     |

| Menu      | Parameter                                   | Units   | Range                                          | Default      | Factory Setting  |
|-----------|---------------------------------------------|---------|------------------------------------------------|--------------|------------------|
| <b>A4</b> | <b>Motor Side Power Convert A4 Submenu</b>  |         |                                                |              |                  |
| A4        | ARM INDUCTANCE                              | mH      | 0.01 – 327.67                                  | 15.00        | 129.21           |
| A4        | ARM RESISTANCE                              | ohm     | 0.0001 – 2.9999                                | 0.5000       | 2.5444           |
| A4        | MTR REV VLT LIM                             | %       | 0.01 – 30.00                                   | 12.00        | 2606             |
| A4        | MOTOR FIELD RES                             | ohm     | 0.0 – 3276.7                                   | 9.0          |                  |
| A4        | MOTOR FIELD TC                              | sec     | 0.000 – 32.767                                 | 0.607        |                  |
| A4        | AUTO TUNE MOTOR                             | none    | – Start Autotune?                              | -            |                  |
| A4        | GAIN SELECTION                              | none    | – manual – use<br>saved par – use<br>self tune | MANUAL       | USE SELF<br>TUNE |
| A4        | GAIN BANDWIDTH A                            | rad/sec | 100 – 2000                                     | 500          | 500              |
| A4        | GAIN BANDWIDTH F                            | rad/sec | 1 – 40                                         | 5            | 5                |
| A4        | SPD MODEFLT BW                              | rad/sec | 5 – 110                                        | 100          | 100              |
| A4        | PWM FREQUENCY                               | kHz     | 2.5 – 16.0                                     | 6.0          | 6                |
| A4        | FAN OFF DELAY                               | sec     | 0 – 999                                        | 180          | 180              |
| A4        | MAIN FAN CONTROL                            | none    | – time –<br>temperature                        | TEMPERATURE  | TEMPERATURE      |
| A4        | UV ALARM LEVEL                              | %       | 80 – 99                                        | 90           | 90               |
| A4        | UV FAULT LEVEL                              | %       | 50 – 99                                        | 80           | 80               |
| A4        | FLD CARRIER FRQ                             | kHz     | 3 – 40                                         | 3            | 3                |
| <b>A5</b> | <b>Line Side Power converter A5 Submenu</b> |         |                                                |              |                  |
| A5        | Id REG PROP GAIN                            | none    | 0.00 – 9.99                                    | 0.30         | 0.30             |
| A5        | Id REG INTGRL GAIN                          | none    | 0 – 999                                        | 10           | 10               |
| A5        | Iq REG PROP GAIN                            | none    | 0.00 – 9.99                                    | 0.30         | 0.30             |
| A5        | Iq REG INTGRL GAIN                          | none    | 0 – 999                                        | 40           | 40               |
| A5        | DC BUS REG P GAIN                           | none    | 0.00 – 9.99                                    | 3.00         | 3.00             |
| A5        | DC BUS REG I GAIN                           | none    | 0 – 999                                        | 40           | 40               |
| A5        | INPUT L-L VOLTS                             | volts   | 150 – 552                                      | 200          | 480              |
| A5        | INITIAL L FREQ                              | Hz      | 50 – 60                                        | 55           |                  |
| A5        | DC BUS V BOOST                              | volts   | 15 – 75                                        | 30           | 30               |
| A5        | SW BUS OV LEVEL                             | volts   | 100 – 850                                      | 850          | 850              |
| A5        | BUS VREF SOURCE                             | none    | – track line v – trk<br>vin param              | TRACK LINE V | TRACK LINE V     |
| A5        | PLL FILTER FC                               | Hz      | 20.0 – 150.0                                   | 40.0         | 40.0             |
| A5        | POLE FILTER                                 | kHz     | 0.0 – 3.0                                      | 2.2          |                  |
| A5        | PRE CHGE THRESH                             | none    | 1 – 60                                         | 28           | 28               |
| A5        | LS PWM FREQUENCY                            | kHz     | 8.0 – 12.0                                     | 10.0         | 10.0             |

| Menu      | Parameter                              | Units | Range                                                                                                                                | Default       | Factory Setting |
|-----------|----------------------------------------|-------|--------------------------------------------------------------------------------------------------------------------------------------|---------------|-----------------|
| <b>A6</b> | <b><i>Motor A6 Submenu</i></b>         |       |                                                                                                                                      |               |                 |
| A6        | MOTOR ID                               | none  | -                                                                                                                                    | -             |                 |
| A6        | RATED MOTOR CURR                       | amps  | 1.0 – 400.0                                                                                                                          | 0.0           | 53              |
| A6        | ARMATURE VOLTAGE                       | volts | 55 – 600                                                                                                                             | 0             | 375             |
| A6        | FULL FLD CURRENT                       | amps  | 1.0 – 40.0                                                                                                                           | 0.0           | 13.0            |
| A6        | WEAK FLD CURRENT                       | amps  | 1.0 – 40.0                                                                                                                           | 0.0           | 10.4            |
| A6        | STANDBY FIELD                          | amps  | 0.0 – 40.0                                                                                                                           | 0.0           | 3.0             |
| A6        | FLUX CONFIRM LEV                       | %     | 25.0 – 99.0                                                                                                                          | 85.0          | 55.0            |
| A6        | ARMATURE IR DROP                       | %     | 0.0 – 25.0                                                                                                                           | 0.0           | 6.0             |
| A6        | TACH VOLT SENSE                        | %     | 0.1 – 60.0                                                                                                                           | 25.0          | 25.0            |
| A6        | TACH SPEED SENSE                       | %     | 0.1 – 40.0                                                                                                                           | 5.0           | 5.0             |
| A6        | OVLDT START LEVEL                      | %     | 100 – 150                                                                                                                            | 110           | 110             |
| A6        | OVLDT TIME OUT                         | sec   | 5.0 – 120.0                                                                                                                          | 60.0          | 60.0            |
| A6        | SAVE MEAS ARM L                        | mH    | 0.00 – 327.67                                                                                                                        | 0.00          | 121.6           |
| A6        | SAVE IR DROP                           | %     | 0.0 – 3276.7                                                                                                                         | 0.0           | 35.2            |
| A6        | SAVE MEAS ARM R                        | ohm   | 0.0000 – 3.2767                                                                                                                      | 0.0000        | 2.5029          |
| A6        | SAVE FIELD RES                         | ohm   | 0.0 – 3276.7                                                                                                                         | 0.00          | 13.2            |
| A6        | SAVE FIELD TC                          | sec   | 0.000 – 32.767                                                                                                                       | 0.000         | 0.440           |
| <b>C1</b> | <b><i>User Switches C1 Submenu</i></b> |       |                                                                                                                                      |               |                 |
| C1        | SPD COMMAND SRC                        | none  | <ul style="list-style-type: none"> <li>- serial</li> <li>- multi-step</li> <li>- ser mult step</li> <li>- analog input</li> </ul>    | MULTI-STEP    | ANALOG INPUT    |
| C1        | RUN COMMAND SRC                        | none  | <ul style="list-style-type: none"> <li>- external tb</li> <li>- serial</li> <li>- serial+extrn</li> </ul>                            | EXTERNAL TB   | EXTERNAL TB     |
| C1        | FIELD ENA SOURCE                       | none  | <ul style="list-style-type: none"> <li>- external tb</li> <li>- serial</li> <li>- enable on run</li> <li>- 2-bit serial</li> </ul>   | ENABLE ON RUN | ENABLE ON RUN   |
| C1        | HI/LO GAIN SRC                         | none  | <ul style="list-style-type: none"> <li>- internal</li> <li>- external tb</li> <li>- serial</li> </ul>                                | INTERNAL      | INTERNAL        |
| C1        | SPEED REG TYPE                         | none  | <ul style="list-style-type: none"> <li>- elev spd reg</li> <li>- pi speed reg</li> <li>- external reg</li> <li>- cemf reg</li> </ul> | ELEV SPD REG  | ELEV SPD REG    |
| C1        | MOTOR ROTATION                         | none  | <ul style="list-style-type: none"> <li>- forward</li> <li>- reverse</li> </ul>                                                       | FORWARD       | FORWARD         |
| C1        | ENCODER CONNECT                        | none  | <ul style="list-style-type: none"> <li>- forward</li> <li>- reverse</li> </ul>                                                       | FORWARD       | FORWARD         |
| C1        | SPD REF RELEASE                        | none  | <ul style="list-style-type: none"> <li>- reg release</li> <li>- brake picked</li> </ul>                                              | REG RELEASE   | REG RELEASE     |
| C1        | CONT CONFIRM SRC                       | none  | <ul style="list-style-type: none"> <li>- external tb</li> <li>- none</li> </ul>                                                      | NONE          | NONE            |
| C1        | TACH FILTER                            | none  | <ul style="list-style-type: none"> <li>- off</li> <li>- on</li> </ul>                                                                | OFF           | OFF             |
| C1        | PreTorque SOURCE                       | none  | <ul style="list-style-type: none"> <li>- none</li> <li>- analog input</li> <li>- serial</li> </ul>                                   | NONE          | NONE            |
| C1        | PreTorque LATCH                        | none  | <ul style="list-style-type: none"> <li>- latched</li> <li>- not latched</li> </ul>                                                   | NOT LATCHED   | NOT LATCHED     |
| C1        | PTorq LATCH CLCK                       | none  | <ul style="list-style-type: none"> <li>- external tb</li> <li>- serial</li> </ul>                                                    | EXTERNAL TB   | EXTERNAL TB     |

## Reference

| Menu                              | Parameter            | Units                                | Range                                       | Default       | Factory Setting |
|-----------------------------------|----------------------|--------------------------------------|---------------------------------------------|---------------|-----------------|
| C1                                | FAULT RESET SRC      | none                                 | -- external tb<br>-- serial<br>-- automatic | EXTERNAL TB   | EXTERNAL TB     |
| C1                                | OVERSPD TEST SRC     | none                                 | -- external tb                              | EXTERNAL TB   | EXTERNAL TB     |
| C1                                | BRAKE PICK SRC       | none                                 | -- external tb<br>-- serial                 | EXTERNAL TB   | EXTERNAL TB     |
| C1                                | BRAKE PICK CNFM      | none                                 | - none<br>- external tb<br>- internal time  | NONE          | NONE            |
| C1                                | BRAKE HOLD SRC       | none                                 | -- internal<br>-- serial                    | INTERNAL      | INTERNAL        |
| C1                                | RAMPED STOP SEL      | none                                 | -- none<br>-- ramp on stop                  | NONE          | NONE            |
| C1                                | RAMP DOWN EN SRC     | none                                 | -- external tb<br>-- run logic<br>-- serial | EXTERNAL TB   | EXTERNAL TB     |
| C1                                | BRK PICK FLT ENA     | none                                 | -- disable<br>-- enable                     | DISABLE       | DISABLE         |
| C1                                | BRK HOLD FLT ENA     | none                                 | -- disable<br>-- enable                     | DISABLE       | DISABLE         |
| C1                                | EXT TORQ CMD SRC     | none                                 | -- none<br>-- serial<br>-- analog input     | NONE          | NONE            |
| C1                                | DIR CONFIRM          | none                                 | -- disable<br>-- enable                     | DISABLE       | DISABLE         |
| C1                                | S-CURVE ABORT        | none                                 | -- disable<br>-- enable                     | DISABLE       | DISABLE         |
| C1                                | PRIORITY MESSAGE     | none                                 | -- disable<br>-- enable                     | ENABLE        | DISABLE         |
| C1                                | STOPPING MODE        | none                                 | -- immediate<br>-- ramp to stop             | IMMEDIATE     | IMMEDIATE       |
| C1                                | AUTO STOP            | none                                 | -- disable<br>-- enable                     | DISABLE       | DISABLE         |
| C1                                | DSPR ENABLE          | none                                 | -- disable<br>-- enable                     | DISABLE       | DISABLE         |
| <b>C2 Logic Inputs C2 Submenu</b> |                      |                                      |                                             |               |                 |
| C2                                | N.C. INPUTS          | None                                 | Hex Number                                  | 0x01          | 001 Hex         |
| C2                                | LOGIC INPUT 1 TB1(1) | -- contact cfirm<br>-- ctr pwr sense | -- ospd test src<br>-- pre-trq latch        | CONTACT CFIRM | CONTACT CFIRM   |
| C2                                | LOGIC INPUT 2 TB1(2) | -- drive enable                      | -- run                                      | CTR PWR SENSE | CTR PWR SENSE   |
| C2                                | LOGIC INPUT 3 TB1(3) | -- extrn fault 1                     | -- run down                                 | NO FUNCTION   | NO FUNCTION     |
| C2                                | LOGIC INPUT 4 TB1(4) | -- extrn fault 2<br>-- extrn fault 3 | -- run up<br>-- s-curve sel -               | DRIVE ENABLE  | DRIVE ENABLE    |
| C2                                | LOGIC INPUT 5 TB1(5) | -- extrn /flt 4                      | -- s-curve sel 1                            | RUN           | NO FUNCTION     |
| C2                                | LOGIC INPUT 6 TB1(6) | -- fault reset<br>-- field enable    | -- ser2insp ena<br>-- step ref b0           | UP/DWN        | RUN             |
| C2                                | LOGIC INPUT 7 TB1(7) | -- low gain sel                      | -- step ref b2                              | STEP REF B0   | NO FUNCTION     |
| C2                                | LOGIC INPUT 8 TB1(8) | -- mech brk hold                     | -- step ref b2                              | STEP REF B1   | NO FUNCTION     |
| C2                                | LOGIC INPUT 9 TB1(9) | -- mech brk pick<br>-- no function   | -- trq ramnp down<br>-- up/dwn              | FAULT RESET   | FAULT RESET     |

| Menu      | Parameter                                                                   | Units           | Range           | Default       | Factory Setting |
|-----------|-----------------------------------------------------------------------------|-----------------|-----------------|---------------|-----------------|
| <b>C3</b> | <b>Logic Outputs C3 Submenu</b>                                             |                 |                 |               |                 |
| C3        | LOGIC OUTPUT 1 TB1(25)                                                      | – alarm         | – no function   | CLOSE CONTACT | CLOSE CONTACT   |
| C3        | LOGIC OUTPUT 2 TB1(26)                                                      | – alarm+flt     | – not alarm     | RUN COMMANDED | RUN COMMAND     |
| C3        | LOGIC OUTPUT 3 TB1(27)                                                      | – auto brake    | – over curr flt | MTR OVERLOAD  | MTR OVERLOAD    |
| C3        | LOGIC OUTPUT 4 TB1(28)                                                      | – brake hold    | – overspeed flt | ENCODER FLT   | ENCODER FLT     |
| C3        | LOGIC OUTPUT 5 TB1(29)                                                      | – brake pick    | – overtemp flt  | FAULT         | FAULT           |
| C3        | LOGIC OUTPUT 6 TB1(30)                                                      | – brk hold flt  | – overvolt flt  | SPEED REG RLS | SPEED REG RLS   |
| C3        | LOGIC OUTPUT 7 TB1(31)                                                      | – brk pick flt  | – ovrtemp alarm | SPEED REG RLS | SPEED REG RLS   |
| C3        | SSR1 TB1(21/22)                                                             | – car going dwn | – phase fault   | NO FUNCTION   | READY TO RUN    |
| C3        | SSR2 TB1(23/24)                                                             | – car going up  | – ramp down ena | NO FUNCTION   | SPEED REG RLS   |
| C3        | RELAY COIL 1 TB2 (1/3/5)                                                    | – charge fault  | – ready 2 start | NO FUNCTION   | READ 2 START    |
| C3        | RELAY COIL 2 TB2 (8/10/12)                                                  | – close contact | – ready to run  | NO FUNCTION   | FLUX CONFIRM    |
|           |                                                                             | – contactor flt | – regen trq lim |               |                 |
|           |                                                                             | – curr reg flt  | – run commanded |               |                 |
|           |                                                                             | – drv overload  | – run confirm   |               |                 |
|           |                                                                             | – encoder flt   | – speed dev     |               |                 |
|           |                                                                             | – fault         | – speed dev low |               |                 |
|           |                                                                             | – flux confirm  | – speed ref rls |               |                 |
|           |                                                                             | – ground fault  | – speed reg rls |               |                 |
|           |                                                                             | – in low gain   | – undervolt flt |               |                 |
|           |                                                                             | – motor trq lim | – up to speed   |               |                 |
|           |                                                                             | – mtr overload  | – uv alarm      |               |                 |
|           |                                                                             | – no faults     | – zero speed    |               |                 |
| <b>C4</b> | <b>Analog Outputs C4 Submenu – See Analog Outputs C4 submenu on page 70</b> |                 |                 |               |                 |
| C4        | ANA OUT 1 TB1-12                                                            | – analog addr2  | – pretorque ref | SPEED REF     | SPEED REF       |
| C4        | ANA OUT 2 TB1-13                                                            | – analog addr3  | – motor mode    | SPEED FEEDBK  | SPEED FEEDBK    |
|           |                                                                             | – arm current   | – spd rg tq cmd |               |                 |
|           |                                                                             | – arm voltage   | – speed command |               |                 |
|           |                                                                             | – aux torq cmd  | – speed error   |               |                 |
|           |                                                                             | – bus voltage   | – speed feedbk  |               |                 |
|           |                                                                             | – est motor spd | – speed ref     |               |                 |
|           |                                                                             | – field current | – tach rate cmd |               |                 |
|           |                                                                             | – iarm error    | – tach speed    |               |                 |
|           |                                                                             | – ls pwr input  | – torque ref    |               |                 |

## Reference

| Menu      | Parameter                    | Unit                |
|-----------|------------------------------|---------------------|
| <b>D1</b> | <b>Elevator Data Submenu</b> |                     |
| D1        | Speed Command                | ft/min or m/sec     |
| D1        | Speed Reference              | ft/min or m/sec     |
| D1        | Speed Feedback               | ft/min or m/sec     |
| D1        | Motor Speed                  | RPM                 |
| D1        | Speed Error                  | ft/min or m/sec     |
| D1        | Pretorque Ref                | % of rated torque   |
| D1        | Ext-Torque Cmd               | % of rated current  |
| D1        | Spd Reg Torq Cmd             | % of rated torque   |
| D1        | Tach Rate Cmd                | % of rated torque   |
| D1        | Aux Torque Cmd               | % of rated torque   |
| D1        | Est Inertia                  | Seconds             |
| D1        | Rx Com Status                | 1 = true; 0 = false |
| D1        | Logic Outputs                | 1 = true; 0 = false |
| D1        | Logic Inputs                 | 1 = true; 0 = false |
| D1        | Rx Logic Input               | 1 = true; 0 = false |
| <b>D2</b> | <b>MS Power Data Submenu</b> |                     |
| D2        | Armature Current             | Amps                |
| D2        | Field Current                | Amps                |
| D2        | Armature Voltage             | Volts               |
| D2        | MS Bus Voltage               | Volts               |
| D2        | Motor Mode                   | None                |
| D2        | Torque Ref                   | %                   |
| D2        | Est Spd Fdbk                 | ft/min or m/sec     |
| D2        | Encoder Speed                | ft/min or m/sec     |
| D2        | Analog Address2              | none                |
| D2        | Analog Address3              | none                |
| D2        | DS Module Temp               | °C                  |
| D2        | LS Module Temp               | °C                  |
| D2        | Highest Temp                 | °C                  |
| D2        | Field IGBT Temp              | °C                  |
| D2        | Armature Cur Err             | Amps                |
| D2        | Auto Meas Arm L              | mH                  |
| D2        | Auto Meas IRDrop             | %                   |
| D2        | Auto Meas Arm R              | Ohm                 |
| D2        | Auto Field Res               | Ohm                 |
| D2        | Auto Field Tc                | sec                 |
| <b>D3</b> | <b>LS Power Data Submenu</b> |                     |
| D3        | LS Pwr Input                 | kW                  |
| D3        | DC Bus Volts                 | Volts               |
| D3        | DC Bus Volts Ref             | Volts               |
| D3        | LS Overload                  | %                   |
| D3        | LS Input Current             | Amps                |
| D3        | LS D Axis I                  | %                   |
| D3        | LS Q Axis I                  | %                   |
| D3        | LS D Axis V                  | %                   |
| D3        | LS Q Axis V                  | %                   |

| Menu | Parameter      | Unit  |
|------|----------------|-------|
| D3   | Input Hz       | Hz    |
| D3   | Input Vab      | Volts |
| D3   | Input Vca      | Volts |
| D3   | LS Module Temp | °C    |

| Menu      | Parameter                         | Unit |
|-----------|-----------------------------------|------|
| <b>U1</b> | <b>Password U1 Submenu</b>        |      |
| U1        | Enter password                    |      |
| U1        | New password                      |      |
| U1        | Password Lockout                  |      |
| <b>U2</b> | <b>Hidden Items U2 Submenu</b>    |      |
| U2        | Hidden Items Enable               |      |
| <b>U3</b> | <b>Units U3 Submenu</b>           |      |
| U3        | Units Selection                   |      |
| <b>U4</b> | <b>Overspeed Test U4 Submenu</b>  |      |
| U4        | Overspeed Test                    |      |
| <b>U5</b> | <b>Restore Dflts U5 Submenu</b>   |      |
| U5        | Restore Motor Dflts               |      |
| U5        | Restore Drive Dflts               |      |
| U5        | Restore Utility Dflts             |      |
| <b>U6</b> | <b>Motor Side Info U6 Submenu</b> |      |
| U6        | MS Type                           |      |
| U6        | MS Platform                       |      |
| U6        | Field Module                      |      |
| U6        | MS Code Version                   |      |
| U6        | MS S/W Date                       |      |
| U6        | MS S/W Time                       |      |
| U6        | MS FPGA Rev                       |      |
| U6        | MS Cube ID                        |      |
| <b>U7</b> | <b>Line Side Info U7 Submenu</b>  |      |
| U7        | LS Type                           |      |
| U7        | LS Code Version                   |      |
| U7        | LS S/W Date                       |      |
| U7        | LS S/W Time                       |      |
| U7        | LS FPGA Rev                       |      |
| U7        | LS Cube ID                        |      |
| <b>U8</b> | <b>Hex Monitor1 U8 Submenu</b>    |      |
| U8        | Addr1                             |      |
| U8        | Addr2&                            |      |
| U8        | Addr3&                            |      |
| <b>F1</b> | <b>Active Faults F1 Submenu</b>   |      |
| F1        | Display Active Faults             |      |
| F1        | Reset Active Faults               |      |
| <b>F2</b> | <b>Faults History F2 Submenu</b>  |      |
| F2        | Display Fault History             |      |
| F2        | Clear Fault History               |      |
| F2        | Display Fault Counters            |      |



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