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User Guide,
iControl for AC Elevators, Release 3, 4
with Control Techniques E300 AC Drive Quick Start Guide

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.

Manual # 42-02-2223, Rev C6, February 2025

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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.



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.

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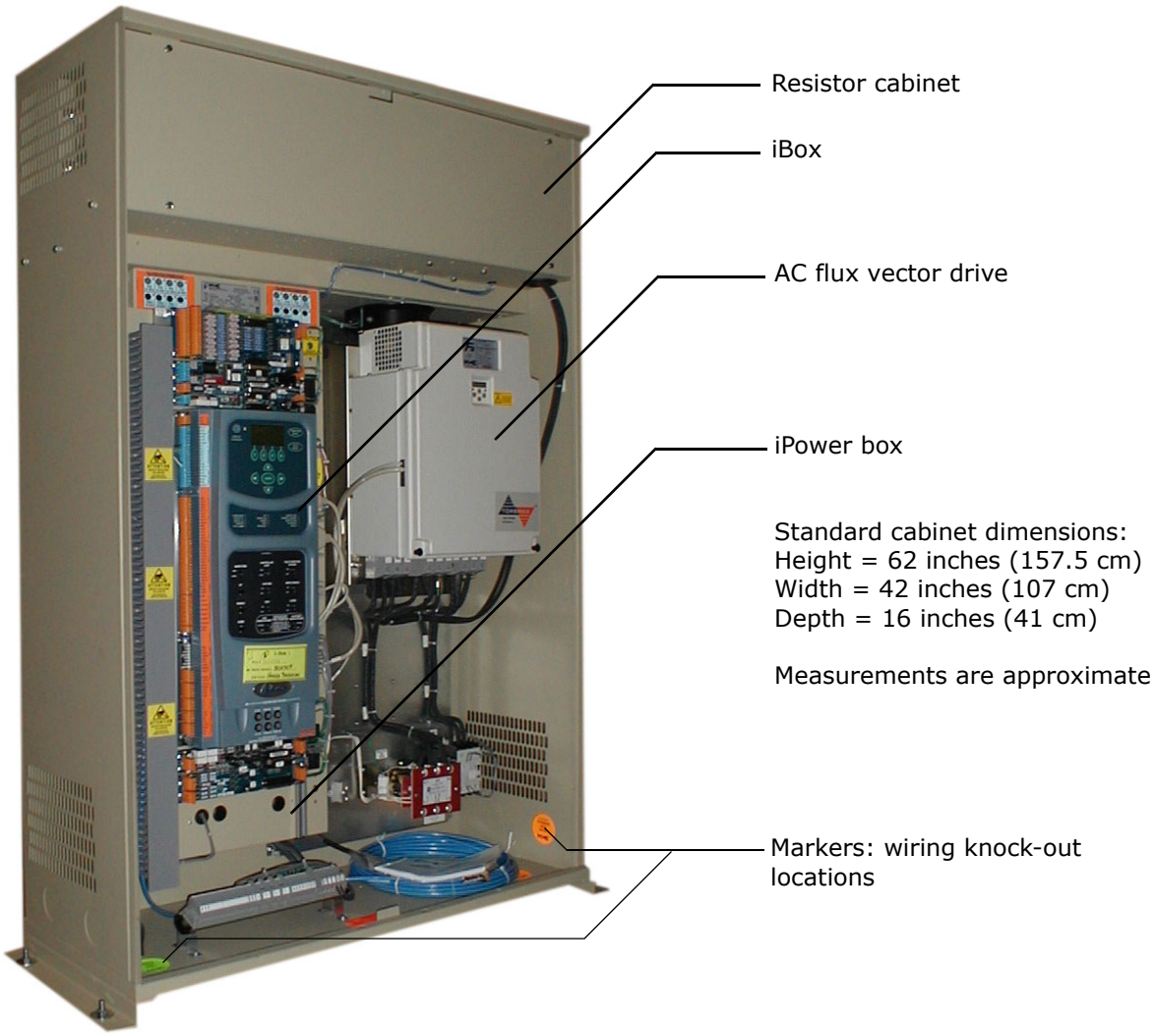
iControl Overview

This section provides:

- General Description, page 1-2
- System Interconnect Diagrams, page 1-4
- Installation Specifications, page 1-7

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

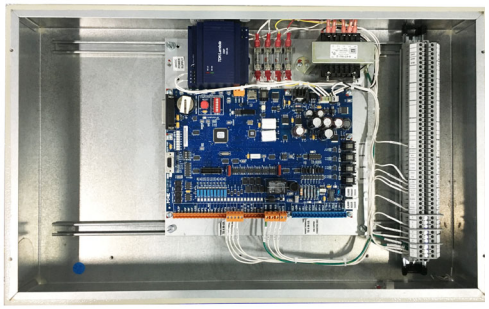
- Load weighers (optional)
  - Rope Tension (LW-EMCO)
  - Isolated Platform (LW-MCEIP)
- Cross Head Deflection (K-Tech International)

Figure 1.2 Single Car Component Assembly Illustrations

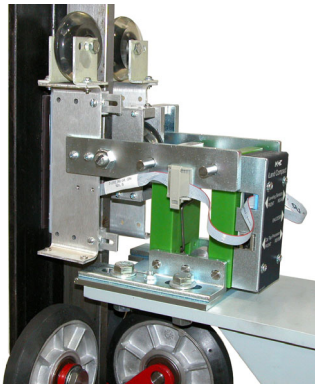
iAC Controller



iLink cartop box



iLand Compact landing system



Group Dispatching

For multiple car installations requiring centralized dispatching and parking control:

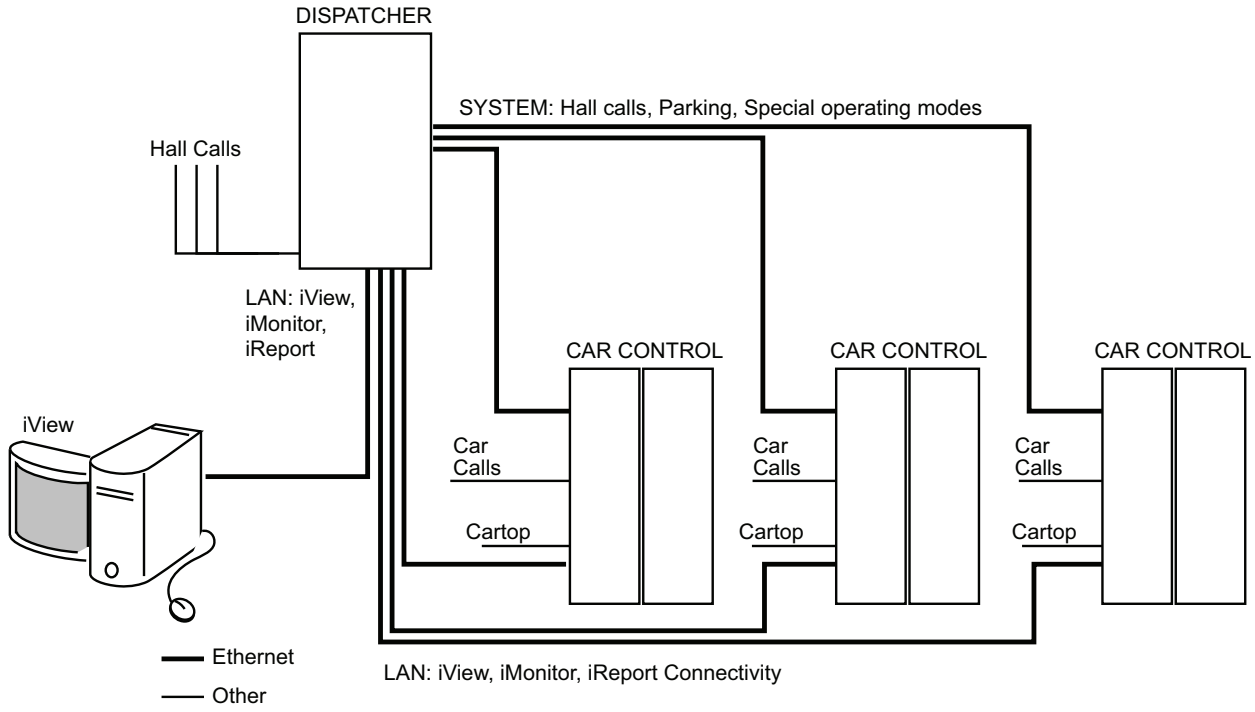
- iCentral: Separate enclosure for complex dispatching requirements, destination based dispatching, security system interaction, groups to 15 cars (maximum 8 cars with destination dispatching)
- Local: Groups to 6 cars with one car providing dispatching for the others. A central interconnect box is used 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.

System Interconnect Diagrams

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

- 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



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Figure 1.4 Car Control Interconnection

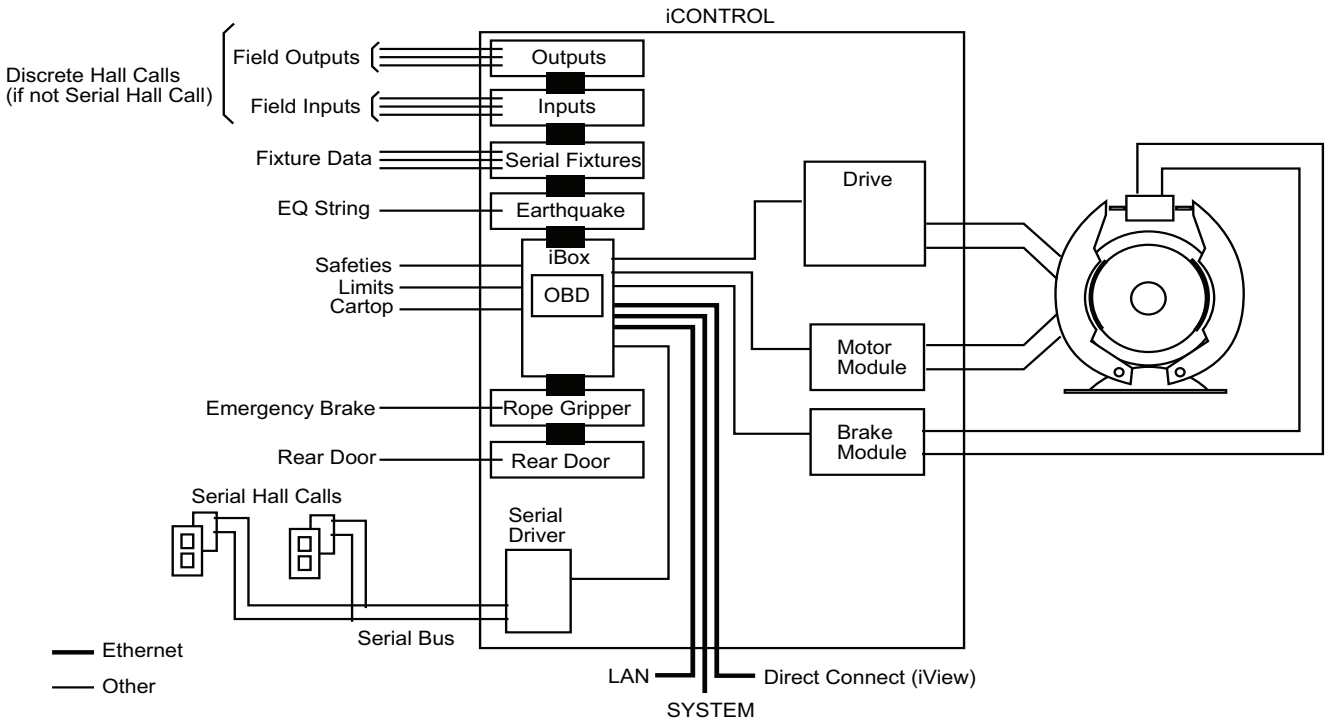


Figure 1.5 Cartop Interconnection

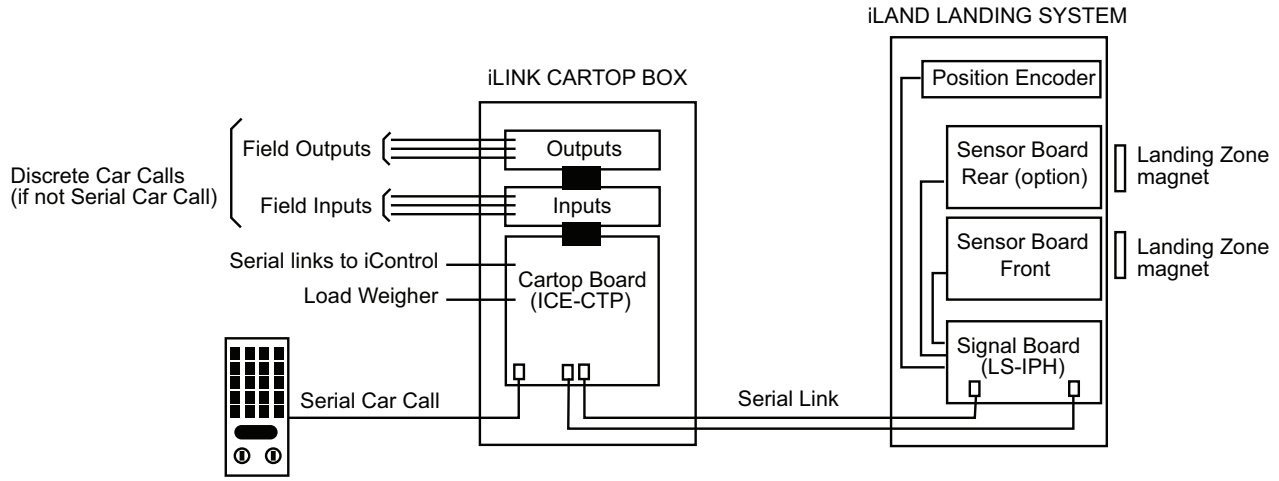


Figure 1.6 Central Dispatcher (iCentral) Interconnection

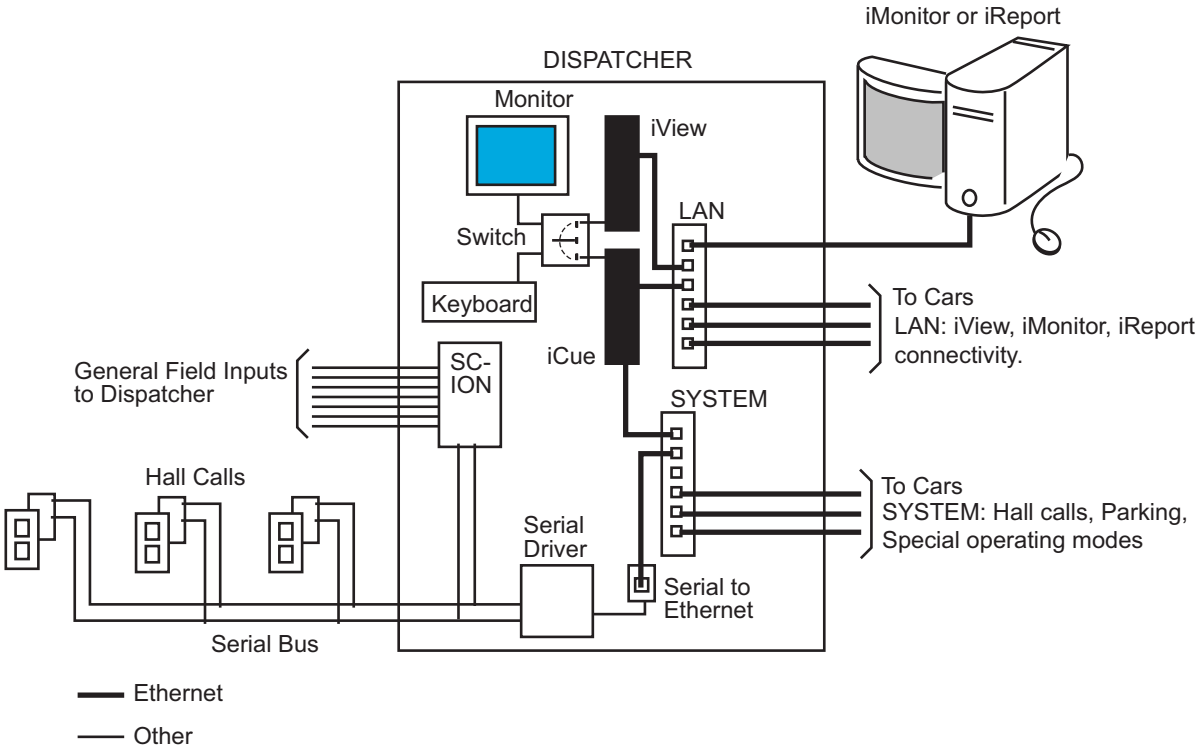
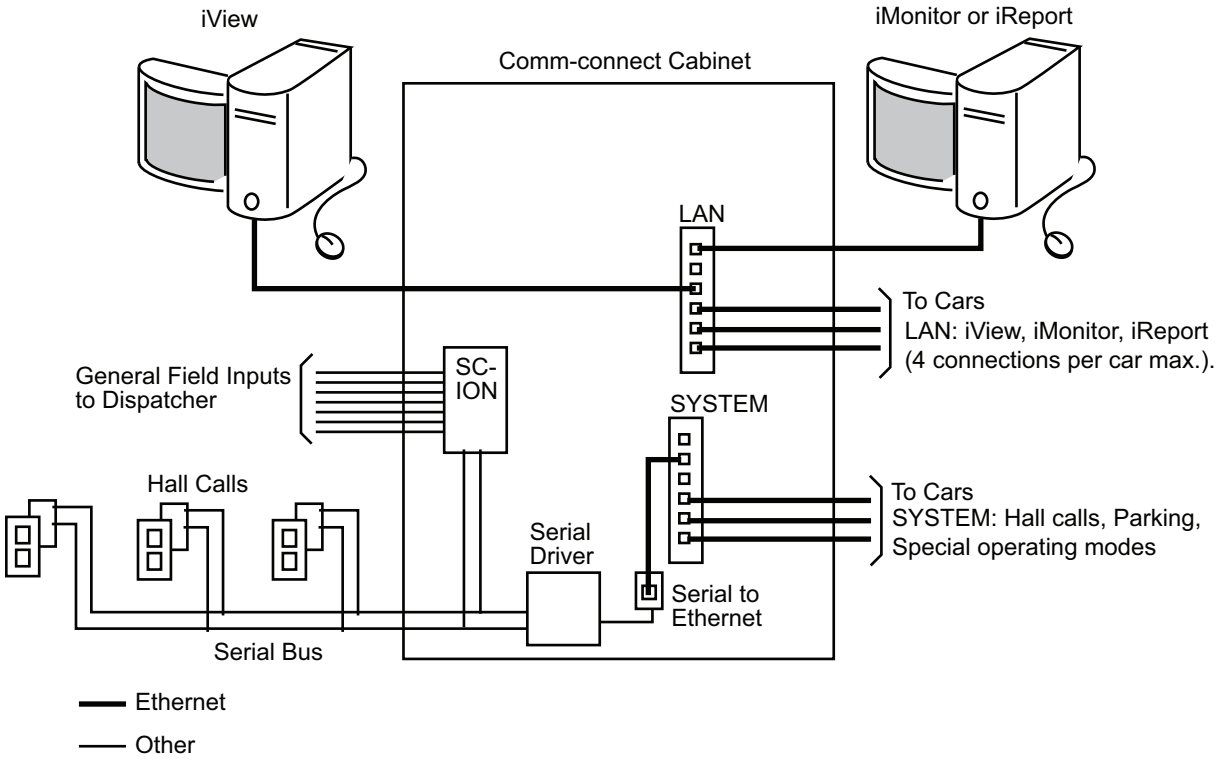


Figure 1.7 Local/Dispatcher (Comm-connect) Interconnections



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Installation Specifications

This section contains specifications pertinent to installing the controller.

Table 1.1 Installation Specifications

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)
iLINK Cartop box	Height = 26 inches (66 cm) Width = 16.2 inches (41 cm) Depth = 6.2 inches (16 cm)
iLINK-2 Cartop box	Height = 35 inches (89 cm) Width = 16.2 inches (41 cm) Depth = 6.2 inches (16 cm)
iLINK-4 Cartop box	Height = 44 inches (112 cm) Width = 18.2 inches (46 cm) Depth = 7 inches (18 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.



Construction Mode

In This Section

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

- Machine Room Preparation (see page 2-3).
- Controller Cabinet Installation (see page 2-5).
- Equipment Grounding (see page 2-5).
- Check for Shorts to Ground (see page 2-6).
- AC Voltage Verification and Wiring (see page 2-7).
- Motor and Brake Wiring (see page 2-9).
- Velocity Encoder Installation (see page 2-10).
- Safety String Wiring (see page 2-12).
- Applying Power (see page 2-14).
- Initial Parameter Settings (see page 2-16).
- Drive Parameter Adjustments (see page 2-20).
- Brake Calibration (see page 2-67).
- Running on Machine Room Inspection (see page 2-71).
- Calibration Actual Car Speed (see page 2-76).

Before You Begin

Review the following warnings and become familiar with this manual section.



Danger

This equipment contains voltages of up to 1000V, rotating motor parts, and driven machinery. The combination of high voltage and moving parts 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. Please observe the following:

- 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.
- BE CERTAIN that any motion of the motor shaft and driven machinery caused by unexpected operation will not cause personal injury or damage.
- HIGH VOLTAGE may be present on the motor and drive whenever AC power is applied, even if the motor is not rotating.

Overview of Construction Mode

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 9-6 for definitions of iBox inputs and outputs.

Faults In Construction Mode, faults may be generated because of missing equipment:

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

Machine Room Preparation

When preparing the machine room, 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 ±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 single 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.

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.

Cabinet Installation



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 to prevent damage to components.

1. Mount cabinets securely to the machine room floor.
2. Open knock-outs for wire bundles.

Labels inside the cabinet identify suggested wiring hole locations. The 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 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.

Shorts to Ground

Check for shorts to ground before powering up the system. **Power must be OFF at the main disconnect.** If 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 (Common) bus and the terminal being tested.

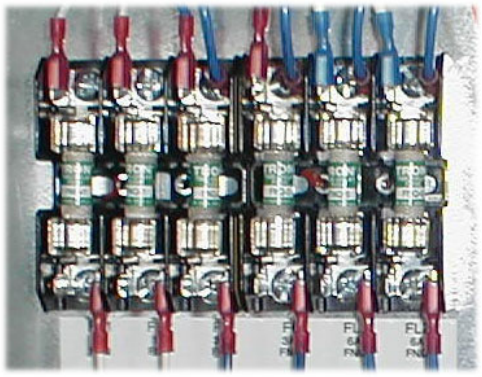
Caution

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.

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.

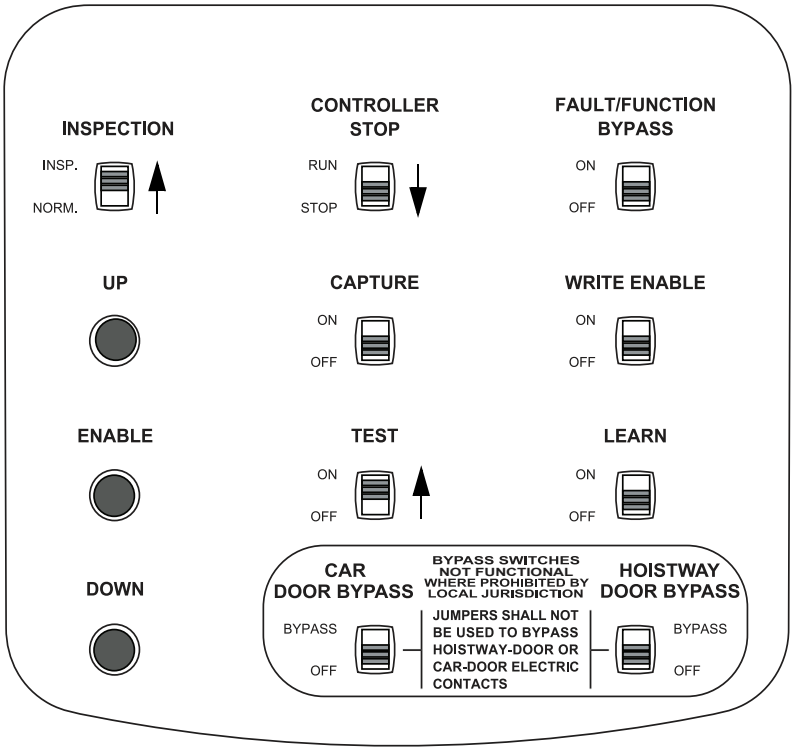
3. If an isolation transformer is used, connect AC supply wiring to the transformer, and transformer outputs to the controller, as shown in the job prints. If required, the prints will detail auxiliary power connections for the brake iField module.
4. If no isolation transformer is used, connect AC supply wiring to the controller as shown in the job prints.

Initial Controller Power Up

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



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 sixty seconds to boot.
3. If the controller fails to power up, refer to the job prints and check supply connections and fuses.

AC Hoist Motor, Brake, and Velocity Encoder

This section contains instructions for:

- Checking the hoist motor for insulation breakdown or short to ground
- Wiring the hoist motor to the controller
- Verifying iField module or low-current brake resistance and wiring the brake
- Installing the velocity encoder

Checking the Hoist Motor

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

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, or as directed by the manufacturer, to subject the insulation to the same high voltages that would be present during elevator operation.
3. A minimum insulation resistance of 100k Ohms is required.
4. Correct any insulation problems before proceeding with installation. 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.

It is very important that AC motor wires be kept separate from control wires both inside and outside the controller. The encoder or tachometer wiring must use a separate grounded conduit. Use a shielded power cable between the motor drive and the AC Motor stator connections to reduce RFI/EMI noise (Siemens Protoflex - EMV or equivalent). The shield must be terminated to earth ground at both ends.

Verifying Brake Current Resistance

High current brake systems use a brake (iField) module to control the brake.

1. With the brake leads disconnected, 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.



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 D3. 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 AC motor wires or velocity encoder wires.

Velocity Encoder Installation and Wiring

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



The 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. Some cables, like the EnDat encoder cable, require a one inch or larger conduit due to the size of the connector.

Encoder Wiring

A shielded cable with an appropriate connector at the encoder end is provided. Please refer to “Encoder Cables” on page 2-11. 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.

1. Connect the cable to the encoder using the cable/connector provided.
2. Route the cable through a separate conduit to the controller cabinet. Inside the controller cabinet, if the encoder wires must cross power wires, they must cross at right angles to reduce the possibility of interference.
3. Connect the controller end of the cable to the drive as shown in the job prints.



Caution

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 (see also caution below).



Caution

The cable supplied with the Heidenhain ENC1313 EnDat encoder must not be altered, cut or shortened. Therefore, a 1.5 inch conduit is required to accommodate the cable connector.

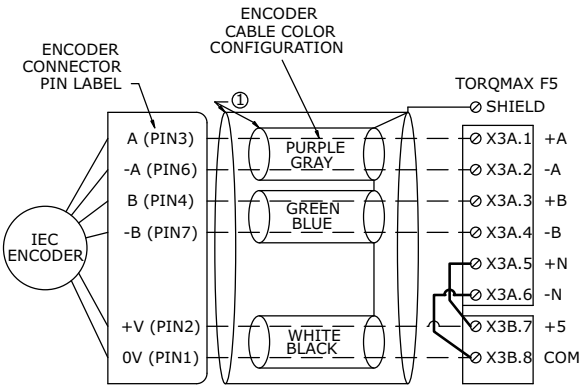


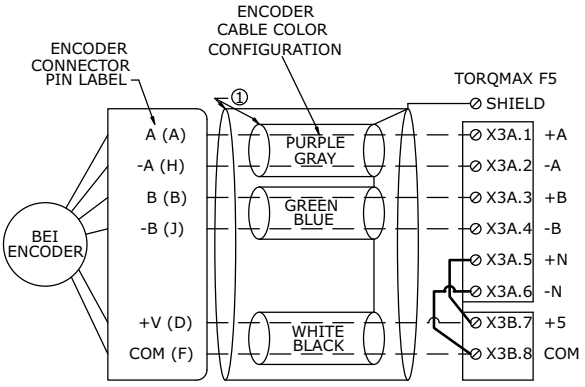
Caution

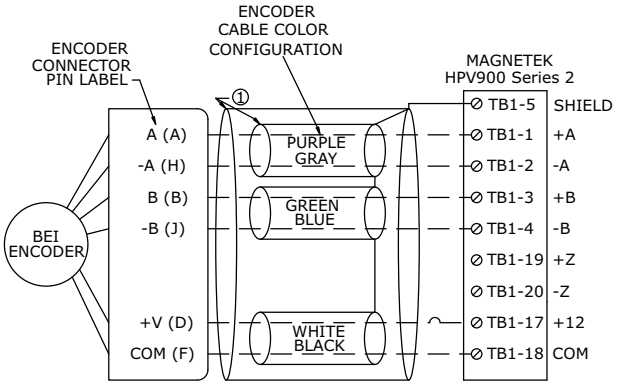
Permanent magnet (PM) AC Gearless Machines must by synchronized with the AC Drive. Please refer to *Motor Data* > *Permanent Magnet Motors* and *Encoder Data* in Section 5 - *Initial Start Up* of the TORQMAX F5 Elevator Drive v3.xx manual.

Encoder Cables The following illustration shows typical encoder wiring. 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.

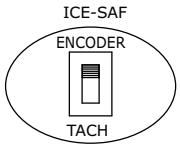
Induction Machine



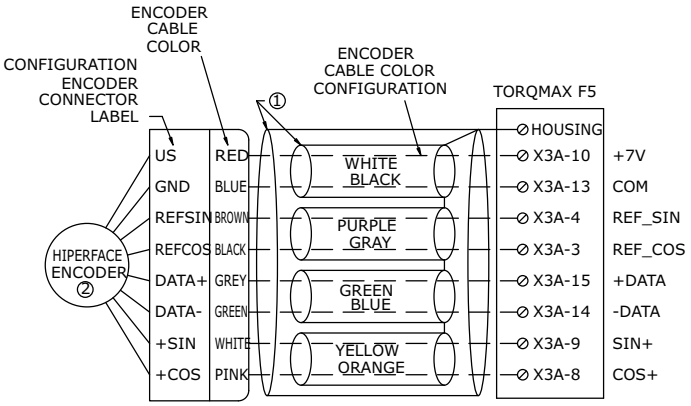


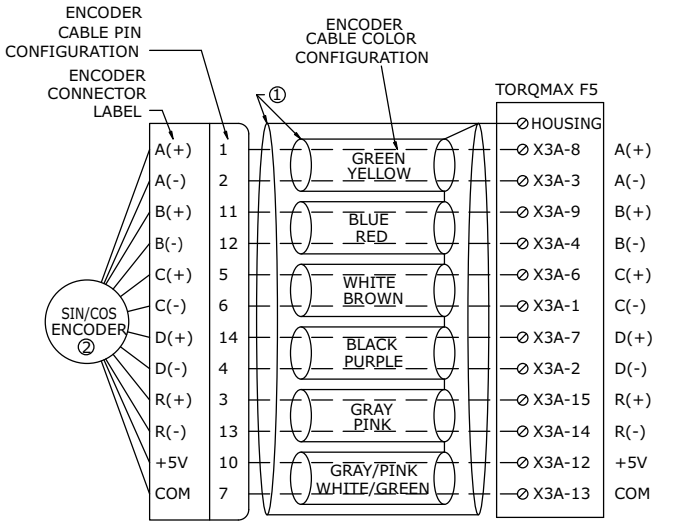


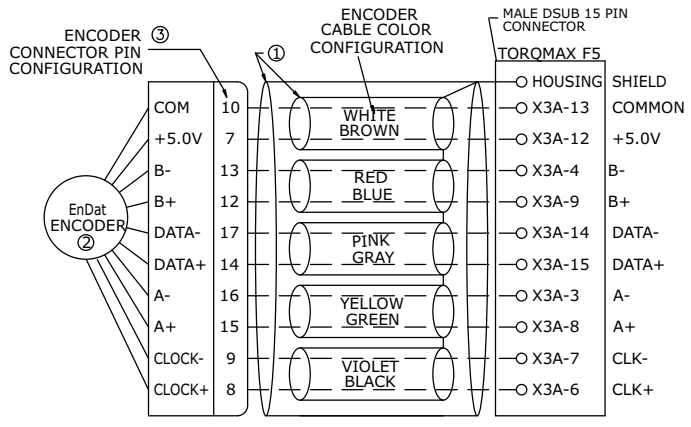
① NO CONNECTION FOR SHIELD AT THIS END
② ENCODER IS MOUNTED ON THE MOTOR SHAFT



PM Machine



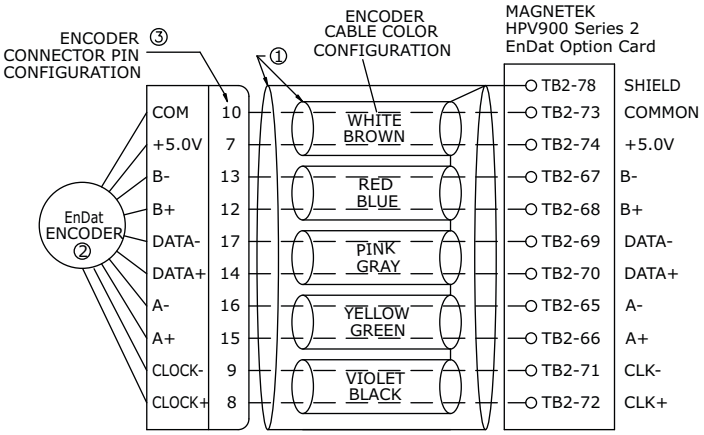




① NO CONNECTION FOR SHIELD AT THIS END
② ENCODER IS MOUNTED ON THE MOTOR SHAFT
③ ENCODER CABLE MUST BE PULLED THROUGH METALLIC CONDUIT, IT IS NECESSARY TO OVER SIZE THE CONDUIT (1 INCH OR LARGER). DO NOT REMOVE CONNECTOR.

Encoder Cables (Cont.)

PM Machine



Basic Safety String and Associated Wiring

The elevator must not be run until the safety string is connected:

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

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 cartop box is not yet installed, it will need to 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

Because the iLink cartop interconnect box which contains the Cartop Safety (CTS) Relay is not yet installed, it is necessary to bypass the CTS relay temporarily (for Construction Mode only). (If you in fact are installing the iLink cartop box already, please refer to the iLink instructions in Section 3 of this guide.)

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.

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. After it is triggered, press the iBox Fault Reset button or the Rope Gripper board reset button to reset the rope gripper.

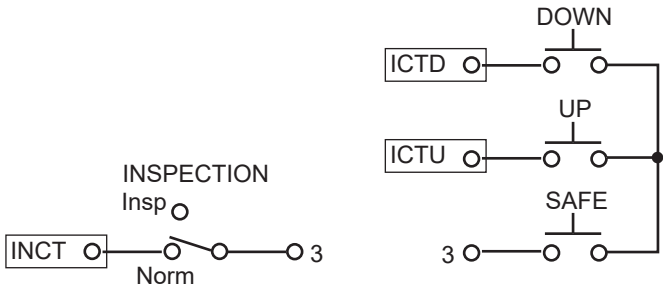
1. Refer to the job prints (MRW- machine room wiring sheets).
2. Connect the rope gripper to iControl RG1, RG2, RG5, and RG7 terminals as shown.

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 is the switch used to put the controller 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.

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 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.

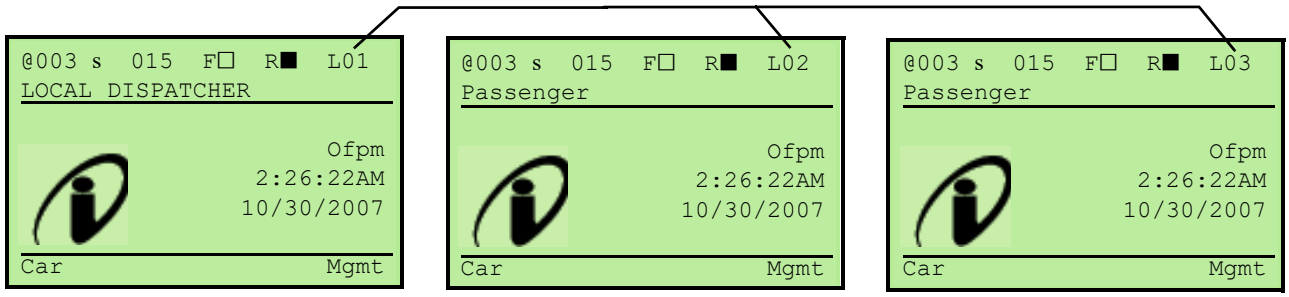
Caution

Before connecting the "System" ethernet cable to the iBox:

1. Verify the Car ID, in the upper right corner of the display, is correct. Press the iBox "Computer Reset" and verify that Car ID is still correct. The Car identifier is set on the iView > Controller > Configuration > General tab.
2. Verify no other iBox in this group of controllers has the same Car ID.
3. Check "Alternate Dispatcher" settings on the iView > System > System Configuration > Building tab. Verify "Auto-select Preference Order" settings are identical on all cars in the group.

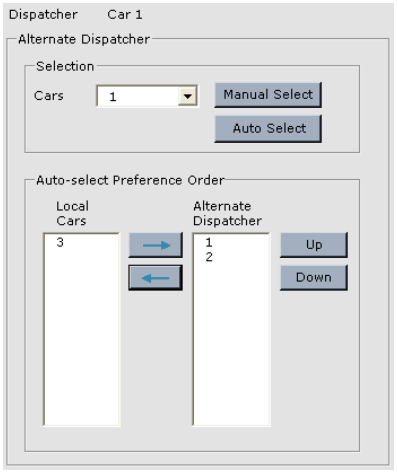
Figure 2.1 Check before connecting the "System" ethernet cable to the iBox

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

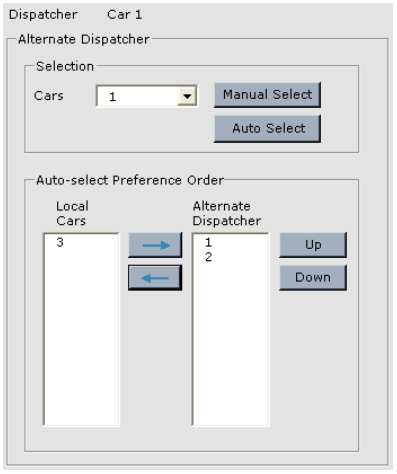


On the iView > System > System Configuration > Building tab, verify that the Alternate Dispatcher "Auto-select Preference Order" settings are identical for all cars in the group.

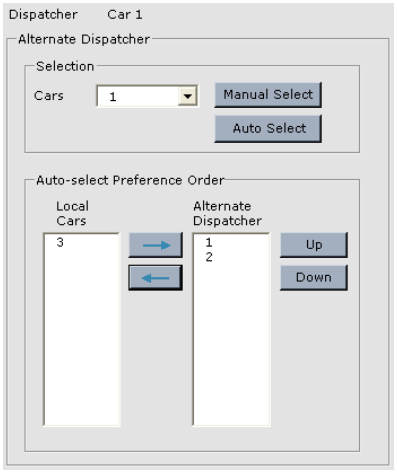
Car 01 System Configuration



Car 02 System Configuration



Car 03 System Configuration



Verifying Initial Parameter Settings

Refer to Table 2.15 on page 2 - 69 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.)
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 on page 2 - 17. 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.
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 on page 2 - 17). 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 on page 2 - 17 and the Reference section of this manual (Section 9) for detailed descriptions.
13. Edit and Send changes to iControl as needed.



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 *Setup* > *Safety* > *Configuration tab* and verify that *Construction Mode* is checked.
15. Edit and Send changes to iControl as needed.

Table 2.2 Recommended iView Starting 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 toll 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 2.2 Recommended iView Starting Values for Initial Operation

iView Screen Settings	
Drive >General tab	
Drive Type	Factory set. Verify drive type selected is correct.
Speed Reference	tachometer
Speed ref resolution	Velocity Encoder PPR
Rated motor RPM:	From motor plate.
Coupling rotational ratio	(Brake drum or Sheave Diameter/ Diameter of encoder wheel). If shaft mounted, set to 1.000
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)
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 Cntact	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)



Caution

Permanent magnet (PM) AC Gearless Machines must by synchronized with the AC Drive. Please refer to the appropriate section in your drive manual.

Learning the Safety Configuration

The controller is set to match the job safety configuration, according to the job survey, before being shipped. By default, Construction Mode is 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 (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 *Setup* > *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.

AC Drive Parameters

Each controller 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

Motor circuits may have high voltage present any time AC power is applied to the controller, even if the motor is not rotating. Wait 10 minutes after removing AC power to allow capacitors to discharge before you open the drive cover. Use extreme caution. Do not touch any circuit board, power device, or connection without ensuring that high voltage is not present.

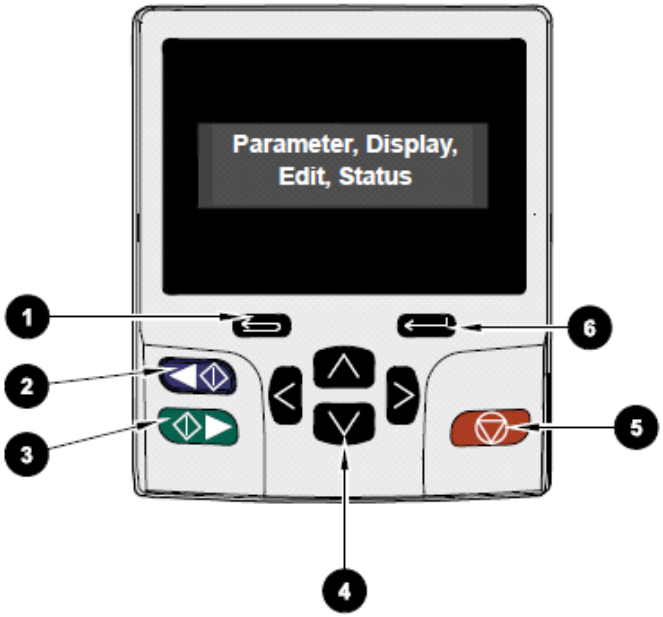
Control Techniques E300 AC Drive Introduction

This guide addresses parameters and adjustments that require unique attention for the Control Techniques E300 AC Drive. The drive is shipped with an SI-I/O module in option slot 2 and an SI-Apps Compact module in option slot 3.

Refer to the E300 Closed Loop RFC-A Mode Setup Guide for details on the setup and commissioning of the drive for closed loop vector RFC-A mode operation with an induction motor or the E300 Closed Loop RFC-S Mode Setup Guide for details on the setup and commissioning of the drive for closed loop vector RFC-S mode operation with a PM synchronous motor. For a detailed parameter listing and full descriptions, refer to the Installation and System Design Guide.

CT E300 Keypad

Figure 2.2 CT Keypad



1. **Escape button** - Used to exit from parameter edit or view mode. In parameter edit mode, if parameter values are edited and the exit button pressed, the parameter value will be restored to the value it had on entry to edit mode.
2. **Start reverse (Auxiliary) button** - Not used.
3. **Start forward button** - Not used.
4. **Navigation keys** (x4) - Used to navigate through the menu and parameter structure and edit parameter values.
5. **Reset button** - Used to reset the drive.
6. **Enter / Mode button** - Used to toggle between parameter edit and view mode.

Figure 2.3 CT E300 Keypad Navigation

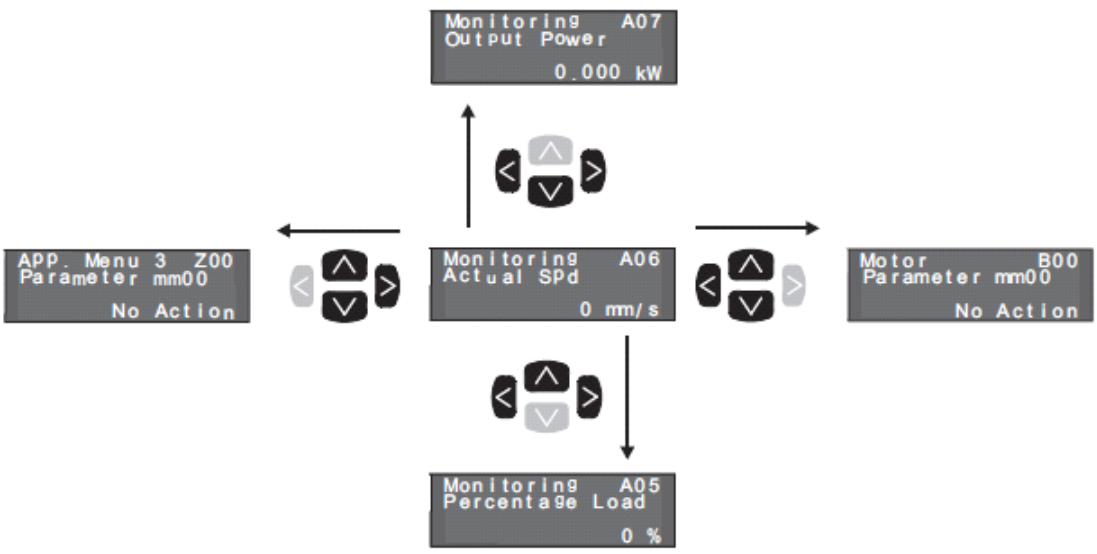
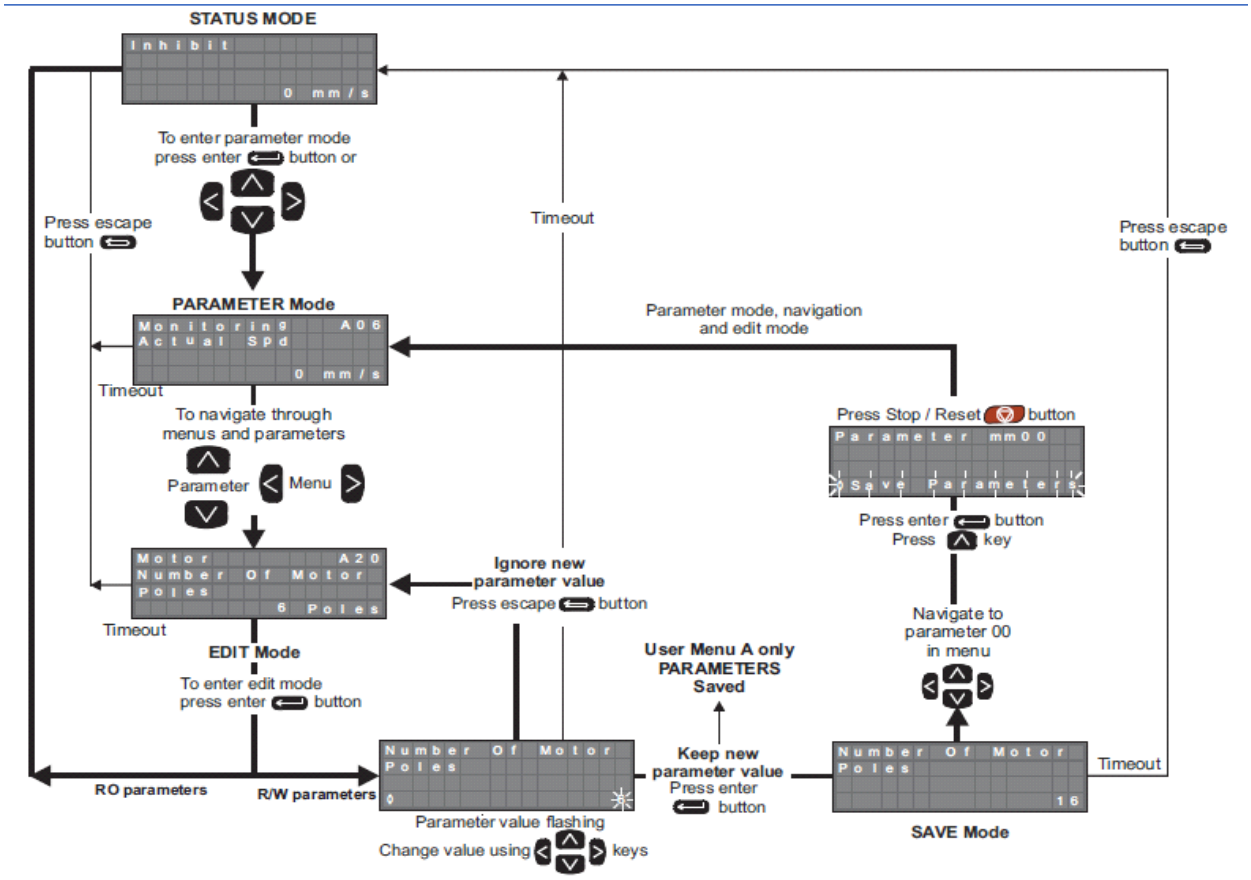


Figure 2.4 CT Keypad Display Modes



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Figure 2.5 CT Drive Features and Options

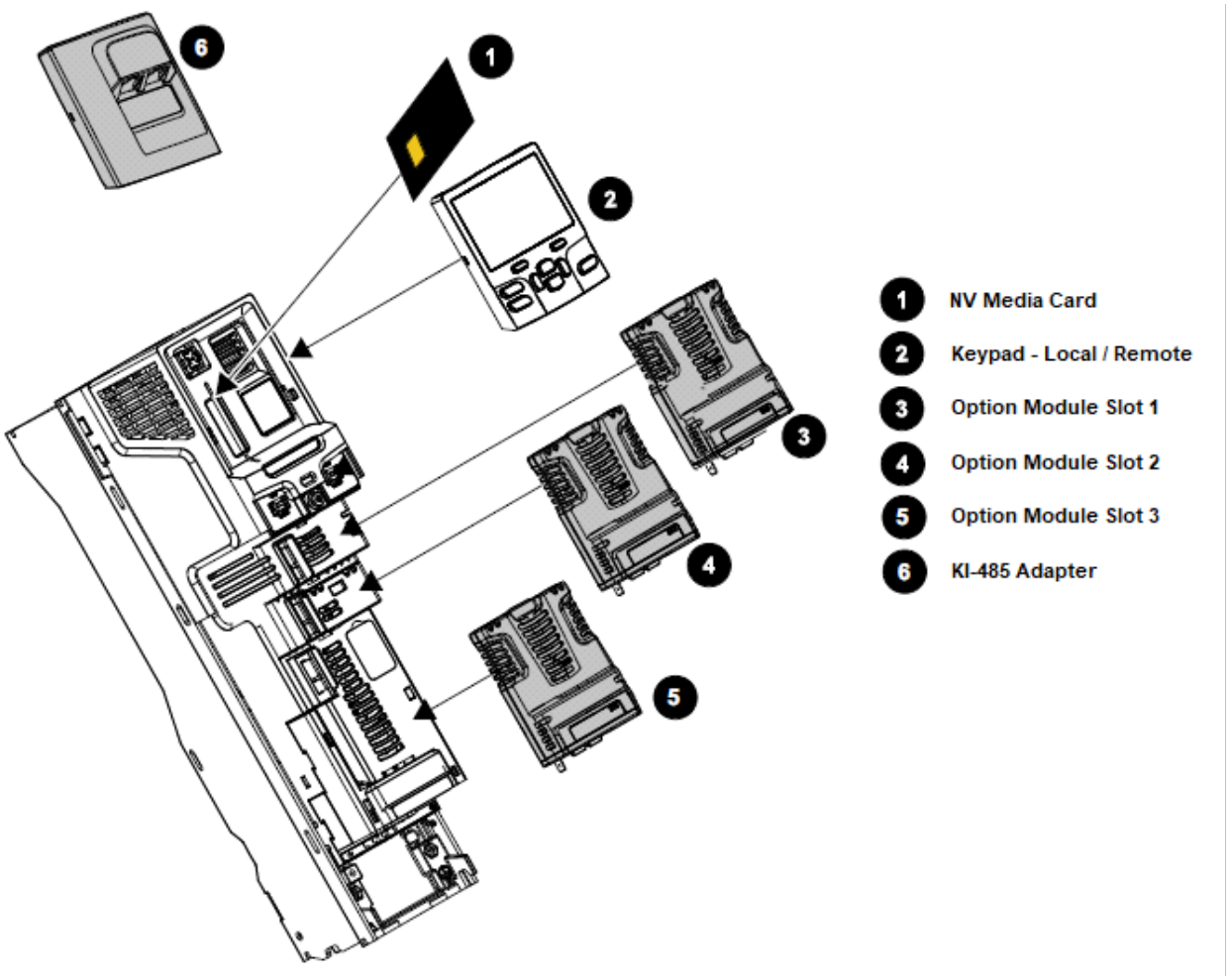
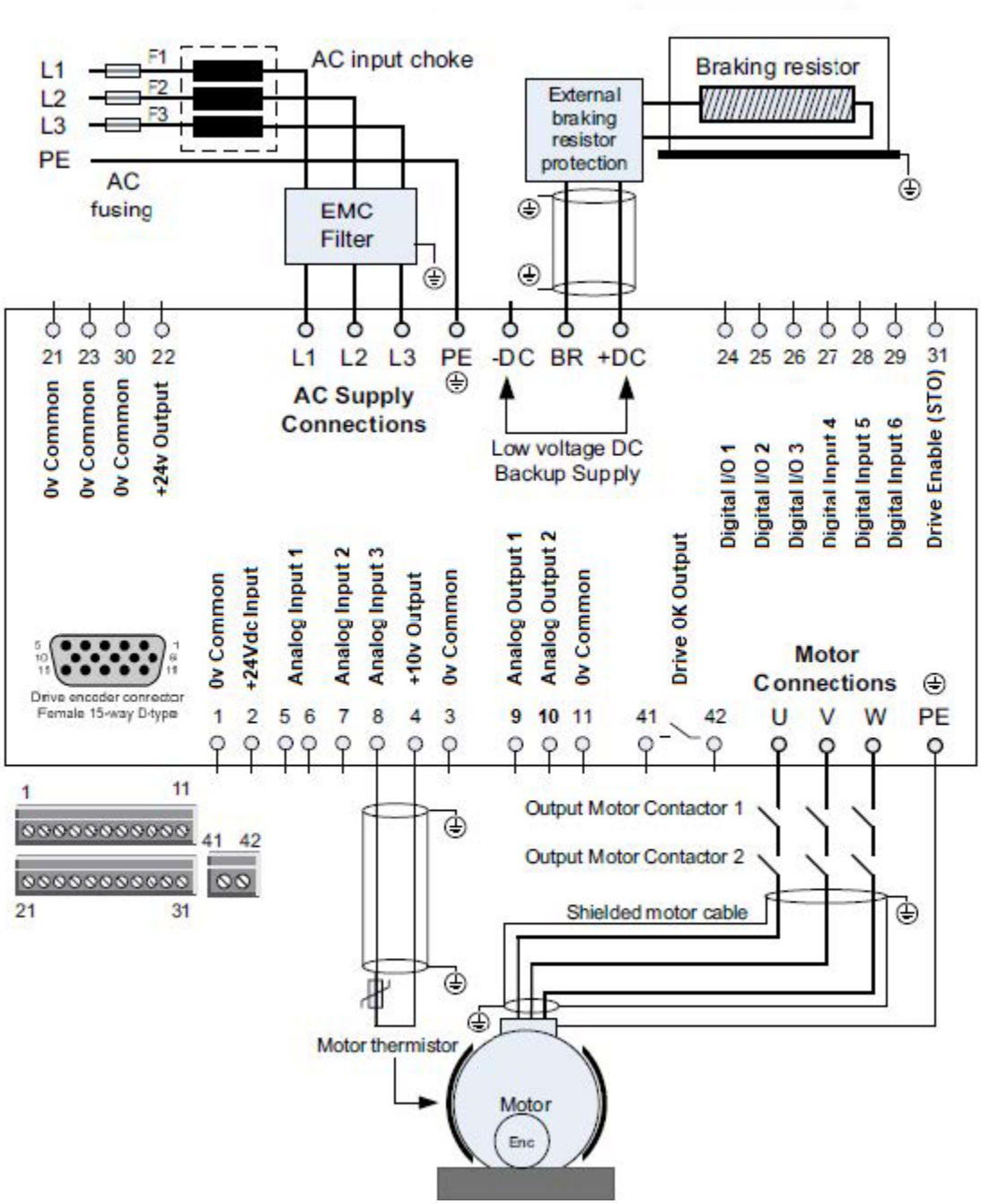


Figure 2.6 CT Position Feedback Connections

Drive Encoder Type (C01)	Position Feedback Connections														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
AB (0)	A	A\	B	B\	Z	Z\									
SC (6)	A (Cos)	A\ (Cos\)	B (Sin)	B\ (Sin\)	Z	Z\									
SC Hiperface (7)	Cos	Cosref	Sin	Sinref	DATA	DATA\									
EnDat (8)	DATA	DATA\	CLK	CLK\									+V	0V	Th
SC EnDat (9)	A	A\	B	B\	DATA	DATA\					CLK	CLK\			
SSI (10)	DATA	DATA\	CLK	CLK\											
SC SSI (11)	A (Cos)	A\ (Cos\)	B (Sin)	B\ (Sin\)	DATA	DATA\					CLK	CLK\			

Figure 2.7 CT Drive System Connections



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Figure 2.8 SI-Apps Compact Module Terminals

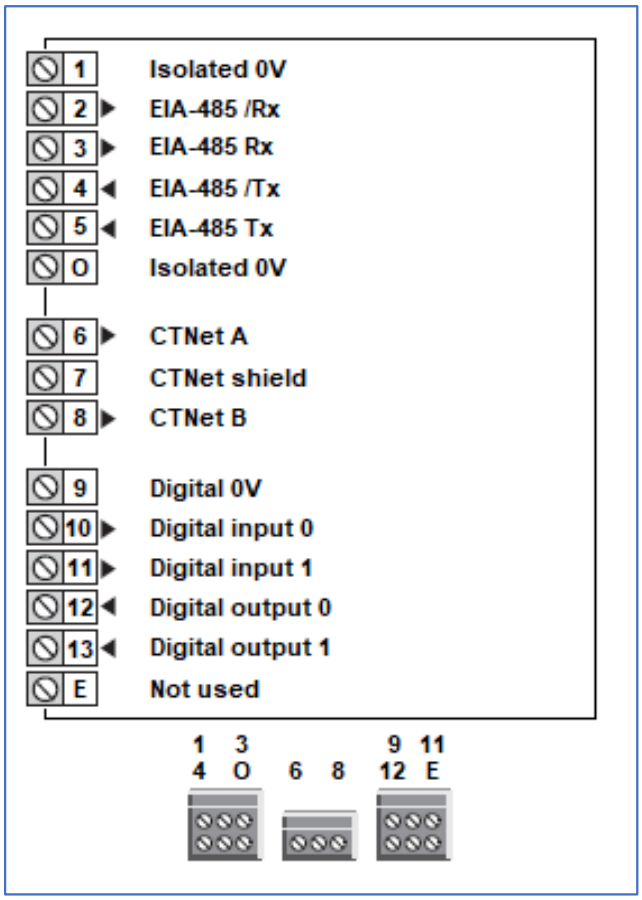
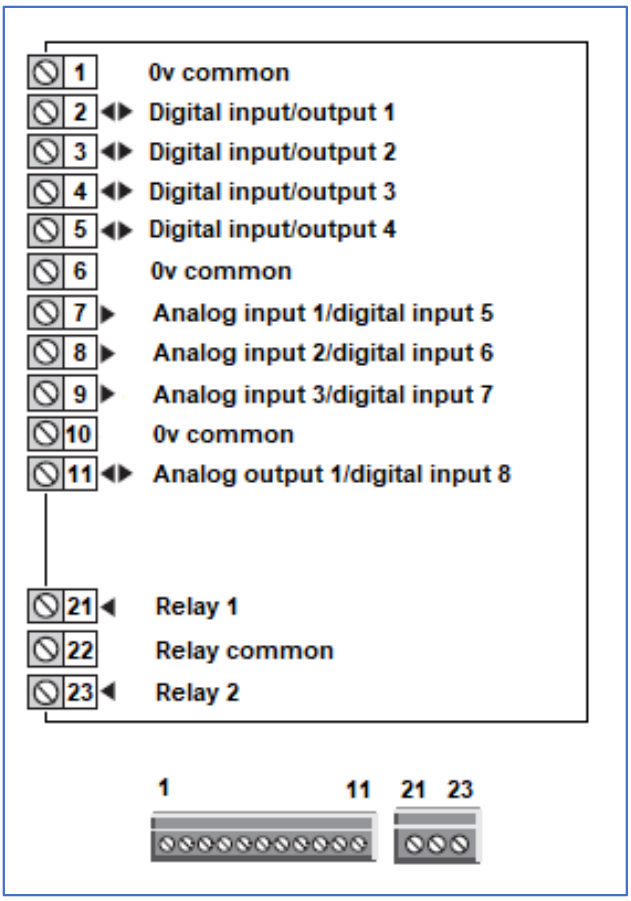
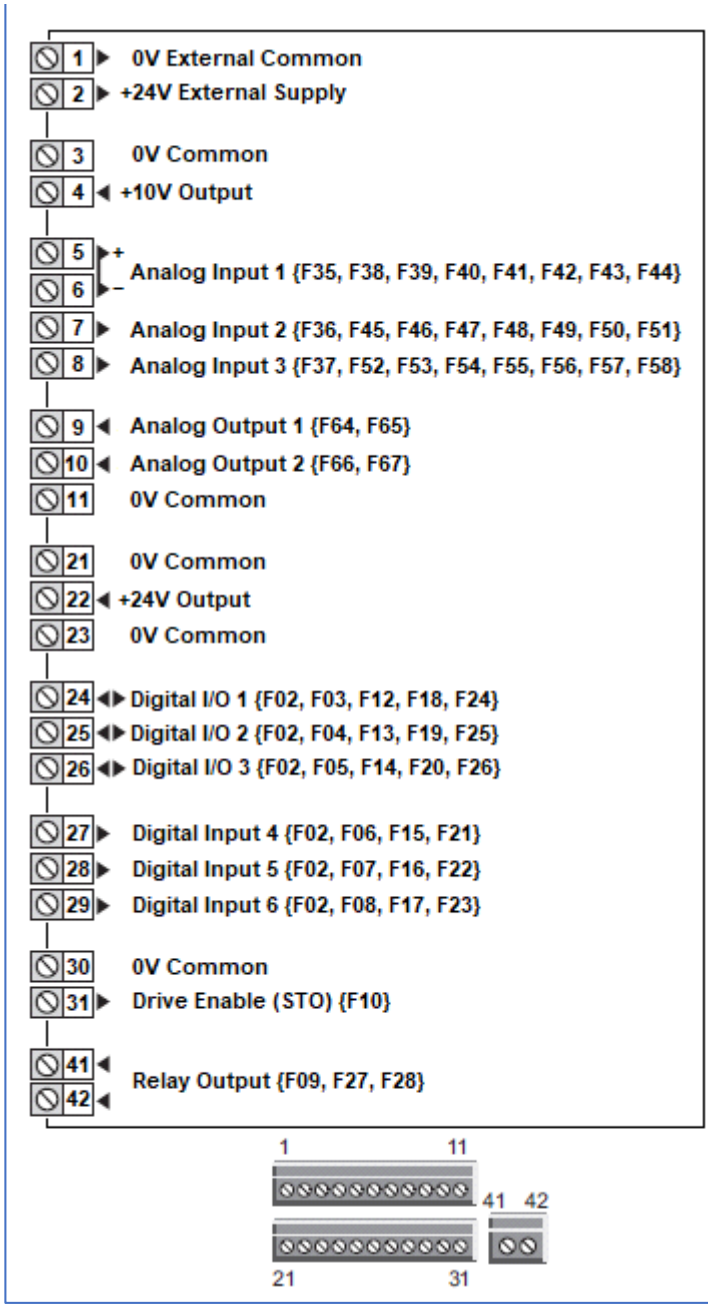


Figure 2.9 SI-I/O Module Terminals



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Figure 2.10 CT Drive Terminals



2

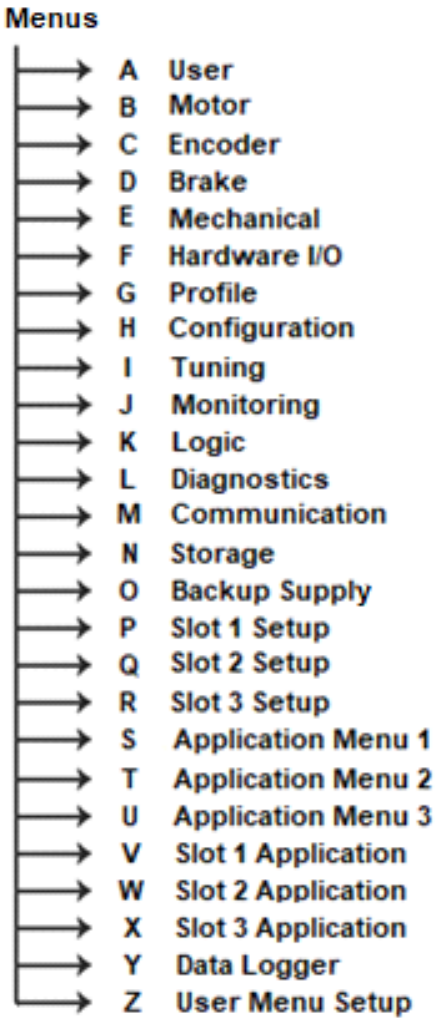
Parameters iControl Controller

Figure 2.11 CT Parameters

Drive Type	Control Technique E300
Drive Interface	Serial
Reference Type	Serial
Profile Advance	[drive tuning specific]
Note:	*Initially set to 75 milliseconds*

Control Techniques E300 AC Drive

Figure 2.12 Drive Menu



Preparation

Saving Parameters

When changing a parameter in User Menu A, the new value is saved when pressing the Enter button to return to parameter view mode from parameter edit mode.

If parameters have been changed in the advanced menus (B - Z), then the change will not be saved automatically. A save function must be carried out via Parameter mm00 which is the first parameter in all menus (A - Z):

1. Modify desired parameters.
2. Select Save Parameters in Parameter mm00 and press Enter.
3. Press the red Reset button to confirm change.
4. When the display shows No Action, the operation has successfully completed.

Initializing Mode / Parameters

If the A02 {B01} operating mode for the drive is not appropriate, the following steps will change the operating mode and default the parameters:

1. Select RFC-A (induction motor) or RFC-S (PM synchronous motor) in A02{B01} and press Enter. The operating mode selected must be different from what is currently active.
2. Enter 1253 (load 50 Hz defaults) or 1254 (load 60 Hz defaults) in Parameter mm00 and press Enter.
3. Press the red Reset button to confirm change.
4. When the display shows No Action, the operation has successfully completed.

If the A02{B01} operating mode for the drive is appropriate, the following steps can be used to default the parameters if necessary:

1. Select Reset 50 Hz Defs (alternatively, enter 1233) or Reset 60 Hz Defs (alternatively, enter 1244) in Parameter mm00 and press Enter.
2. Press the red Reset button to confirm change.
3. When the display shows No Action, the operation has successfully completed.

Displaying Non-Default Parameters

The keypad has an option to display all parameters which have been changed from their default values. This function does not require a drive reset to become active, and only parameters containing non-default values will be visible to the user.

1. Select Show non-default (alternatively, enter 12000) in Parameter mm00 and press Enter.
2. The display shows Show non-default.

To deactivate this function:

1. Select No action (alternatively, enter a value of 0) in Parameter mm00 and press Enter.
2. The display shows No Action.

Accessing Diagnostics

The drive has a status LED present on the front of the drive just below the keypad. The status LED will remain solidly on if no fault has occurred and will flash if the drive has tripped.

Trip Numbers:

1. Parameter L29 through L38 store the 10 most recent trips that have occurred where L29 is the most recent and L38 is the oldest.

Sub-Trip Numbers:

1. Some trips have sub-trip numbers which provide more detail on the possible cause for a trip. If a trip has a sub trip number, its value is stored in parameter L61 through L70 where L61 correlates to L29 while L70 correlates with L38. If the trip does not have a sub-trip number, zero will be stored in the sub-trip log.

Enter Drive Parameters

1. Follow steps described in the Preparation section above to become familiar with saving parameters, defaulting parameters if required, observing only parameters with non-default values, and the unique procedure utilized to change the drive's mode of operation.
2. Enter parameters from the Configuration section.

Configuration

Table 2.3 Menu A: User Menu

A01{H02} – User Security Status	1=All Menus
A02{B01} – Drive Control Mode	[job specific]
Note (see Preparation above):	2=RFC-A (induction motor) 3=RFC-S (PM synchronous motor)
A10{H11} – Control input Mode	0=Analog Run Prmit
Incremental Encoder	
A12{C01} – Encoder Type	0=AB
A13{C02} – Encoder Auto Configuration	0=Disabled
A14{C03} – Encoder Pulses / Revolution	[encoder specific]
A15{C04} – Encoder Voltage	[encoder specific]
EnDat Encoder	
A12{C01} – Encoder Type	9=SC EnDat
A13{C02} – Encoder Auto Configuration	1=Enabled
A14{C03} – Encoder Pulses / Revolution	2048
A15{C04} – Encoder Voltage	[encoder specific]

Table 2.3 Menu A: User Menu

Note (nominal value):	*0=5V*
A16{C13} – Position Feedback Phase Angle	[encoder specific]
Note:	*Only used for PM synchronous motor*
A18{B02} – Motor Rated Current	[motor specific]
A19{B03} – Motor Rated Voltage	[motor specific]
A20{B05} – Number of Motor Poles	[motor specific]
Note (nominal value):	*6 poles for induction motor* *Poles=120*Frequency in Hz/Synchronous RPM*
A21{B06} – Motor Rated Frequency	[motor specific]
Note (induction motor):	*50 Hz or 60 Hz (USA)*
A22{B07} – Motor Rated Speed	[motor specific]
A24{B16} – Symmetrical Current Limit	[job specific]
A26{B11} – Motor Autotune	1=Stationary (induction motor) 5=Full Stationary (PM synchronous motor)
Note:	*If unsuccessful initially and with two motor leads swapped, see B54 (PM Synchronous Motor)*
A28{E01} – Nominal Elevator Speed mm/s	[job specific]
Note:	*Set to contract speed*
A29{E02} – Sheave Diameter	[job specific]
A30{E03} – Roping	[job specific]
Note:	*1=1:1, 2=2:1*
A31{E04} – Gear Ratio Numerator	[motor specific]
Note:	*1=gearless application* *n=geared application (n>10)*
A32{E05} – Gear Ratio Denominator	[job specific]
Note:	*1=gearless application, 10=geared application*
A33{E07} – Nominal Elevator Speed rpm	[job specific]
Note:	*Adjust A29{E02} for gearless applications and A31{E04} for geared applications to affect this value*

Table 2.3 Menu A: User Menu

A35{G13} – Run Jerk 1	10,000
A36{G14} – Run Jerk 2	10,000
A37{G15} – Run Jerk 3	10,000
A38{G16} – Run Jerk 4	10,000
A39{G18} – Creep Stop Jerk	10,000
A40{G11} – Acceleration Rate	5,000
A41{G12} – Deceleration Rate	5,000
A42{G17} – Creep Stop Deceleration Rate	5,000
A47{D04} – Brake Control Release Delay	5
A48{D05} – Brake Control Apply Delay	5
A49{I01} – Start Speed Loop P Gain	[job specific]
Note:	*Set initially to 0.2 (RFC-S) or 0.02 (RFC-A). Commonly between 0.01 and 2.0. Must be greater than or equal to A52{I06}*
A50{I02} – Start Speed Loop I Gain	[job specific]
Note:	*Set initially to 2.0 (RFC-S) or 0.2 (RFC-A). Commonly between 0.1 and 20.0. Must be greater than or equal to A53{I07}*
A51{I05} – Start Current Loop Filter	[job specific]
Note:	*Set initially to 2.0. Commonly between 2.0 and 10.0*
A52{I06} – Run Speed Loop P Gain	[job specific]
Note:	*Set initially to 0.2 (RFC-S) or 0.02 (RFC-A). Commonly between 0.01 and 2.0*
A53{I07} – Run Speed Loop I Gain	[job specific]
Note:	*Set initially to 2.0 (RFC-S) or 0.2 (RFC-A). Commonly between 0.1 and 20.0*
A54{I10} – Run Current Loop Filter	[job specific]
Note:	*Set initially to 2.0. Commonly between 2.0 and 10.0*

Table 2.4 B Menu: Motor

B20 – Motor Thermal Time Constant 1	[job specific]

Table 2.4 B Menu: Motor

Note:	*Set initially to 89.0*
B54 – Minimal Movement Phasing Test Angle	[job specific]
Note:	*Set initially to 0.00. If A26{B11} is unsuccessful initially and with two motor leads swapped, set to 0.01 and repeat 26{B11}*

Table 2.5 E Menu: Mechanical

E10 – Load Cell Compensation Enable	On
Note:	*Pretorque is enabled, disabled, and adjusted on controller*
E12 – Load Cell Compensation Filter	50 ms
E14 – Inertia Compensation Mode	[job specific]
Note:	*Perform preliminary adjustment before enabling (Torque)*
E15 – Inertia Compensation Total Inertia	[job specific]
Note:	*Set initially to 0.05. Commonly between 0.05 and 0.2*
E19 – Load Cell Compensation Offset	0.0%
E20 – Load Cell Compensation Scaling	1.0
E33 – Alternative Torque Feedforward Select	On
E34 – Alternative Torque Feedforward Value	[read only]

Table 2.6 F Menu: I/O Hardware

F18 – T24 Digital I/O 1 Source/Destination	A00
F19 – T25 Digital I/O 2 Source/Destination	A00
F20 – T26 Digital I/O 3 Source/Destination	A00
F21 – T27 Digital Input 4 Source	A00
F22 – T28 Digital Input 5 Source	A00
F23 – T29 Digital Input 6 Source	A00
F24 – T24 Digital I/O 1 Output Select	Off
F25 – T25 Digital I/O 2 Output Select	Off
F26 – T26 Digital I/O 3 Output Select	Off

Table 2.6 F Menu: I/O Hardware

F27 – T41 T42 Relay Output Source	S33
F28 – T41 T42 Relay Output Invert	On
F41 – Analog Input 1 Destination	G49 (Analog Speed Reference)
F48 – T7 Analog Input 2 Destination	A00
F74 – Motor Thermistor Input Select	No Thermistor

Table 2.7 H Menu: Configuration

H15 – Maximum Speed Error Threshold	[job specific]
Note:	*Set initially to 100*
H16 – Maximum Distance Error Threshold	0
H40 – Drive Name Characters 1-4	[job number characters 1-4]
H41 – Drive Name Characters 5-8	[job number characters 5-8]
H42 – Drive Name Characters 9-12	[job number characters 9-12]
Note:	*Append car number as letter*
H43 – Drive Name Characters 13-16	[leave blank]
H54 – Digital Override Analog Input Mode	4 (Velocity)

Table 2.8 I Menu: Tuning

I19 – Variable Gains Mode	0=Start Only

Table 2.9 O Menu: Backup Power

O05 – UPS Controller Enable	[read only]
O06 – UPS Maximum Power Setpoint	[job specific]
Note:	*If TAPS (Traction Auxiliary Power Supply) is used, enter rating of unit (3kw or 6kw); otherwise ignore setpoint value*
O07 – UPS evacuation current full load limit	150%
O08 – UPS evacuation current no load limit	150%
Note:	*The UPS load limit values may need to be increased if insufficient. If TAPS (Traction Auxiliary Power Supply) is not used, ignore load limit values*

Table 2.10 R Menu: Slot 3 SI-Apps Compact Setup

R06 – EIA-RS485 Mode	6
R07 – EIA-RS485 Baud Rate	57600

Table 2.10 R Menu: Slot 3 SI-Apps Compact Setup

R11 – Clock Task Scheduling	0 ms
R12 –POS Task Scheduling Rate	3=1 ms
R15 – Disable Reset on Trip Cleared	On

Table 2.11 S Menu: Application 1

S30 – Controller Control Word	[read only]
Note:	*Bit 0=enable* *Bit 1=reset* *Bit 2=run* *Bit 3=direction* *Bit 4-6=zone* *Bit 10=battery* *Bit 11=generator* *Bit 12=inspection*

Table 2.12 T Menu: Application Menu 2

T11 – Inverter Node	1
T13 – Number of Good Messages Received	[read only]
T14 – Received Message Duration	[read only]
Note:	*Nominally 6 to 10 ms*
T15 – Received Message Periodicity	[read only]
Note:	*Nominally 20 ms*
T16 – Max Received Message Periodicity	[read only]
Note:	*Message lost if greater than 40 ms*
T17 – Error Messages Received	[read only]
Note:	*Since power up*
T18 – Last Error Message Code	[read only]
Note:	*1=no STX* *2=service ID not supported* *3=message ID invalid* *4=no ETX* *5=BCC does not match* *6=wrong inverter address.*
T20 – Velocity Command Inertia Filter	5 Hz

Table 2.12 T Menu: Application Menu 2

T21 – Inertia Compensation Filter	5 Hz
T22 – Inertia Acceleration Option	0
Note:	*0=controller acceleration (default)* *1=estimated acceleration* *2=controller acceleration when direction active; otherwise, estimated acceleration*
T31 – Speed Inversion	[job specific]
Note:	*OFF=no inversion (default)* *ON=inversion*
T32 – Controller	*0n=iControl*
T51 – SI Application Version	[format=xx.yy.zz]

Table 2.13 U Menu: Application 3

U22 – Estimated Acceleration	[read only: mm/s2]
U23 – Controller Acceleration	[read only: mm/s2]
U24 – Inertia Compensation Acceleration	[read only: mm/s2]
U25 – G54 Velocity Command	[read only: mm/s]
U26 – Filtered Velocity Command	[read only: mm/s]
U27 – E13+E34	[read only: %]
U28 – Estimated Inertia Compensation for E15	[read only]
Note:	*10,000=scale (7500 correlates to 0.07500)*

Table 2.14 Slot 2 Menu: SI-I/O

2.02.019 – Relay 1 Invert	Off
2.02.020 – Relay 2 Invert	Off
2.02.029 – Relay 1 Source	0. S33
Note:	*There is a space between the period and letter S*
2.02.030 – Relay 2 Source	0. S32
Note:	*There is a space between the period and letter S*

Adjustment

Enter Drive Parameters

1. Review the steps in the **Preparation** section on page 2-29 to become familiar with saving parameters, defaulting the parameters, displaying parameters with non-default values, and the procedure for changing the drive's mode of operation.
2. Enter/verify parameters described in the **Configuration** section beginning on page 2-30.

Auto Tune Motor Data

Review Section 4.2.6 of the E300 Closed Loop RFC-A Mode Setup Guide for induction motors or E300 Closed Loop RFC-S Mode Setup Guide for PM synchronous motors. The steps below implement the Motor Learn and Encoder Synchronization procedure:

1. Place controller on Machine Room Inspection.
2. Set the Fault/Function Bypass to On.
3. Activate the following bypasses on the controller's View > Diagnostics > Fault Bypass screen:
   - Brake Voltage Not Off.
   - Brake Voltage Not On.
4. On the Control tab of the controller's View > Configuration > Brake > Control screen, set the following parameters as indicated while taking note of their value:
   - Pattern Scaling = 0%.
   - Brake Pick Voltage = 5 V.
   - Brake Partial Pick Voltage = 5 V.
   - Brake Hold Voltage = 5 V.
   - Brake Relevel Voltage = 5 V.
   - Brake Weakening Voltage = 5 V.
5. On the Configuration tab of the controller's View > Configuration > Brake screen, set the following parameters as indicated while taking note of their value:
   - 10% Current Reference value = 0.0.
   - 20% Current Reference value = 0.0.
6. On the drive, set Maximum Switching Frequency parameter A25{B13} to 0 (2 kHz).
7. On the drive, select 1 (Stationary) for induction motor (RFC-A) or 5 (Full Stationary) for PM synchronous motor (RFC-S) to begin the motor tuning procedure using Motor Autotune parameter A26{B11}.
8. Press the escape button on the drive's keypad to display the status screen. Fault messages are not displayed on the drive's parameter screen.
9. On the controller, pick and hold up or down direction until the drive's display indicates that the procedure has been completed. This will be indicated by None for parameter A26{B11}.
10. Once the tuning procedure has completed, drop direction on the controller.
11. On the Control tab of the controller's View > Configuration > Brake screen, restore parameters from (4) above to their original values.

12. On the Configuration tab of the controller's View > Configuration > Brake screen, restore parameters from (5) above to their original values.
13. Set the Fault/Function Bypass to Off.
14. On the drive, restore Maximum Switching Frequency parameter A25{B13} to 4 (8 kHz).

Verify Communication

Verify no drive comm fault on controller or fault indicator on drive.

Verify Motor Rotation

1. Move the elevator on Inspection and verify that the motor is under control and rotating in the proper direction. Verify output current at A4.
2. If the motor is rotating under control in the proper direction while drawing nominal current, skip the remaining steps.
   - If the motor draws normal current and rotates in the opposite direction, change the commanded speed polarity by setting parameter T31 from Off to On or On to Off.
   - If the motor runs away or draws excessive current while not moving at all, swap any two motor leads. Then, repeat Auto Tune Motor Data section.
   - For PM Synchronous Motors only. If the motor draws excessive current after an auto-tune was performed initially and with two motor leads swapped, change Minimal Movement Phasing Test Angle parameter B54 to 0.01 and repeat Auto Tune Motor Data section.



If the motor still draws excessive current and does not rotate, swap the two motor leads again and perform the motor auto tune again. If a PM synchronous motor still draws excessive current and doesn't turn, the auto tune process is unable to align the encoder. In this case, change Minimum Movement Phasing Test Angle parameter B54 to 0.01. Then repeat steps from Auto Tune Motor Data section.

Verify Motor Speed

Preliminary

While moving on Inspection, the default speed loop gains may not be set at the optimum value. Even though the values will be system dependent, reasonable initial values should be within the following range:

1. A49{I01} - 0.1 to 0.5 s/rad (RFC-S) or 0.01 to 0.05 s/rad (RFC-A)
2. A50{I02} - 1.0 to 5.0 s2/rad (RFC-S) or 0.1 to 0.5 s2/rad (RFC-A)
3. A51{I05} - 2.0 to 10.0 ms
4. A52{I06} - Set to A49{I01} value
5. A53{I07} - Set to A50{I02} value
6. A54{I10} - Set to A51{I05} value

Geared Application

1. While moving on Inspection, verify that the displayed speed on the controller's screen is virtually the same as the requested inspection speed via the controller's View > Configuration > Pattern > Modes > Inspection (High Speed) parameter. If these values do not match, adjust the Gear Ratio Numerator parameter A31{E04}. Increase this value to increase the elevator's speed.
2. The Nominal Elevator Speed RPM parameter A33{E07} will be automatically adjusted as A31{E04} is altered. The parameters A28{E01}, A29{E02}, A30{E03}, and A32{E05} should already have been set appropriately.

Gearless Application

1. While moving on Inspection, verify that the displayed speed on the controller's screen is virtually the same as the requested inspection speed via the View > Configuration > Pattern > Modes > Inspection (High Speed) parameter. If these values do not match, adjust the Sheave Diameter parameter A29{E02}. Decrease this value to increase the elevator's speed.
2. The Nominal Elevator Speed RPM parameter A33{E07} will be automatically adjusted as A29{E02} is altered. The parameters A28{E01}, A30{E03}, A31{E04}, and A32{E05} should already have been set appropriately.

Verify One-Floor-Run Operation

1. Move the elevator on inspection between landings and verify that it moves properly. After taking the elevator out of inspection mode, verify that the elevator corrects to a landing and stops properly. Make a one-floor-run and observe the elevator as it moves between floors and stops at landings.
2. Follow procedure in Adjust for Response if necessary.
3. Follow procedure in Adjust Control Gains, Adjust Load Cell Compensation, and Adjust Inertia Compensation as required.

Verify Contract Speed Operation

1. Run the elevator between landings and verify that it moves properly. Observe the elevator as it starts from landings, moves between landings, and stops at landings. Progressively increase the number of landings traveled until contract speed is reached. When the elevator reaches contract speed, verify proper speed.
2. If required, adjust the Gear Ratio Numerator parameter A31{E04} if a geared application, or the Sheave Diameter parameter A29{E02} if a gearless application, to fine tune the speed of the elevator as described in Verify Motor Speed above.
3. Follow procedure in Adjust Control Gains, Adjust Load Cell Compensation, and Adjust Inertia Compensation as required.

Adjust Control Gains

The control gains are comprised of the speed loop gains, the current loop gains, and the current loop filter. The current loop gains are set during the motor auto tune procedure, while the speed loop gains and current loop filter are tuned manually. The control is divided into three groups: start, run, and stop. The active groups are determined by drive parameter I19: Start Only, Start+Run, and Start+Run+Stop.

Initially, only the start gains and the start filter should be enabled to tune the speed loop. Load cell and inertia compensation should be adjusted and enabled once the speed loop has been coarsely tuned to optimize the control.

1. Set drive parameter I19 to Start Only.
2. Begin adjusting drive parameters Start Speed Loop P Gain (I01), Start Speed Loop I Gain (I02), and Start Current Filter (I05). Refer to Section 4.3.1 of the E300 Closed Loop RFC-A Mode Setup Guide for an induction motor, or the E300 Closed Loop RFC-S Mode Setup Guide for a PM synchronous motor.
3. Follow procedure in Adjust Load Cell Compensation if available.
4. Follow procedure in Adjust Inertia Compensation.

Adjust Load Cell Compensation

If a load cell with an analog output is provided, it can be used to prevent rollback or movement at the start of motion.

1. On the drive, verify that parameter E10 is On, E19 is 0.0%, E20 is 1.0, F45 is Volt, F46 is 1.0, F47 is Off, F49 is 0.0%, F50 is -100.0%, and F51 is 100.0%.
2. Set controller parameter Speed Pick Delay 1 to 3 seconds on the View > Configuration > Brake > Control tab while taking note of the original value.
3. Set controller parameters Pretorque Option to Load Weigher Pretorque, Pretorque Position Compensation to 0.0, and Pretorque Gain to 0.0 on the View > Configuration > Drive > Pretorque tab.
4. On controller, select Load Weigher Balanced for Test Point 1 and Load Weigher (Raw) for Test Point 2 on the View > Diagnostics > Virtual Oscilloscope screen.
5. Follow the load cell's installation manual to configure and adjust the load cell.
6. With a fully loaded car, verify Test Point 2 is between 5.5 and 8.0. If necessary, adjust trimpot LW ADJ on the CTP (cartop) board in the iLink enclosure to achieve the correct reading. If the Load Weigher readings seem 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.
7. Place a balanced load in the car and adjust controller parameter Pretorque Balance Adjustment on the View > Configuration > Drive > Pretorque tab until Test Point 1 is equal to 0.0.
8. With an empty car at the top landing, adjust controller parameter Pretorque Gain on the View > Configuration > Drive > Pretorque tab until no rollback is detected during one-floor run movement near the top terminal landing.
9. With an empty car at the bottom landing, adjust controller parameter Pretorque Position Compensation on the View > Configuration > Drive > Pretorque tab until no rollback is detected during one-floor-run movement near the bottom terminal landing.
10. With a fully loaded car, verify no rollback at the top and bottom terminal landing.

11. Restore controller's Speed Pick Delay 1 parameter.
12. The load cell is now adjusted to provide motor pretorque at the start of elevator movement.

Adjust Inertia Compensation

Inertia compensation can improve system performance and ride quality by providing optimum control of the elevator. It reduces the dependence on the speed feedback from the motor by predicting what the system will do and providing the required torque command based on that prediction. It will be able to reduce or eliminate speed overshoot into contract speed and leveling speed. It will also allow a reduction in control gains to improve ride quality without adversely affecting system performance.

1. On the drive, set parameter E14 to None and E15 to 0.05. After adjustment, E15 will generally be between 0.05 and 0.1.
2. With an empty cab, run the car between terminal landings while monitoring drive parameter U28. After the car stops and the motor contactor drops at both terminal landings, take the average of the U28 values at the top and bottom terminal landings. To calculate the average decimal value, divide that U28 average value by 100,000.



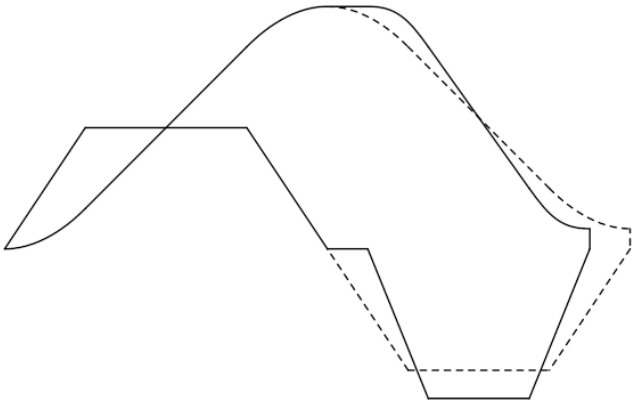
There is a fixed decimal point between the fifth and sixth digit from the right, so a U28 average value of 7500 would be equal to 0.07500 average decimal value.

3. Set drive parameter E15 to the calculated U28 average decimal value. If the U28 value observed is zero, verify that the car is traveling between terminal landings correctly. The car must spend an appreciable amount of time accelerating to contract speed, running at contract speed, and decelerating to leveling speed for the system to determine the appropriate value.
4. Enable inertia compensation by setting drive parameter E14 to Torque.
5. Run the car to both terminal landings and observe the system performance. Increase and decrease E15 to determine the optimum value. A single change in the value of E15 should be small. Note that E15 will generally be between 0.05 and 0.1.
6. With inertia compensation enabled and adjusted, lower values for the speed loop P gain, speed loop I gain, and current loop filter may be possible without adversely affecting system performance.

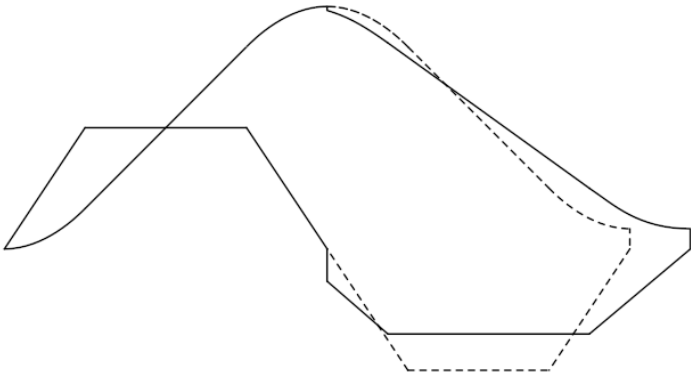
Adjust for Response

Depending on how the drive is tuned, the amount of lag between the commanded speed and drive response can vary. As a result, as the drive is adjusted, the Lag Delay parameter in the controller's VIEW > CONFIGURATION > PATTERN > Common menu will need to be changed as well. Use the information below to make these adjustments. Observe the Pattern Command and Acceleration Command on the controller's VIEW > DIAGNOSTICS > VIRTUL OSCILLOSCOPE. Generally, the lag will be between 50 and 150 milliseconds.

1. 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.
2. If 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 for movement between floors where a stabilized speed (contract speed) is not reached (short runs).



Insufficient lag delay. The dashed line shows expected velocity and acceleration that is possible with optimum delay. The solid line shows velocity and acceleration with insufficient delay.



Excessive lag delay. The dashed line shows expected velocity and acceleration that is possible with optimum delay. The solid line shows velocity and acceleration with excessive delay.

Safety Tests

If performing a Car/Counterweight Safety Test, Electrical Governor Test, or Contract Overspeed Test, a single drive parameter facilitates moving the elevator at a speed greater than contract speed.

1. Run the elevator to the appropriate location to initiate the test.
2. On the controller, activate the test.
3. On the drive, set the Nominal Elevator Speed mm/s parameter A28{E01} to the speed selected on the controller for the test.
4. Run the elevator to perform the test.
5. When the run completes, restore the drive's Nominal Elevator Speed mm/s parameter A28{E01} to the contract speed.

If performing a Car/Counterweight Buffer Test, Inspection Overspeed Test, Emergency Brake Test - Unintended Motion, Normal Terminal Switch Overspeed Tests - Level 1, Normal Terminal Switch Overspeed Tests - Level 2, Normal Terminal Switch Position Tests, or Emergency Terminal Switch Overspeed Test, no drive adjustments are required to facilitate the tests.

1. Move the elevator to the appropriate location to initiate the test.
2. On the controller, activate the test.
3. Run the elevator to perform the test.

Diagnostics

Control Techniques E300

The serial diagnostics are displayed in the following menus:

1. S Menu
   - S30 – Controller Control Word
2. T Menu
   - T13 – Number of Good Messages Received
   - T14 – Received Message Duration
   - T15 – Received Message Periodicity
   - T16 – Max Received Message Periodicity
   - T17 – Error Messages Received
   - T18 – Last Error message Code

iControl

On iView, the controller's serial diagnostics are located on the View > Diagnostics > Diagnostic Outputs screen.

The available monitors are as follows:

1. Serial Device Break Errors
2. Serial Device Config Errors
3. Serial Device Framing Errors
4. Serial Device Noise Errors
5. Serial Device Parity Errors
6. Serial Device Rx Overflows
7. Serial Device Tx Errors
8. Serial Ioctl Rx Errors
9. Serial Ioctl Tx Errors
10. Serial Control Techniques Rx Code
11. Serial Control Techniques Rx Communication
12. Serial Control Techniques Rx Errors[1]
13. Serial Control Techniques Rx Errors[2]
14. Serial Control Techniques Rx Errors[3]
15. Serial Control Techniques Rx Errors[4]
16. Serial Control Techniques Rx Errors[5]
17. Serial Control Techniques Rx Errors[6]
18. Serial Control Techniques Rx Errors[7]
19. Serial Control Techniques Rx Errors[8]
20. Serial Control Techniques Rx Messages
21. Serial Control Techniques Rx Payloads
22. Serial Control Techniques Tx Communication
23. Serial Control Techniques Tx Errors
24. Serial Control Techniques Tx Messages
25. Serial Control Techniques Tx Payloads

TORQMAX F5 Drive v3.xx Introduction

Take the time to study the TORQMAX F5 drive manual. It has very important startup and other information that is beyond the scope of this manual.

This section provides information about the TORQMAX F5 Drive **V3.xx**. If you have a TORQMAX F5 Drive **V1.xx** please see TORQMAX F5 Drive v1.xx Setup on page 9-61.

LCD Keypad

The keypad and LED display are mounted on the digital operator. The operator must be plugged into the drive or the drive will not function. If the operator is removed while the drive is operating, the drive will shut down immediately. If you must remove the operator, do so while the elevator is standing still.

Figure 2.13 TORQMAX F5 LCD Keypad

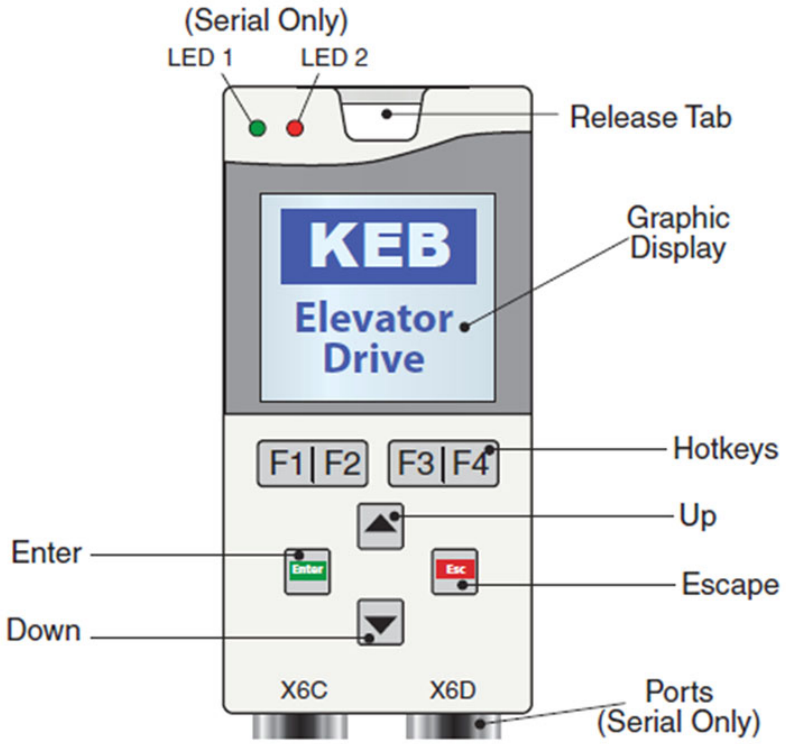
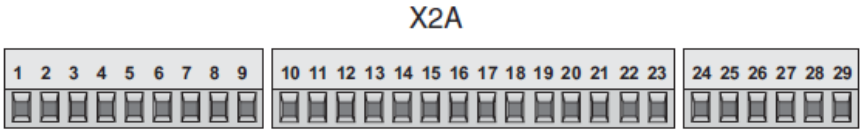


Figure 2.14 LCD Keypad Controls and Indicators

Button	Name	Function
▲ ▼	Up/Down	Increment/Decrement through menu or values
Enter	Enter	Selects a parameter or group, Enters *Edit Mode*, Save parameter setting
Esc	Escape	Backs out of parameter group or exits *Edit Mode*
F1 | F2 F3 | F4	Hotkeys	Keys correspond to display LCD text above Allows a user to quickly jump menus

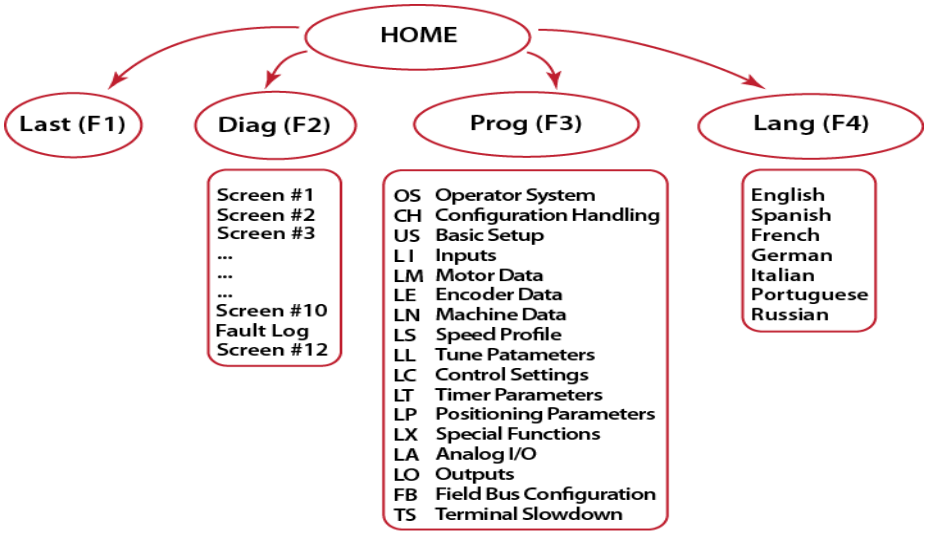
	LED 1	LED 2
Off	No operation (noP) Drive not enabled	
● (Green)	Inverter running the motor	Run mode Drive is able to run
● (Orange)	-	Stop mode: Drive is being programmed or making calculations; FTP file transfer mode.
● (Red - Blinking)	A limit has been reached: Torque, Current, or Voltage (not yet implemented)	-
● (Red - Solid)		Drive is faulted

Figure 2.15 Terminal Strip Control Connections



PIN	Function	Name	Description	
1	Analog Input 1 +	AN1+	Pattern speed input	Resolution: 12 bit
2	Analog Input 1 -	AN1-		
3	Analog Input 2 +	AN2+	Pre-torque input	Scan time: 1 ms
4	Analog Input 2 -	AN2-		
5	Analog Output 1	ANOUT1	Analog output of the motor speed closed loop, calculated open loop	Voltage range: 0...±10V
6	Analog Output 2	ANOUT2	Analog output of the motor torque 0...10VDC (0...2x$T_{Rated\ (motor)}$)	Ri = 100 kOhm, resolution: 12 bit
7	+10V Output	CRF	Analog supply voltage for speed ref.	+10VDC +5%, max. 4mA
8	Analog Common	COM	Common for analog in- and outputs	
9	Analog Common	COM		
10	Prog. Input LI04	I1	When I1...I6, I8 are assigned as speed selection, I1>I2>...I8	Ri = 2.1 kOhm, scan time: 1msec,
11	Prog. Input LI05	I2		
12	Prog. Input LI06	I3	Inputs not used for speed selection can be assigned special functions.	LI02 digital filter reduces false trigger due to relay chatter, filter time: 5-50msec (adjustable)
13	Prog. Input LI07	I4		
14	Prog. Input LI08	I5	When I1...I8 are assigned as direction inputs, both directions cannot be signaled together	
15	Prog. Input LI09	I6		
16	Drive Enable	I7	Enable/Disable; response time < 1 msec; Enable instantly turns off motor current	
17	Prog. Input LI11	I8	Same as I1...I6	
18	Digital Out 1	O1	Programmable output LO05 - Default = At Speed	
19	Digital Out 2	O2	Programmable output LO10 - Default = Deceleration Active	
20	24V-Output	V_{out}	Approx. 24V output (max.100 mA load)	
21	20...30V-Input	V_{in}	Voltage input when an external 24VDC supply is used	
22	Digital Common	0V	Common for digital in-/outputs	
23	Digital Common	0V	Common for digital in-/outputs	
24	Relay 1	NO	Programmable output LO15 - Default "Off"	max. 30VDC, 1A
25		NC		
26		COM		
27	Relay 2	NO	Programmable output LO20 - Default - "Brake Control"	
28		NC		
29		COM		

TORQMAX F5 v3.xx Menus and Navigation Overview



TORQMAX F5 v3.xx Home Screen

The home screen provides a split menu with basic diagnostics. The F2 hot key accesses the diagnostic menus. The F3 hot key accesses the programming menu. The F4 hot key accesses the language settings

Languages

The LCD Keypad supports seven languages:

English	Spanish	French	Portuguese
Italian	German	Russian	

At the Home screen, selecting the F4 hot key will take you directly to the language settings.

Programming Menu

The programming menu is where all manual parameter adjustments are made. At the Home screen, selecting the (F3) hot key will take you directly to the programming menu. The menu contains the following groups:

Operator System (OS)	Basic Setup (US)	Inputs (LI)
Motor Data (LM)	Encoder Data (LE)	Machine Data (LN)
Speed Profile (LS)	Tune Parameters (LL)	Control Setting (LC)
Timer Parameters (LT)	Positioning Parameters (LP)	Special Functions (LX)
Configuration Handling (CH)	Analog I/O (LA)	Outputs (LO)
Diagnostic Parameters (DG)	Field Bus Configuration (FB)	Terminal Slowdown (TS)

Diagnostic Screen

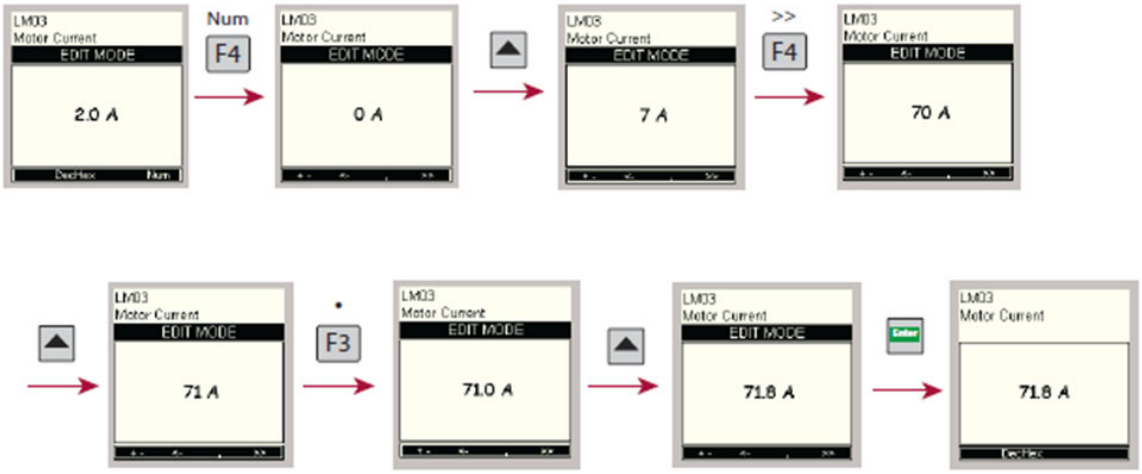
The LCD operator has split-view diagnostic screens. The diagnostics are grouped together which makes it easier to view several related parameters. At the Home screen, selecting the (F2) hot key will take you directly to the diagnostic menu. A fault log can be accessed on the last diagnostic screen. To access: *Home* > *Diag* > *Prev*.

Parameter Adjustment

When adjusting a parameter, press the ENTER key to access Edit Mode. Parameters values can only be changed in Edit Mode.

- Up/Down - Can be used to increment or decrement the number. Press the ENTER key to save the change.
- F4 Hot key (NUM) - Pressing the F4 key in Edit Mode allows a user to adjust each placeholder value. The other Hot keys change the placeholder or add a decimal point. Press ENTER key to save the changes.
- >> Used to move placeholder for adjustment.
- . Inserts decimal point.
- <- Used as a backspace to move placeholder for adjustment
- + - Used to change the sign of the value.

An example of using the **NUM** function to change a parameter is shown below:



The NUM function can be useful for selecting parameter options from a list using its assigned value as opposed to scrolling through the text descriptions. Most parameters with a large list option will have a corresponding NUM column listed in the parameter description of the manual for quick and easy adjustment.

The NUM function can also be very quick and useful for adjusting large numbers as opposed to scrolling.

With parameters that allow multiple items to be selected together, the NUM value would correspond to the sum of the individual selections.

Error Messages

If a malfunction occurs during operation, the drive shuts down operation and the keypad will display an error. Error messages can be reset by pressing “RESET” F4 hot key.

TORQMAX F5 Drive v3.xx Setup

Utilizing the programming record for the job, program the drive parameters. Configure initial parameters on the drive's *Home> Prog > Basic Setup* menu in the following order:

1. US02 (System Units).
2. US03 (Motor Type).
3. US04 (Control Type).
4. US05 (Load Configuration).
   - Set parameter to 2 = Write Configuration to Drive” and save.
5. US06 (Contract Speed).

Configure remaining parameters on the drive's *Home > Prog > Inputs, Motor Data, Encoder Data, Machine Data, Control Settings, Timer Parameters, Special Functions, Analog I/O, Outputs, and Field Bus Configuration* menu.

TORQMAX F5 Drive v3.xx Motor Auto-tuning

AC Induction Motor

1. Review Sections 5.9 and 5.10.3 in the drive manual. The steps below implement the Motor Learn and Encoder Synchronization procedures.
2. Place controller on Machine Room Inspection.
3. Set the Fault/Function Bypass to **ON**.
4. On iView, activate the following bypasses on the *Controller > View > Diagnostics > Fault Bypass* tab:
   - Brake Voltage Not Off.
   - Brake Voltage Not On.
5. On iView, set the following parameters as indicated while taking note of their value:
   - On the *Controller > View > Configuration > Pattern > Common* tab,
     - Pattern Scaling = 0%.
   - On the Controller > View > Configuration > Brake tab,
     - Normal Brake Pick Voltage = 5 V.
     - Brake Partial Pick Voltage = 5 V.
     - Normal Brake Hold Voltage = 5 V.
     - Brake Relevel Voltage = 5 V.
     - Brake Weakening Voltage = 5 V.
6. On iView, set the following parameters as indicated while taking note of their value:
   - On the Configuration tab of the *Controller > View > Configuration > Brake* tab,
     - 10% Current Reference value = 0.0.
     - 20% Current Reference value = 0.0.

7. On the drive's *Home* > *Prog* > *Tune Parameters* menu, begin the motor tuning procedure by setting the LL01 parameter to **Start**.
8. On the controller, pick and hold up or down direction until the drive's display indicates that the procedure has completed.
9. Once the tuning procedure has completed, drop direction on the controller.
10. Restore parameters in part 5 & 6 above to their original value.
11. Set the Fault/Function Bypass to **Off**.
12. On the drive's *Home* > *Prog* > *Tune Parameters* menu, begin the encoder synchronization procedure by setting the LL07 parameter to **Start**.
13. On the controller, pick and hold up or down direction until the drive's display indicates that the procedure has completed.
14. Once the tuning procedure has completed, drop direction on the controller.
15. The LM30 parameter on the drive's *Home* > *Prog* > *Motor Data* menu will be set to **Motor Model + Flux Control**.

AC Permanent Magnet Motor (PM Motor)

1. Review Sections 5.9, 5.10.1, and 5.10.3 in the drive manual. The steps below implement the Motor Learn, SPI Encoder Learn, and Encoder Synchronization procedures.
2. Place controller on Machine Room Inspection.
3. Set the Fault/Function Bypass to ON.
4. On iView, activate the following bypasses on the *Controller* > *View Diagnostics* > *Fault Bypass* tab*:*
   - Brake Voltage Not Off.
   - Brake Voltage Not On.
5. On iView, set the following parameters as indicated while taking note of their value:
   - On the *Controller* > *View* > *Configuration* > *Pattern* > *Common* tab,
     - Pattern Scaling = 0%.
   - On the *Controller* > *View* > *Configuration* > *Brake* tab,
     - Brake Pick Voltage = 5 V.
     - Brake Partial Pick Voltage = 5V.
     - Brake Hold Voltage = 5 V.
     - Brake Relevel Voltage = 5 V.
     - Brake Weakening Voltage = 5V.
6. On iView, set the following parameters as indicated while taking note of their value:
   - On the Configuration tab of the *Controller* > *View* > *Configuration* > *Brake* tab,
     - 10% Current Reference value = 0.0.
     - 20% Current Reference value = 0.0.
7. On the drive's *Home* > *Prog* > *Tune Parameters* menu, begin the motor learn procedure by setting the LL01 parameter to **Start**.
8. On the controller, pick and hold up or down direction until the drive's display indicates that the procedure has completed.
9. Once the tuning procedure has completed, drop direction on the controller.

10. On the drive's *Home* > *Prog* > *Tune Parameters* menu, begin the encoder learn procedure by setting the LL05 parameter to **Start**.
11. On the controller, pick and hold up or down direction until the drive's display indicates that the procedure has completed.
12. Once the tuning procedure has completed, drop direction on the controller.
13. Restore parameters in part 5 & 6 above to their original value.
14. Set the Fault/Function Bypass to **Off**.
15. On the drive's *Home* > *Prog* > *Tune Parameters* menu, begin the encoder synchronization procedure by setting the LL07 parameter to **Start**.
16. On the controller, pick and hold up or down direction until the drive's display indicates that the procedure has completed.
17. Once the tuning procedure has completed, drop direction on the controller.
18. The LM30 parameter on the drive's *Home* > *Prog* > *Tune Parameters* menu will be set to “Motor Model + Flux Control”.

The Drive Manual

The information included above is very basic. If you are not familiar with the TORQMAX F5 drive, please take time to look through the drive manual to learn how to proceed, what to expect, and what adjustments are available through the drive.



Instructions regarding TORQMAX drive parameter adjustments in this user guide show the version 3.xx drive parameter first, followed by the version 1.xx drive parameter in parenthesis, e.g., **adjust the motor parameter LN02 (LF.22) Gear Reduction Ratio in small increments to obtain the correct Inspection speed**.

Initial Drive Settings (TORQMAX F5)

Verify TORQMAX parameters below before startup using drive documentation or the 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.



If required, parameter entry can be performed from a known default condition where all parameters and dependent parameters are set to the drive manufacturers default values:

1. On the drive's Home > Prog >Pass menu (F4 at bottom of LCD), set the password parameter to 3141592653. The display will indicate that the parameters are being defaulted and that the operator will need to be reset to restore normal operation. The previous password value will be restored.
2. Power down the controller for three minutes to reset the drive.
3. Once power is restored, navigate to the drive's Home > Prog > Basic Setup menu and set parameter US05 to 2 (Write Config. to Drive).
4. Configure 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 "Control Techniques Parameter Table" on page 9-23.

Critical TORQMAX F5 Drive Parameters

Basic Setup

- US02 System Units — 1 = ft/sec
- US03 Motor Type — Job Specific (Possible types): 0 = Induction Motor, 1 = Induction Gearless, 2 = PM Geared, 3 = PM Gearless
- US04 Control Type — 3 = Bi-polar Analog Speed (analog interface), 5 = Serial Speed DIN66019 Service 50

US06 Contract Speed — Job Specific

Inputs

- LI01 Type of Input — 0 = PNP
- LI04 Input Function — 1 = UPS Operation (analog interface), 0 = no function (serial interface)
- LI05 Input Function — 2 = Reduced Torque (analog interface), 0 = no function (serial interface)
- LI06 Input Function — 0 = no function
- LI07 Input Function — 0 = no function
- LI08 Input Function — 25 = Up Direction (analog interface), 0 = no function (serial interface)
- LI09 Input Function — 0 = no function

- LI11 Input Function — 16 = Fault Reset (analog interface); 0 = no function (serial interface)
- LI15 Direction Selection Inputs — 0 = up & down + function by direction inputs

Motor Data *Induction Motor*

- LM01 Motor Power — Job Specific
- LM02 Motor Speed — Job Specific
- LM03 Motor Current — Job Specific
- LM04 Motor Frequency — Job Specific
- LM05 Motor Voltage — Job Specific
- LM06 Motor Power Factor — Job Specific (if unknown): 0.9 for high slip motors; 0.75 for induction motors
- LM08 Electric Motor Protection — 1 = On
- LM09 Motor Protection Current — Job Specific

Motor Data *Permanent Magnet Motor*

- LM02 Motor Speed — Job Specific
- LM03 Motor Current — Job Specific
- LM04 Motor Frequency — Job Specific
- LM05 Motor Voltage — Job Specific
- LM07 Motor Torque — Job Specific
- LM08 Motor Protection — 1 = oN
- LM11 Peak Current Factor — Job Specific

Encoder Data

- LE02 Encoder 1 Pulse Number — Job Specific
- LE03 Swap Encoder 1 Channels — Job Specific (Initially set to 0)
  0 = Not Inverted
  1 = A-B Swapped
  2 = Inverted Rotation
  3 = A-B Swap & Inverted Rotation
- LE04 Sample Rate for Encoder — 3 = 4 msec
- LE05 Encoder 1 Multiplier — Job Specific (no affect for incremental); 2 for Geared, 8 for Gearless

Machine Data

- LN01 Sheave Diameter — Job Specific
- LN02 Gear Ratio — Job Specific (See LN05 for the estimated value)
- LN03 Roping Ratio — Job Specific

Tune Parameters *Induction Motor*

- LL01 Motor Tuning — Perform after all parameters are initially set

- LL07 Encoder Synchronization Perform after motor tuning - LL01

Tune Parameters *Permanent Magnet Motor*

- LL01 Motor Tuning Perform after all parameters are initially set
- LL05 SPI Perform after motor tuning - LL01
- LL07 Encoder Synchronization Perform after SPI - LL05

Control Settings

- LC01 Control Mode 3 = Closed Loop Analog Pretorque (analog interface)
  4 = Closed Loop Digital Pretorque (serial interface)
- LC30 Maximum Torque Job Specific Typically set between 200% and 250% (150% during commissioning)

Timer Parameters

- LT01 Brake Release Delay 0 seconds
- LT02 Control Hold Off 0.4 seconds (Delay should be less than controller's speed pick delay)
- LT03 Speed Pick Delay 10.0 seconds
- LT10 Brake Drop Delay 0.0 seconds
- LT12 Current Hold Time 0.0 seconds
- LT13 Current Ramp Down Time 0.3 seconds

Special Functions

- LX08 Phase Current Check 1 = Phase Current Check
- LX13 Speed Follow Error 1 = On with Error
- LX14 Speed Difference 10%

Analog I/O

- LA31 Analog Output 1 Function 2 = Actual Speed

Outputs

- LO01 Output Inversion 0 = None
- LO05 Output Function O1 2 = Drive Ready
- LO10 Output Function O2 3 = Drive On
- LO15 Output Function RLY1 2 = Drive Ready
- LO20 Output Function RLY2 3 = Drive On

Magnetek AC Drive Introduction

Study the drive manual. It has very important startup and other information beyond the scope of this manual.

Digital Operator

The keypad and display integral to the digital operator.

Figure 2.16 Magnetek AC Drive



Keypad Operation

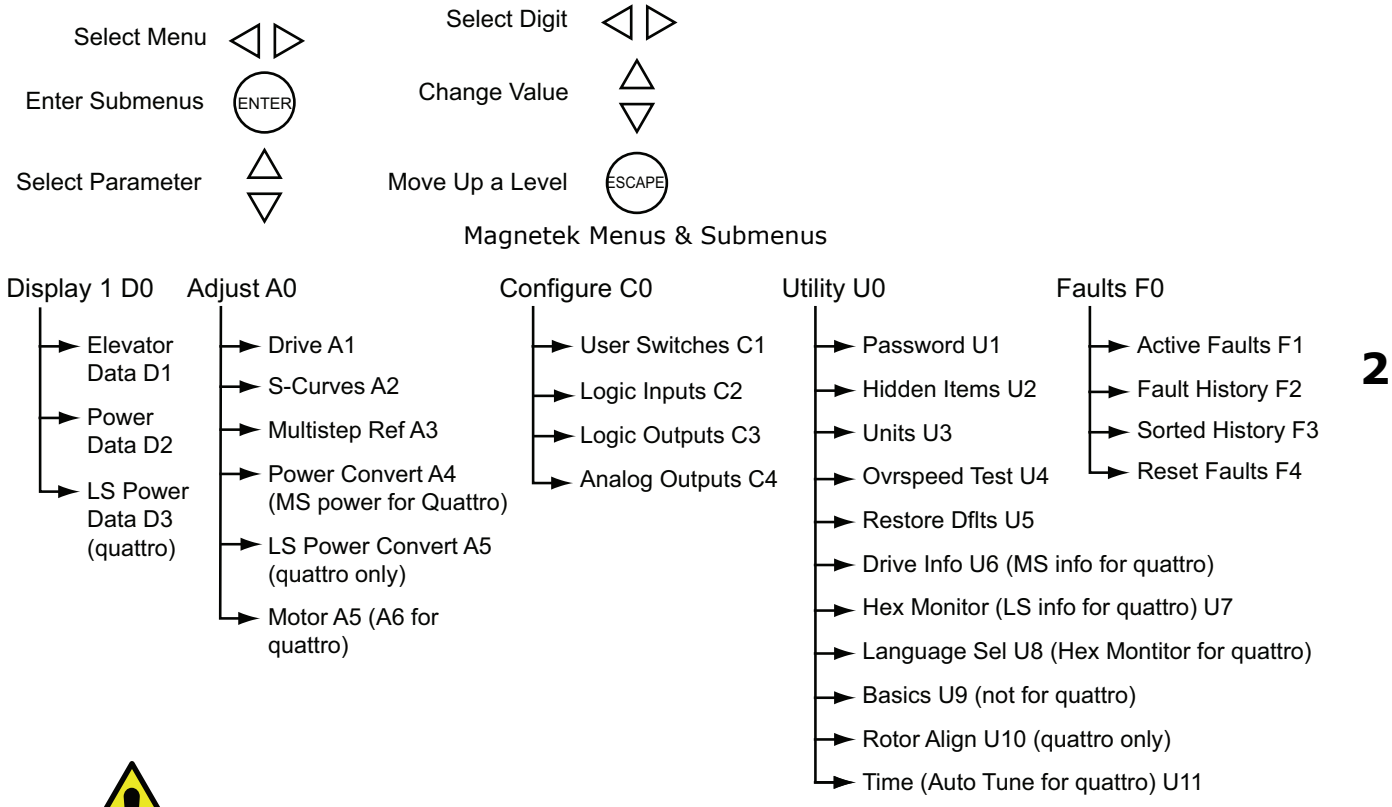
Please refer to “Magnetek Keypad Overview” on page 2-57.

Clear Fault

Most faults clear automatically. If a persistent (serious) fault is displayed, the drive will shut down. To clear the fault after correcting the cause:

- Access the drive Faults F0 menu, submenu Active Faults, F1.
- Go to Reset Active Faults. Press Enter.

Figure 2.17 Magnetek Keypad Overview



Changes are saved only after ENTER is pressed.
Some parameters cannot be changed while the elevator is operating.

Magnetek Drive Operation Overview

Menus, sub menus, and parameters may be accessed while the drive is running. Some parameters may not be changed while the drive is running. For these parameters, the word "LOCK-OUT" appears.

Operator LEDs indicate the status of the drive, generally including:

- Ready: Ready but not actually providing current to the motor.
- Run: Providing current to the motor.
- User: Selected via Logic Outputs C3 submenu.
- Fault: Drive has declared a fault.
- Torque Limit: The drive has reached its torque limit. See drive manual.
- Sub Menu: A sub menu has been accessed.
- Data Entry: A parameter value has been accessed.

Initial Controller Settings, HPV 900 S2

Configuration > Brake > Timer tab

- Pick delay = job specific - initially set to 1.0
- Speed pick delay 1 = job specific - initially set to 1.75
- Speed pick delay 2 = job specific - initially set to 0.75
- Contactor drop delay = 1.1

Configuration > Pattern > Common

- Lag delay = drive tuning specific - initially set to 0.3
- Leveling distance = drive tuning specific - initially set to 2.0

Configuration > Drive > General

- Normal rate limited stop = drive tuning specific - initially set to 7.0
- Drive type = HPV900

Initial Controller Settings, Quattro PM

- Configuration => Drive => General => Options
  - Drive type: Quattro
  - Drive interface: Analog
- Configuration => Drive => General => System
  - Normal rate limited stop < drive tuning specific – initially set to 2.0>
- Configuration => Drive => General => Speed Reference
  - Reference type: Tachometer
- Configuration => Brake => Control => Timer
  - Pick delay < job specific – initially set to 1.5>
  - Speed pick delay 1<job specific – initially set to 2.25>
  - Speed pick delay 2<job specific – initially set to 0.75>
- Configuration => Pattern => Common => General
  - Lag delay < drive tuning specific – initially set to 0.3>
- Configuration => Pattern => Common => Leveling
  - Level distance < drive tuning specific – initially set to 2.0>

Initial Drive Settings, HPV 900 S2

Verify the following Magnetek parameters are set as indicated before startup. With the exception of the parameters listed below, verify that the drive parameters are set to drive default English values. A list of parameters is included in the Reference Section of this user guide.



Verify/Modify A5 Motor ID before changing any other parameters. This parameter determines the items visible in the menus.

A1 Drive Menu

- Contract Car Spd = job specific
- Contract Mtr Spd = job specific

- Encoder Pulses = job specific
- Serial Cnts/Rev = job specific (PM only)
- Contact Flt Time = 0.75

A2 S-Curves Menu

- Accel Rate 0 = 7.99
- Decel Rate 0 = 7.99
- Accel Jerk In 0 = 0.00
- Accel Jerk Out 0 = 0.00
- Decel Jerk In 0 = 0.00
- Decel Jerk Out 0 = 0.00

A4 Power Convert Menu

- Input L-L Volts = job specific

A5 Motor Menu

- Motor Id = Select 4 Pole, 6 Pole, or PM
- Rated Mtr Power = job specific
- Rated Mtr Volts = job specific
- Rated Excit Freq = job specific
- Rated Motor Curr = job specific
- Motor Poles = job specific
- Rated Mtr Speed = job specific
- D Axis Induct = 5 to 40 mH
- Q Axis Induct = 5 to 40 mH

C1 User Switches Menu

- Spd Command Src = Analog
- Run Command Src = Analog
- Encoder Select = job specific (PM only)
- Cont Confirm Src = External TB
- Ramped Stop Sel = Ramp On Stop
- Ramp Down En Src = Run Logic
- Motor Ovrld Sel = Fault At Stop
- Pretorque Source = Analog

C2 Logic Inputs Menu

- Logic Input 4 (TB1-9) = NC Ctct Cfirm
- Logic Input 5 (TB1-10) = No Function
- Logic Input 6 (TB1-11) = No Function
- Logic Input 7 (TB1-24) = No Function
- Logic Input 8 (TB1-25) = No Function
- Logic Input 9 (TB1-26) = No Function

C3 Logic Outputs Menu

- Logic Output 3 (TB1-15 = Speed Reg Rls
- Logic Output 4 (TB1-16 = Ramp Down Ena
- Relay Coil 1 (TB2-27/28/29) = Ready to Run

C4 Analog Outputs Menu

- Logic Output 1 (TB2-8 = Speed Command

Initial Drive Settings, Quattro PM

- **A1 Drive Menu**
  - Contract Car Spd <job specific>
  - Contract Mtr Spd <job specific>
  - Encoder Pulses <job specific>
  - Serial Cnt / Rev <job specific>
- **A5 LS Pwr Convert Menu**
  - Input L-L Volts <job specific>
- **A6 Motor Menu**
  - Rated Mtr Power <job specific>
  - Rated Mtr Volts <job specific>
  - Rated Motor Curr <job specific>
  - Motor Poles <job specific>
  - Rated Mtr Speed <job specific>
  - Verify D Axis Induct and Q Axis Induct are between 5 and 40 mH.
- **C1 User Switches Menu**
  - Spd Command Src: Analog Input
  - Cont Confirm Src: External TB
  - Motor Ovrld Sel: Fault at Stop
  - Pretorque Source: Analog Input
  - Ramped Stop Sel: Ramp On Stop
  - Ramp Down En Src: Run Logic
- **C2 Logic Inputs Menu**
  - 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**
  - Relay Coil 1 (TB2-1/3/5): No Fault
  - Relay Coil 2 (TB2-8/10/12): Speed Reg Rls

Drive Offsets Calibration

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 automated and manual procedures that can be used to calibrate drive analog circuitry. MCE recommends using the automated procedure first and then verifying the most critical offsets using the manual procedure.

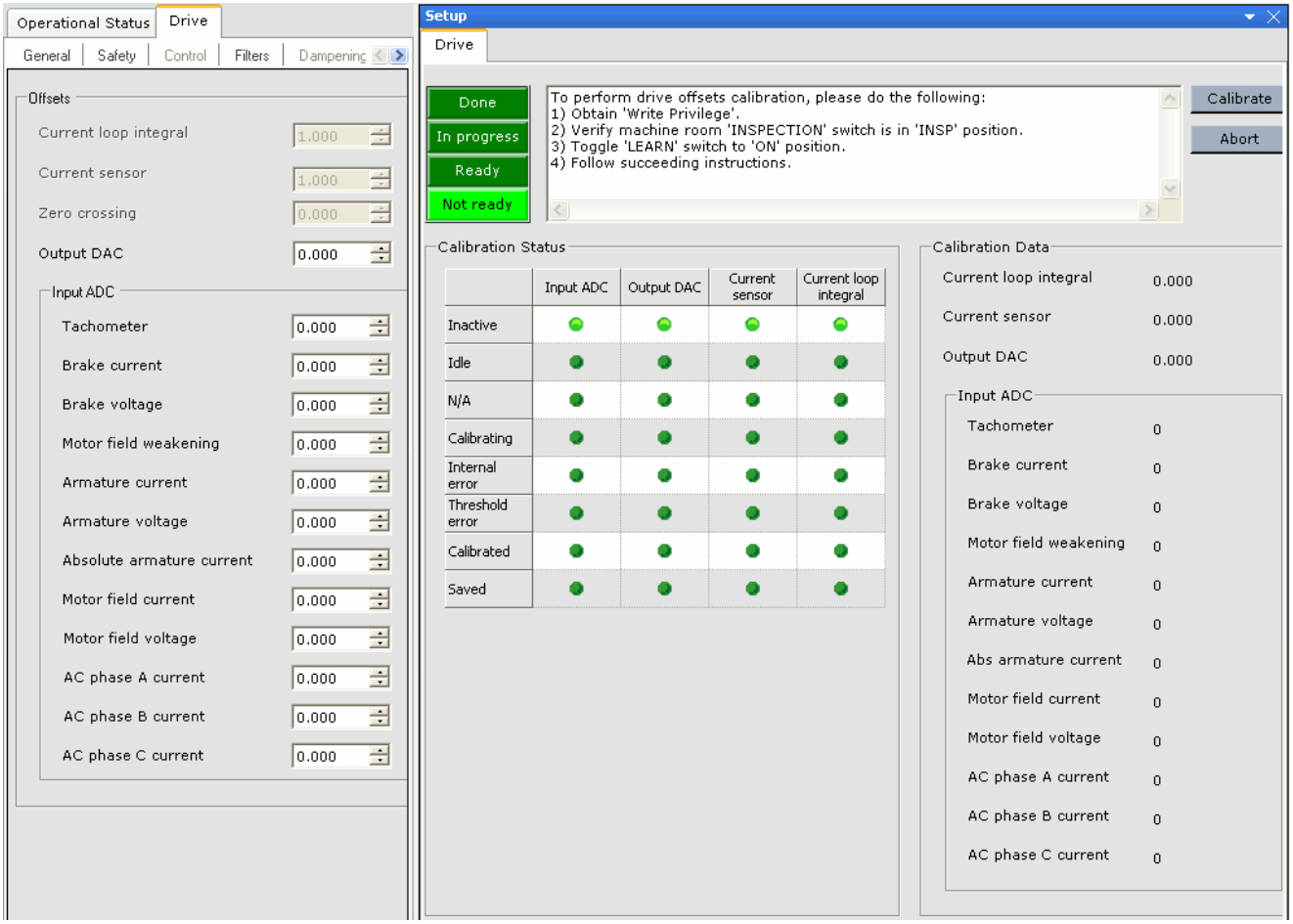
Automated Drive Setup Procedure

2

Before adjusting the drive, verify that:

- the CONTROLLER STOP switch is in the RUN position
- 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 (View > Layouts > Drive)



2. Follow the on-screen instructions, “To perform the drive offsets calibration...” (calibrates Input ADC and Output DAC offset).
3. Once 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).

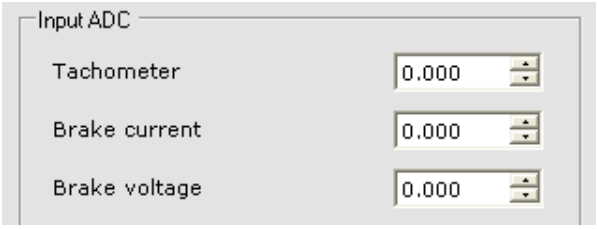
Manual Drive Setup Procedure

MCE recommends first performing the Automated Drive Setup Procedure previously described and then verifying the most critical offsets (***Output DAC*** and ***Input ADC - Tachometer***) using the manual procedure. If the automated procedure is unsuccessful, the manual procedure must be used.

Before adjusting the drive, verify that:

- the CONTROLLER STOP switch is in the RUN position
- the iBox Safety OK LED is ON
- the iBox Door Locked LED is ON
- the iBox Fault LED is OFF
- iView is connected, write privilege has been obtained (Write Privilege > Acquire selected and “Yes” softkey on iBox pressed in response)

1. Verify Pattern scaling is set to 100% (Configuration > Pattern > Common tab).
2. On iView, display the Drive - Offsets tab (Configuration > Drive > Calibration tab).
3. ***Output DAC***: With zero speed commanded (car idle):
   - TORQMAX F5: verify that pattern voltage applied to the AC drive unit reads 0.0 volts between F5 drive terminals X2A-1 (+) and X2A-2 (—).
   - Magnetek: verify that the D1 Speed Command value is zero). If not, adjust Output DAC on the Drive/Calibration screen by entering and sending small negative or positive values until the reading is as close to 0.0 volts as possible (less than 1mV). The DAC adjustment range is from —0.25 to +0.25 units.
4. On iView, display the Drive - Offsets tab (Configuration > Drive > Calibration tab). Also display the Virtual Oscilloscope (View > Virtual Oscilloscope) and set Test point 1 = Tachometer Signal.
5. ***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 (20mV). The ADC adjustment range is from —0.5 to +0.5.



6. *Input ADC - Brake current*: Set Virtual Oscilloscope Test Point 1 = Brake Current Feedback and 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.
7. *Input ADC - Brake voltage*: Set Virtual Oscilloscope Test Point 1 = Brake Voltage Feedback and 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 Tuning and Encoder Alignment

Drives used in iControl applications provide auto tuning procedures that allow the drive to directly learn motor characteristics. Tuning improves performance and automatically calculates some motor values you would otherwise have to enter manually.

Learning Encoder Data From PM Machines, TORQMAX F5

Please refer to *Motor Data* > *Permanent Magnet Motors* and *Encoder Data* in Section 5 - *Initial Start Up* of the TORQMAX F5 Elevator Drive v3.xx manual.

Encoder Alignment HPV 900 S2

This instruction is for permanent magnet (PM) motors only. Refer to the *PM Start-Up Procedure* in the Magnetek drive manual.

Auto-tuning the PM motor HPV 900 S2

This instruction is for permanent magnet (PM) motors only. Refer to the *PM Start-Up Procedure* and *Auto-Tune Procedure* in the Magnetek Drive Technical Manual.

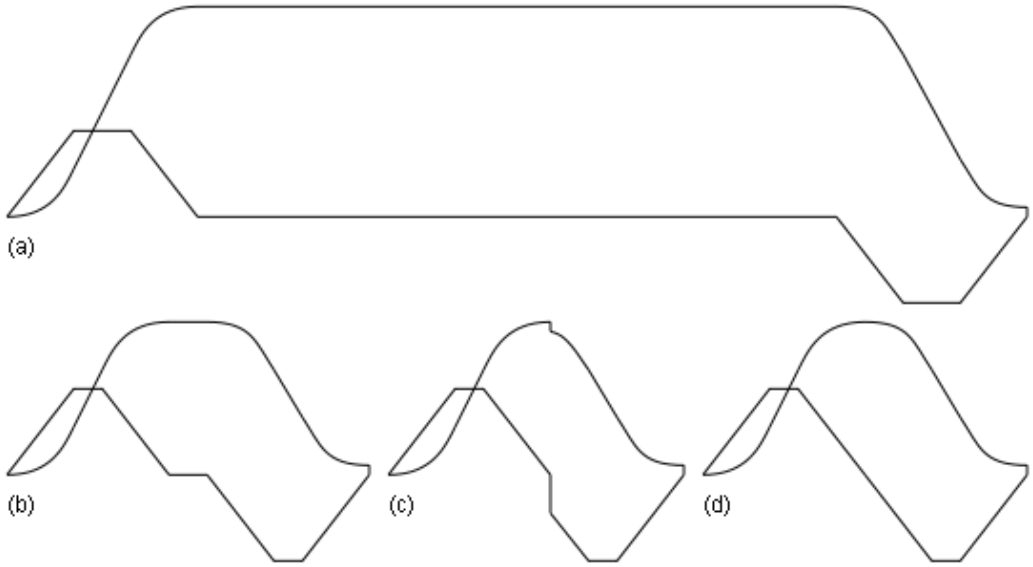
Drive Response HPV 900 S2

1. For initial setup, set the Pick delay, Speed pick delay 1, and Speed pick delay 2 via the iView Configuration > Brake > Timer tab to a sufficiently long value to allow enough time for the drive to respond to a run request.
   - If Pick delay is too short, a DRO fault will occur.
   - Once the elevator is moving under control in the correct direction and at the commanded speed, these delays can be adjusted to a more optimum value.
   - Set Pick delay to 1.0 second.
   - Set Speed pick delay 1 to 1.75 seconds.
   - Set Speed pick delay 2 to 0.75 seconds.
2. Depending on drive tuning, the amount of lag between commanded speed and drive response can vary. As a result, as the drive is adjusted, the Lag delay parameter on Configuration > Pattern > Common > General 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 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 for movement between floors where a stabilized speed is not reached. Under normal operation, this would occur when contract speed is not reached.
   - To adjust Lag delay, observe “Acceleration (Raw)” on the virtual oscilloscope via Diagnostics > 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 (see Figure 2.14).

- For initial setup, set Lag delay parameter to 0.3 seconds on Configuration > Pattern > Common > General.

Figure 2.18 Velocity and acceleration



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 drive, the leveling distance may have to be generous to allow the elevator's speed to completely transition to the requested leveling speed.
   - For initial setup, set the Leveling distance parameter to 2.0 inches on the controller's Configuration > Pattern > Common > Leveling. Once the drive is tuned, this parameter may be adjusted to a more optimum value.
4. Depending on the tuning of the drive, the transition from leveling speed to zero speed may be sluggish.
   - For initial setup, set the Normal rate limited stop parameter to 7.0 ft/s^2 on the controller's Configuration > Drive > General > System tab. Once the drive is tuned, this parameter may be adjusted to a more optimum value.
5. Please see the Magnetek Drive Technical Manual for tuning/adjustment procedures.

Auto Tune Encoder Alignment Quattro PM

1. Place controller on Inspection.
2. Disable contactor confirmation by setting C1, Cont Confirm Src to NONE.
3. Set Logic Output 1 (TB1-25), C3 Logic Outputs Menu, to READY TO RUN.

4. Temporarily jumper terminals TB4-1 to F2 and TB4-4 to F1 (located in the Quattro Drive Cabinet on the top). These terminals should also be available on the terminal block in the Controller cabinet on the bottom (please see prints). This will bypass the PM1 contacts and allow the Quattro DC Drive to pick its ME contactor (motor contactor). Care must be taken not to short the secondary of the transformer that is the source of power for these terminals.
5. Verify the machine brake is set, will hold the car, and cannot be picked.
6. Follow the "Absolute Encoder Alignment Procedure: Auto Alignment Procedure" in the Quattro PM Elevator Drive manual. Follow the enable "through the operator" rather than "through the drive run command." (At the Begin Alignment prompt, select YES rather than ON RUN.)
7. Proceed to the following Auto Tune Motor Data section.

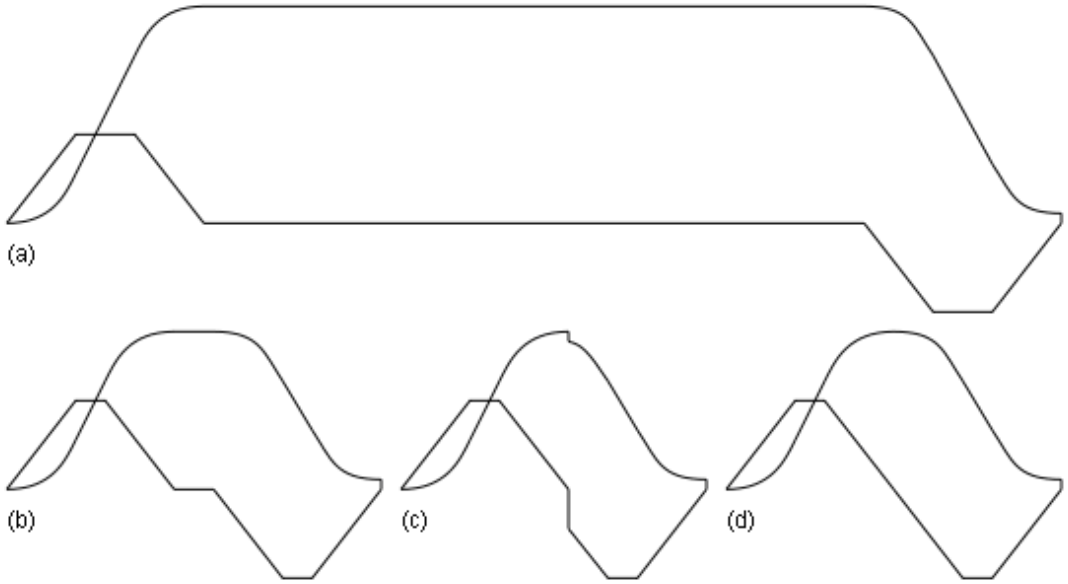
Auto Tune Motor Data Quattro PM

1. Follow the "Auto Tune Procedure" in the Appendix of the Quattro PM Elevator Drive manual. Follow the enable "through the operator" rather than "through the drive run command." (At the Autotune Select prompt, select YES rather than ON RUN.)
2. When auto tune is successfully completed, remove the temporary jumpers from terminals TB4-1/F2 and TB4-4/F1.
3. Set Logic Output 1 (TB1-25), C3 Logic outputs Menu to CLOSE CONTRACT.
4. Enable Contactor Confirmation by setting C1 Cont Confirm Src to EXTERNAL TB.
5. Verify the machine brake is able to pick and drop on command.

Adjust for Magnetek Quattro Drive Response

1. For the initial setup, set the Pick delay, Speed pick delay 1, and Speed pick delay 2 (Configuration => Brake => Timer) to a sufficiently long value to allow enough 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 1.5 seconds.
   - Set Speed pick delay 1 to 2.25 seconds.
   - Set Speed pick delay 2 to 0.75 seconds.
2. Depending on the tuning of the Quattro drive, the amount of lag between the commanded speed and drive response can vary. As a result, as the drive is adjusted, the Lag delay parameter on 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 for movement 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 virtual oscilloscope via Diagnostics => 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 Configuration => Pattern => Common => General.



- **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 contact speed.**

3. Depending on the tuning of the Quattro drive, the leveling distance may have to be generous to allow the elevator speed to completely transition to the requested leveling speed.
   - For initial setup, set the Leveling distance parameter to 2.0 inches on Configuration => Pattern => Common => Leveling. Once the drive is tuned, this parameter may be adjusted to a more optimum value.
4. Depending on the tuning of the Quattro drive, the transition from leveling speed to zero speed may be sluggish.
   - For initial setup, set the Normal rate limited stop parameter to 2.0 ft/s^2 or more on Configuration => Drive => General => System. Once the drive is tuned, this parameter may be adjusted to a more optimum value.

Please see the Magnetek Quattro PM Drive Technical Manual for tuning/adjustment procedures.

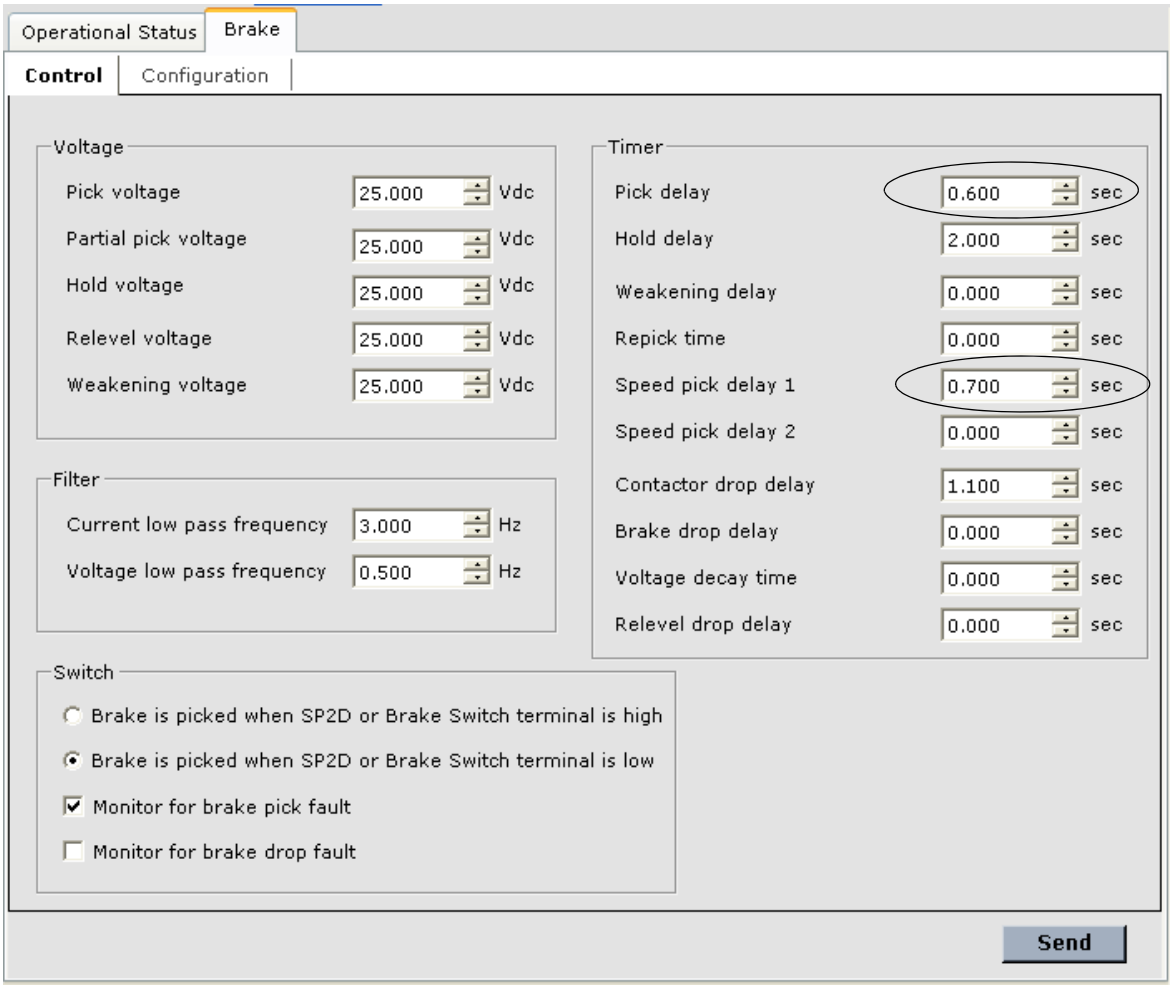
Brake Calibration

This section describes brake calibration for 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 *View* menu select *Layouts* and click *Brake*.



2

2. Set *Pick delay* to 0.600 seconds.
3. Set *Speed pick delay 1* to 0.700 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.

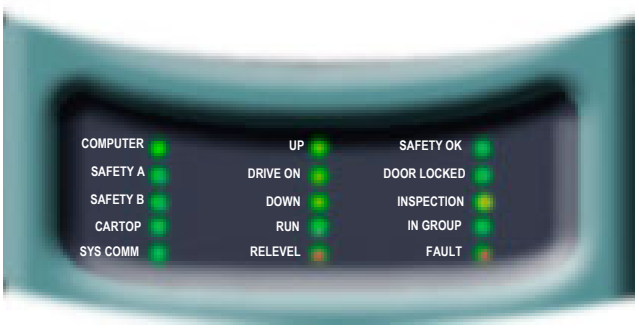
Calibration

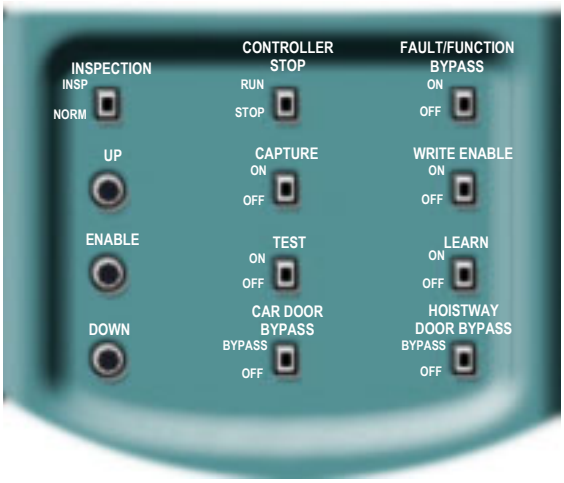
Calibration allows iControl to learn the characteristics of the machine brake.

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.

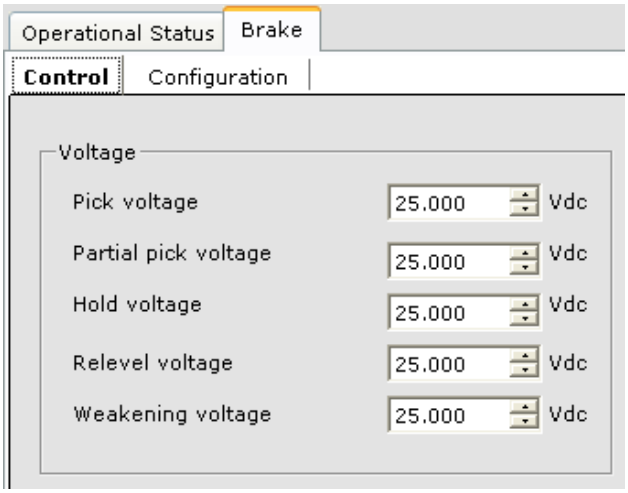
Note

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.



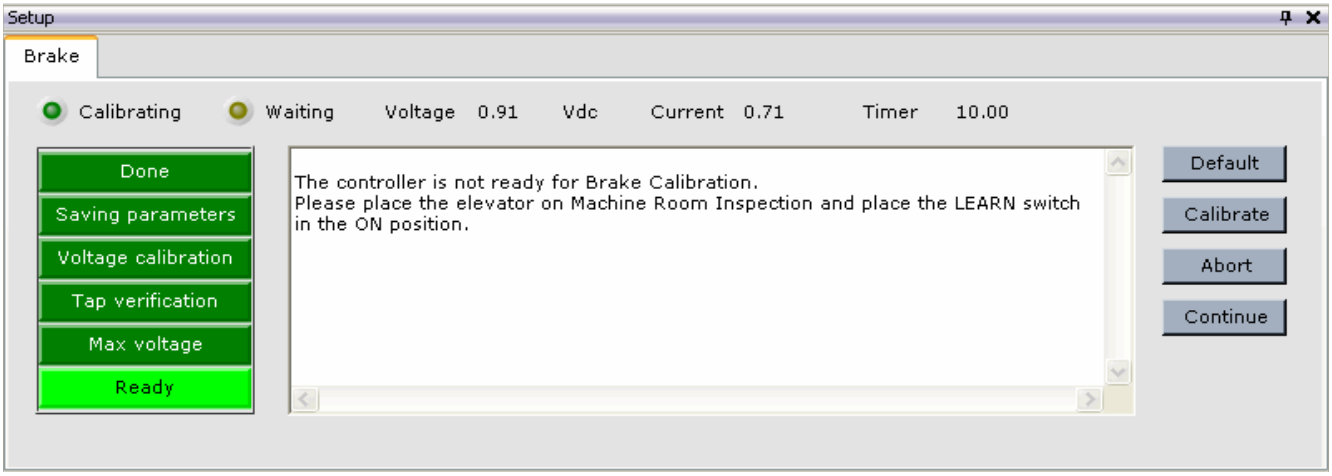


4. Display the *Brake* > *Control tab* (Configuration > Brake > Control tab).
5. Set *Pick voltage* and *Hold voltage* as shown on your job prints.
6. For now, set *Releveling voltage* and *Weakening voltage* to the same value as Pick voltage. (This parameter can be fine tuned during final adjustment.)



Contents Index MCE Web

7. On the *Setup* > *Brake tab* the *Ready* indicator should be On. The text box will show 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.



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.

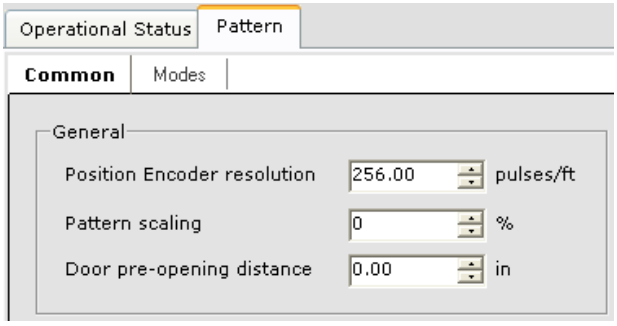
Table 2.15 Brake Calibration Status Messages

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 START 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.

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%. Send that value to the controller.

Running on Machine Room Inspection

Once you are satisfied that the brake is picking properly, then do the following

1. Verify car movement (direction) and motor control and troubleshoot if not correct (see "Verifying Car Direction and Encoder Phasing (Magnetek)" on page 2-72).
2. Verify pattern command vs. drive speed feedback tracking (see "Verify Pattern Command and Drive Speed Feedback" on page 2-73).
3. Calibrate the actual car speed (see "Calibrating Actual Car Speed" on page 2-74).
4. Set the following error margin (see "Following Error Margin" on page 2-76).
5. Set the following error and tach error tripping thresholds (see "Following Error Margin" on page 2-76 and see "Tach Error Tripping Threshold Adjustment" on page 2-77).
6. Verify electronic motor overload protection (see "Verify Electronic Motor Overload Protection (TORQMAX F5)" on page 2-78).
7. Perform additional adjustments and checks (see "Set the value of LF.09 back to the noted setting (Motor FLA or LF.12)." on page 2-78).

Verifying Car Direction and Motor Control (TORQMAX F5)

1. If the brake picks but the car does not move, oscillates, or trips an EEnC1 fault (E.ENC1), change the setting of the F5 drive LE03 parameter on the *Home* > *Prog* > *Encoder Data Parameters menu* (LF.28). This parameter swaps encoder channels and/or reverses motor rotation internally in the drive. Physically changing encoder or motor connections is not necessary and is not recommended. The LE03 options are:
   0 = nothing reversed
   1 = encoder channels A-B swapped
   2 = motor rotation reversed
   3 = motor rotation reversed and encoder channels A-B swapped

Note

For PM Synchronous Motors, if the A/B encoder channels are swapped, the encoder pole position value in LE06 (LF.77) will have a different corresponding value and must be relearned. See *Encoder Learn* in Section 5 -*Initial Start Up* of the TORQMAX Drive v3.xx manual.

2. If the car moves opposite of the intended direction while drawing normal current, change parameter LN03 from 0 to 2 or 1 to 3. Motor current can be verified by displaying F5 drive parameter 7 on the *Home* > *Diag. #1 screen (*LF.93).
3. If the car moves in the intended direction while drawing excessive current, change parameter LE03 from 0 to 1 or 2 to 3. Motor current can be verified by displaying F5 drive parameter 7 on the Home > Diag. #1 screen (LF.93).
4. Try to run the car on Inspection. If the drive still trips an EEnC1 fault, again change the F5 drive parameter LN03 (LF.28). (Refer to LN03 parameter options in step 1). The car should now move in the correct direction and draw normal current.

Caution

For PM motors, the direction of motion should not be changed by swapping motor phases (connections).

Verifying Car Direction and Encoder Phasing (Magnetek)

Move the elevator on Inspection and verify that the motor is under control and rotating in the proper direction. If it is, skip to the next section.

- If the motor runs away in the proper direction, change the drive's C1 Encoder Connect direction.
- If the motor runs away in the opposite direction, change the drive's C1 Motor Rotation direction.
- If the motor runs under control in the opposite direction, change the drive's C1 Encoder Connect direction and C1 Motor Rotation direction.

For proper operation, motor phasing must match encoder feedback phasing. If the phasing is not correct, the motor will not accelerate up to speed. It will typically oscillate back and forth at zero speed and the current will be at the torque limit.

- If the motor operates as described above, swap any two motor phases (U<->V, V<->W or U<->W.

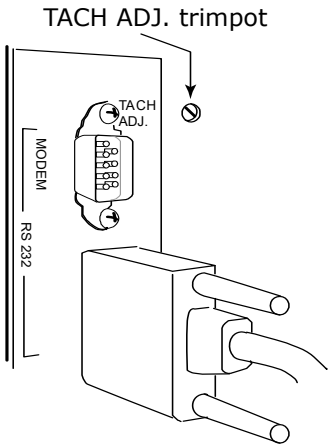


Danger

Turn power off and wait five minutes for DC bus voltage to bleed off before taking the drive cover off. Do not touch any terminals without ensuring that high voltage is not present.

Verify Pattern Command and Drive Speed Feedback

1. Verify/set the following iView Drive parameters (Configure > Drive > General tab > Speed Reference section):
   - Reference type = Tachometer
   - Scaling = 1.000
2. If you change any values, send them to the controller.
3. Display the Virtual Oscilloscope (View > Virtual Oscilloscope).
4. Set Test point 1 = Pattern (Command) and Test point 2 - Speed Feedback.
5. Run the car and verify the polarity (Test point 1 and 2 traces are both moving in the same direction). If they not, change the Speed Reference Direction parameter (Forward / Reverse) on the Configuration > Drive > General tab.
6. 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 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 the Scaling parameter (Configuration > Drive > General tab > Speed Reference section) up or down in 0.1 increments. Remember to *Send* the value to the controller, and then re-adjust the trimpot.

Calibrating Actual Car Speed

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 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 (see Caution). If measured inspection speed does not match the commanded value, verify the following:

1. Verify the Inspection - High Speed parameter (iView: Configuration > Pattern > Modes tab or iBox: Car/Pattern Profile/Inspection high velocity).
2. Verify that *Pattern scaling* is set to 100% (Configuration > Pattern > Common tab).
3. Verify drive parameters set earlier:
   - TORQMAX F5: see “Initial Drive Settings (TORQMAX F5)” on page 2-53.
   - Magnetek: see “Initial Drive Settings, HPV 900 S2” on page 2-58.
4. Additional drive specific instruction:
   - Magnetek: Adjust drive parameter A1 Contract Mtr Spd if the speed is not correct (higher RPM for increased speed.
   - TORQMAX F5: Adjust motor parameter LF22 Gear Reduction Ratio in small increments to obtain the correct Inspection speed (see Note).



Gear Reduction Ratio: If the gear reduction ratio is not available from the machine name plate, calculate the value by first measuring the motor revolutions using a marker on the motor shaft or brake drum. Reduce the inspection speed by decreasing the Inspection High speed setting, then determine the number of motor shaft revolutions required to complete one revolution of the sheave. Calculate the gear reduction ratio using the formula: Gear reduction ratio = Motor RPM / Sheave RPM. Enter the calculated value in parameter LF.22.

The drive has the capability of estimating the gear reduction ratio. Run the car on inspection and read the value of parameter LF.25, the gear ratio estimated by the drive. The value of LF.25 can be temporarily used for LF.22.

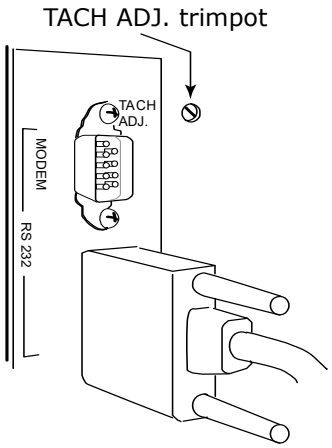


Caution

Up vs. down speed variance: If the car runs at commanded speed in one direction but less then commanded speed in the other direction, this can indicate insufficient voltage available to generate the required torque. At inspection speed this may be as little as 1 or 2 fpm, but at contract speed this variance will be much greater. On a small percentage of jobs it is necessary to increase the value of TORQMAX F5 parameter LF14 Rated Motor Voltage. For example, for a motor rated for 480 volts it may be necessary to increase LF14 to 500 volts.

Verify Pattern Command and Drive Speed Feedback

1. Verify/set the following iView Drive parameters (Configure > Drive > General tab > Speed Reference section):
   - Reference type = Tachometer
   - Scaling = 1.000
2. If you change any values, send them to the controller.
3. Display the Virtual Oscilloscope (View > Virtual Oscilloscope).
4. Set Test point 1 = Pattern (Command) and Test point 2 - Speed Feedback.
5. Run the car and verify the polarity (Test point 1 and 2 traces are both moving in the same direction). If they not, change the Speed Reference Direction parameter (Forward / Reverse) on the Configuration > Drive > General tab.
6. 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 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.

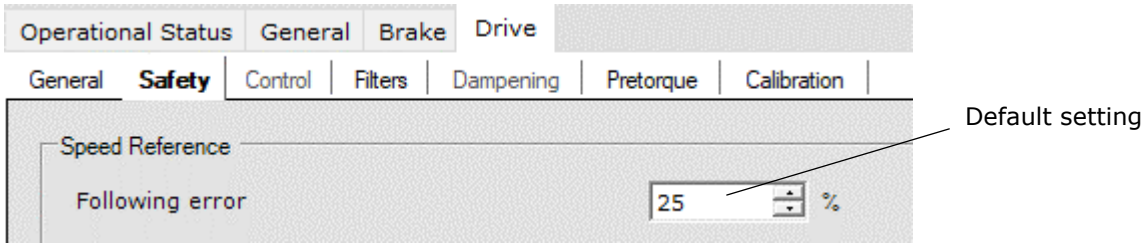


If the trimpot adjustment is insufficient, adjust the Scaling parameter (Configuration > Drive > General tab > Speed Reference section) up or down in 0.1 increments. Remember to *Send* the value to the controller, and then re-adjust the trimpot.

Following Error Margin

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.

1. Verify that the Pattern (Command) and Speed Feedback signals are tracking properly. Please refer to “Following Error Margin” on page 2-76.
2. On the Configuration > Pattern > Modes tab, verify that Standard Profile/High Speed and Inspection Profile/High Speed parameters are set correctly for this job.
3. Verify that actual car speed on Inspection is equal to the Inspection High speed setting. Please refer to “Following Error Margin” on page 2-76.
4. 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 2-77.



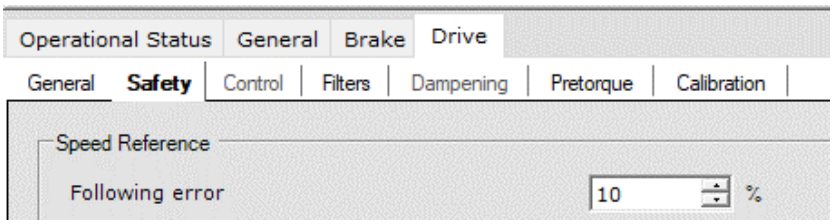
Caution

The default setting for the Following error parameter is 25%. For a car that has been properly adjusted as described in steps 1 through 3 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.

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. 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 Testpoint 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 Following Error is a percentage of speed. On a 500fpm job a 10% Following Error allows a 50fpm contract speed deviation before a fault is generated.

Verify Electronic Motor Overload Protection (TORQMAX F5)

Provided the car is running normally on Inspection operation and is drawing normal current, perform the following test to verify the drive electronic motor overload protection is correctly set to protect the motor from overload conditions:

1. Verify LF.08 (Electronic Motor Protection) is set to ON.
2. Note (write down) the value of LF.09 (Electronic motor protection current). This value must be equal to LF.12.
3. Lower the value of LF.09 to 20% of the noted setting (LF.09 x 0.20).
4. Run the car on Inspection. After one minute the drive should trip an E.0H2 fault and shut down the car.
5. After five seconds, the fault will automatically clear and the car will be ready to run on Inspection again.
6. Set the value of LF.09 back to the noted setting (Motor FLA or LF.12).

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 *Inspection/Low Speed* to 25 fpm.



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.



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 any 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. The distance between the two switches should ideally be greater than the distance required to stop the car after the direction command is removed with the car on Inspection operation.
7. Verify the brake has sufficient tension to hold the car under all conditions likely to be encountered during the installation phase.



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 3-3).
- 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).
- Door Operation (see page 3-8).
- Running on Machine Room Inspection Mode (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).

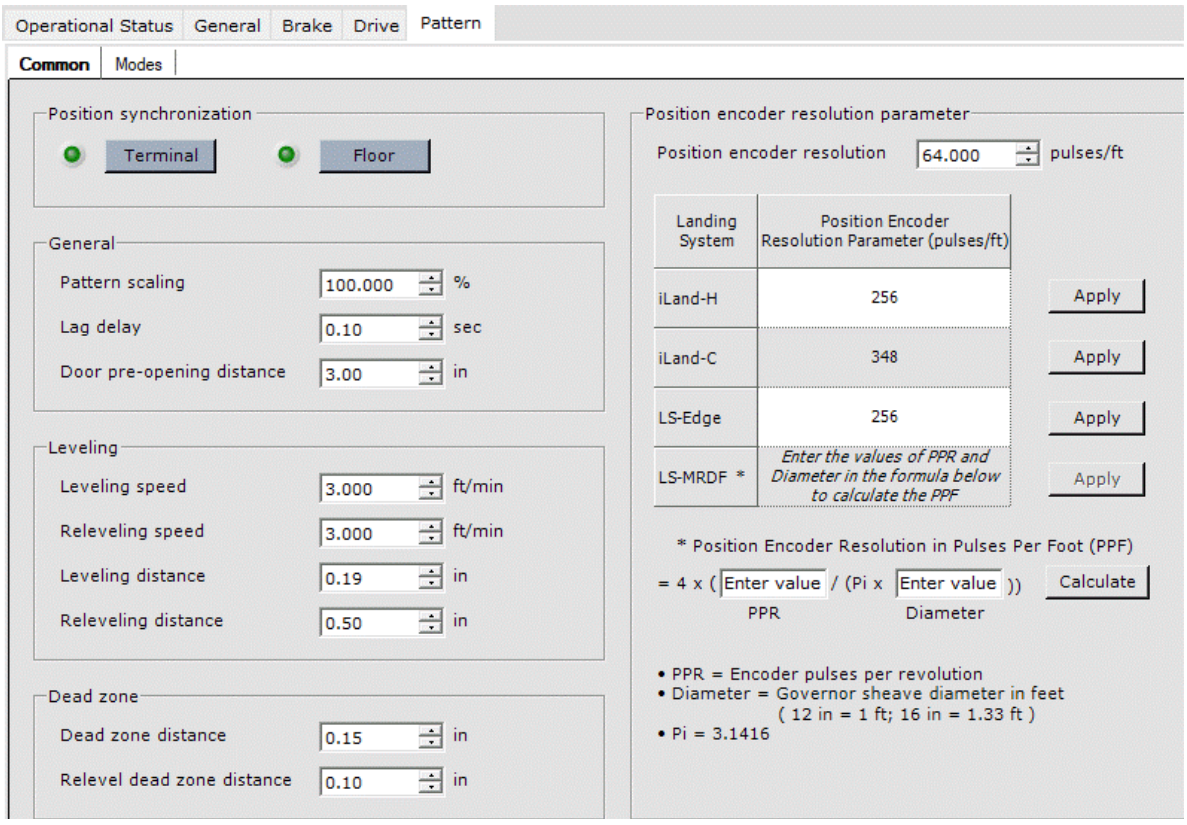
Landing System

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

Set position encoder resolution as directed for the system on (iView Controller > View > Configuration > Pattern > Common tab).



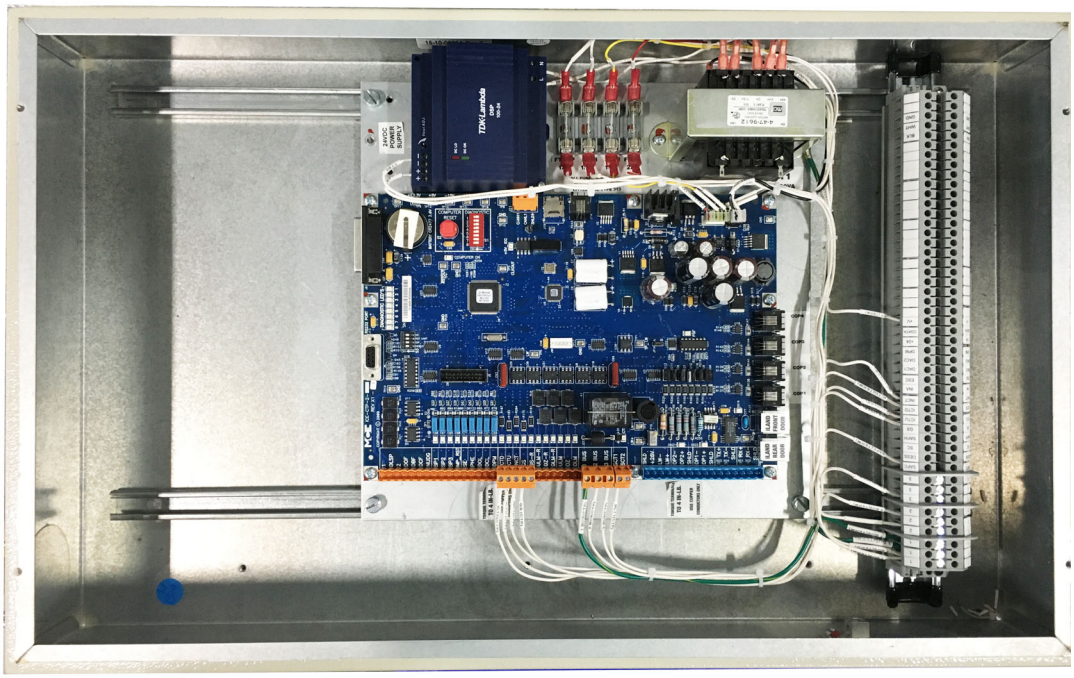
Calibrating the Floor Offsets

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.

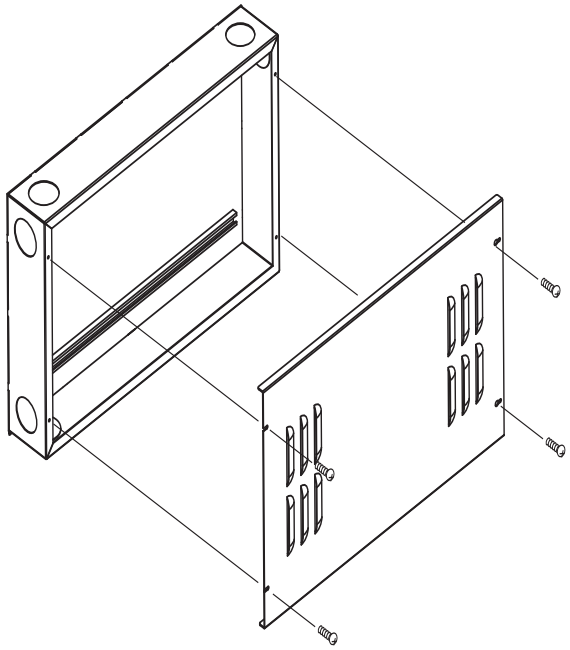
Figure 3.1 iLink Circuitry and Wiring



Installing the iLink Enclosure

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.



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.



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 4-31.

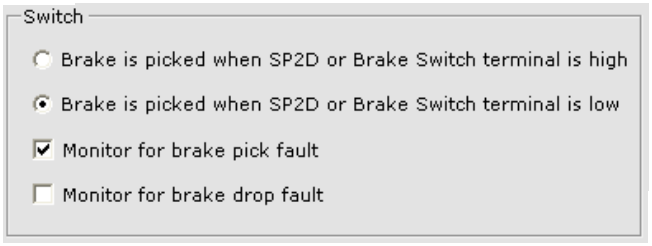
Installing Brake Monitoring

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.



Danger

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

Installing the Earthquake Sensor

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

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

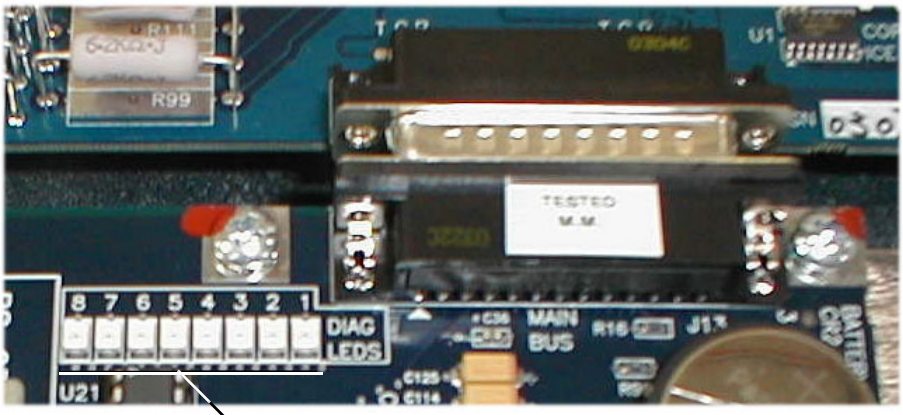
Connect position indicators as shown in the prints.

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 -CT drawings for power connections. On the cartop, verify all voltages shown are present and within acceptable levels.
   - +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 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 box.
9. Verify the iBox CARTOP LED is ON indicting 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 Circuit Board Quick References” on page 6-83.

Verifying Door Operation

1. Verify that 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 opening 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 the Safety Configuration

Verify that 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 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) softkey 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.
6. You must then re-learn the Safety Configuration. Please refer to “Learning the Safety Configuration” on page 2-19.

Running on Machine Room Inspection

When ready to run the elevator on Inspection:

1. Verify 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, the 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.
   - TORQMAX F5: Use drive parameter LN02, Gear Reduction Ratio to calibrate speed if required (LF22). Please refer to “Following Error Margin" on 2-76.
   - Magnetek HPV900 S2: Use parameter A1 Contract Mtr Spd to calibrate speed if required.

Verifying Quadrature Pulse Sequence and Encoder Resolution

Position Encoder Resolution

Verify that Position Encoder Resolution (Pattern Configuration/Common tab) is correct as instructed on the entry screen.

Quadrature Pulse Sequence

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 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 preparing for final adjustment.

Door Operator

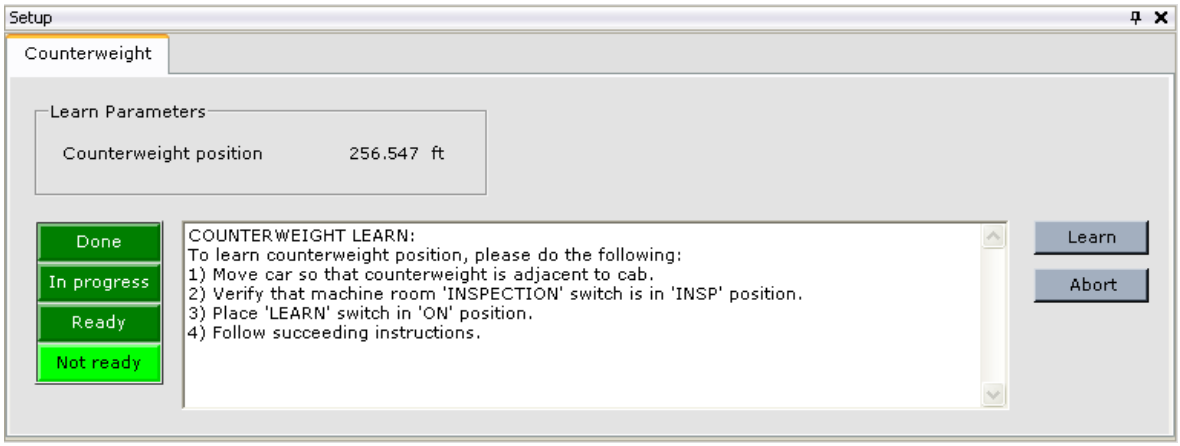
The door operator must be working properly.

1. Verify door fuses are properly installed.
2. Verify 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 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 clear.

Counterweight Learn Procedure

This procedure allows the controller to learn the position at which the car and counterweight are at the same height. It must be performed if the controller will be using Earthquake operation and 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 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.

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 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 timer period. If you are using a storage oscilloscope, monitor iBox 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:

- TORQMAX F5 Drive: Verify the drive gain parameters:
  - LC03 - Kp speed accel (proportional gain) = 3000 (A.LF.31)
  - LC04 - Kp speed decel (proportional gain) = 3000 (d.LF.31)
  - LC08 - Ki speed accel (integral gain) = 350 (A.LF.32)
  - LC09 - Ki speed decel (integral gain) = 250 (d.LF.32)

2. Adjust brake *Pick delay* and *Speed pick delay 1* (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. A DRO fault may occur if brake Pick delay is reduced to a value lower than 0.30. Generally, brake Pick delay is set to 0.40 and Speed pick delay 1 is set to 0.90 or slightly higher. (For TORQMAX drives, verify that LT03, Speed Start Delay = 1.00 (Delay to turn on DRO) (LF.70)
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 the iView Operational Status tab (Speed/Actual) or a hand held tachometer, verify that Machine Room Inspection car speed is 10% of Standard - High speed (contract speed) and matches the Inspection - High speed setting. Please refer to “Following Error Margin” on page 2-76 if necessary.



Danger

At this point, the Fault/Function Bypass switch on the iBox 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.



Final Adjustment

In This Section

This section describes final adjustment inspection of the elevator. 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 (see page 4-6).
- Learning Normal & Emergency Terminal Limit Switches (see page 4-8).
- Shaping the Speed Profile (see page 4-12).
- Controlling the Start of Car Motion (see page 4-16).
- Calibrating the Floor Offsets (see page 4-23).
- Adjusting Leveling and Final Stop (see page 4-26).
- Load Weigher Adjustment for Dispatching (see page 4-31).
- Pre-Start Sequence (see page 4-36).
- Calibration and Verification of Safety Functions (see page 4-41).
- Safety Tests (see page 4-43).
- Terminal Switch Faults (see page 4-56).

Learning Floor Heights

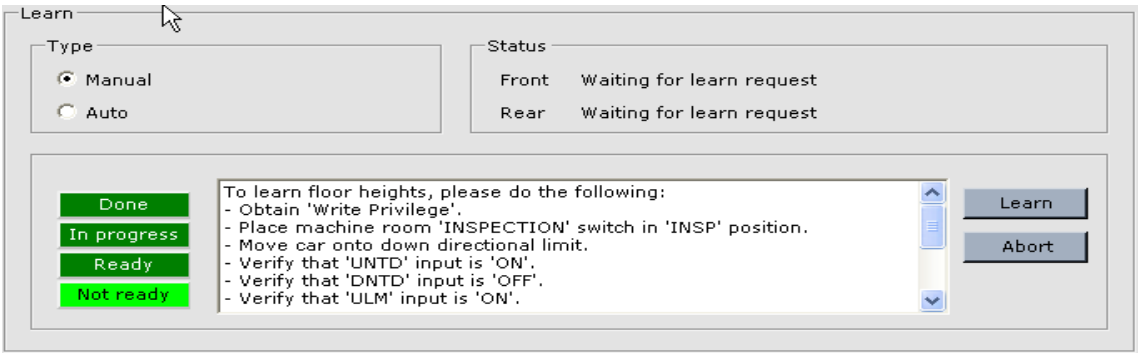
Note

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). We recommend setting Inspection/High Speed between 50 and 125 fpm for this process.

1. Place the car on Inspection.
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 Learn switch in the ON position.
4. In iView, display the *Floor Heights Learn* layout by selecting *Floor Heights* from the *View* > *Layouts* menu and clicking the *Learn* tab on the *Setup* > *Floor Heights* tab.
5. On the Setup > Floor Heights > Learn tab, select Manual or Auto learn. (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 was selected, you are prompted to press and hold the iBox Enable and Up buttons.
   - 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 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 directs 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.



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

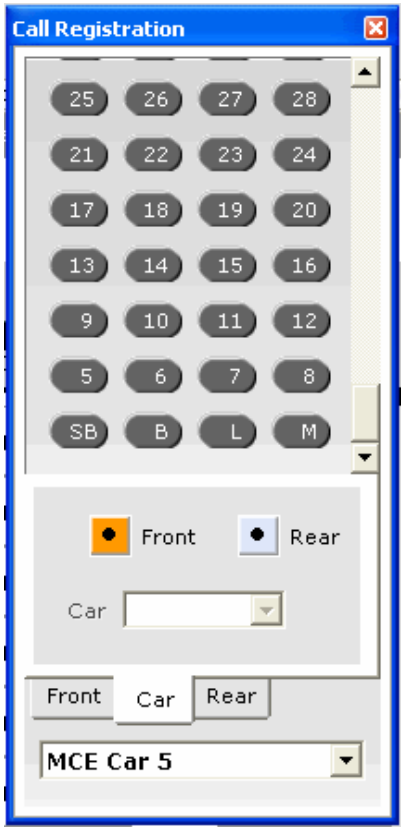
- Check the iBox status display. Verify:
  - ULM, DLM, and DZ signals are working properly
  - Safety OK = ON - safety string is made up.
  - Doors Locked = ON - all doors are locked.
  - Inspection = OFF - not on Inspection operation.
  - Fault = OFF - no faults are active.

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.

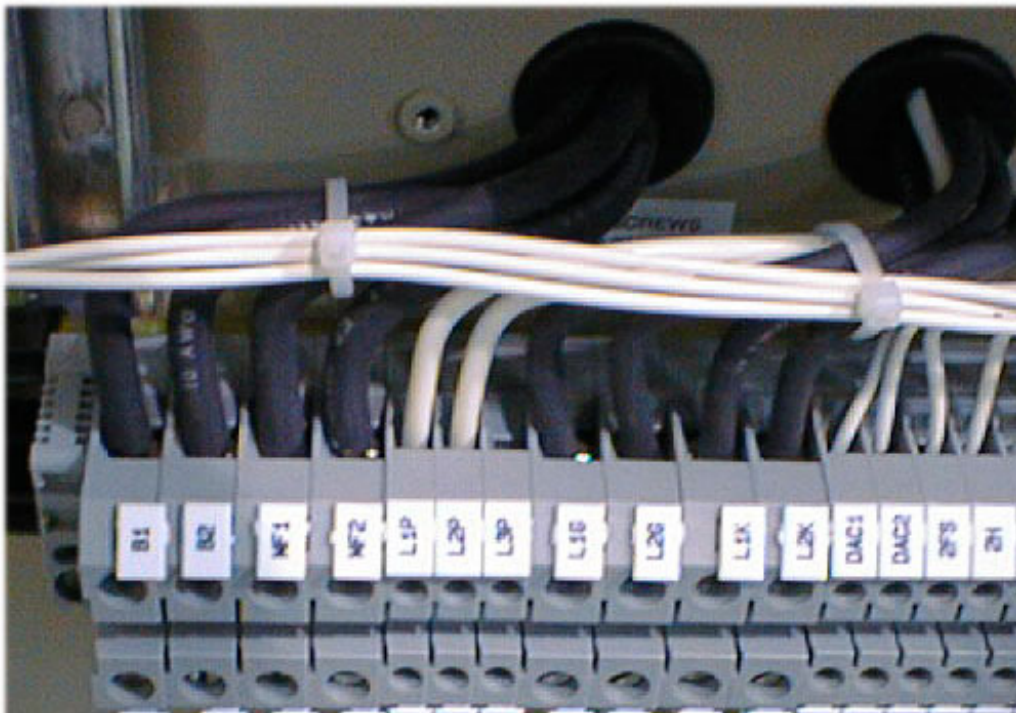


- The car will continue until it reaches a point 3" (76.2 mm) before the floor, then the Door Zone input will activate. The Door Zone Rear input will be active if the floor has rear doors.
- The elevator will continue to level into the floor and stop. The final leveling speed should be set from 2 to 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 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 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 AC 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.
4. Note that the relevel brake voltage is the same as pick voltage if you are using a low current brake.



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 4-20.)

Reaching Contract Speed

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.

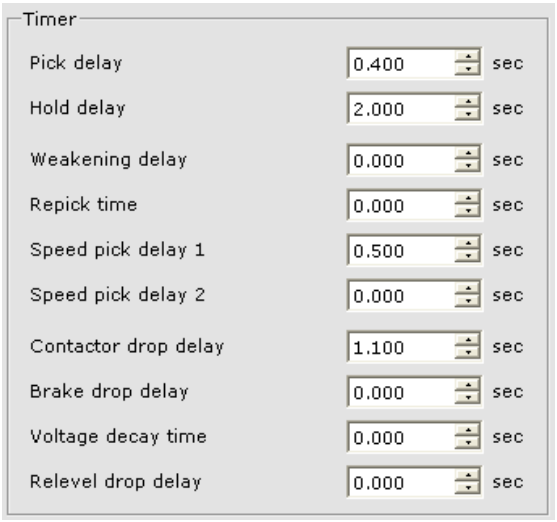
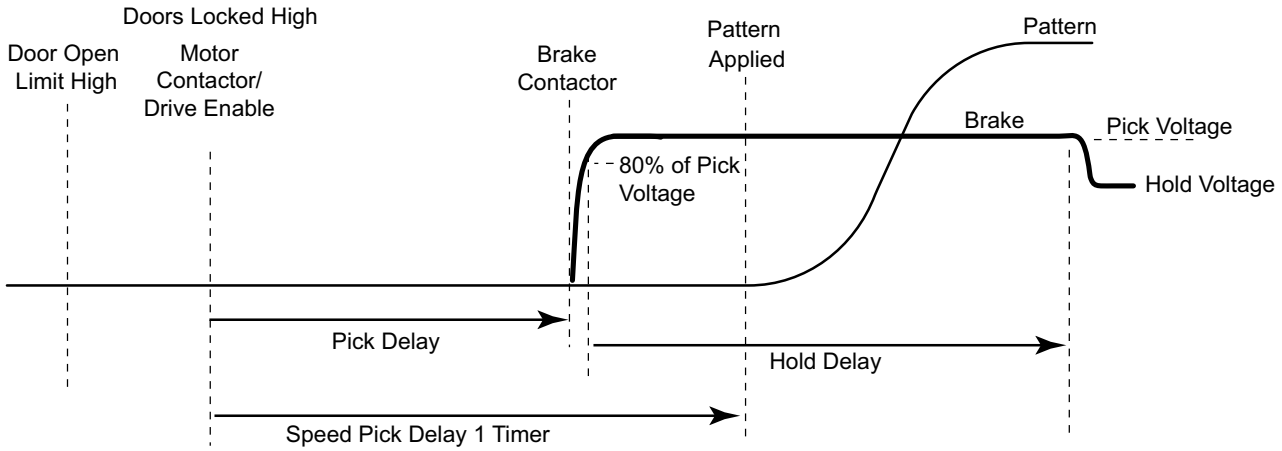


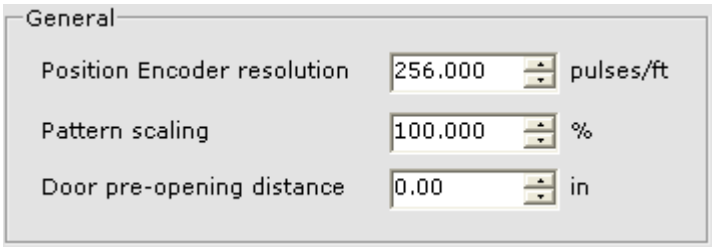
Figure 4.1 Timer Diagram



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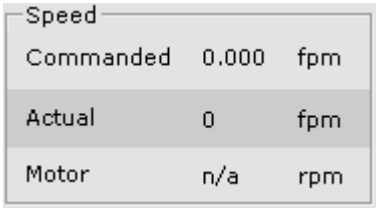
Pattern Scaling

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:



   - 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. Increasing the following TORQMAX drive parameters will help to reduce overshoot:
   - LC03 Kp speed accel: Proportional gain (A.LF.31)
   - LC04 Kp speed decel: Proportional gain (d.LF.31)
4. 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:
   - TORQMAX F5: LM02, US06, LN01, LN02, LN03, and LS02 are set correctly. (LF.11, LF.20, LF.21, LF.22, LF.23, and LF.42)
   - Pattern scaling is 100%.
   - If the car is running faster than contract speed parameter:
     - TORQMAX F5: Provided LS02 (LF.42) is set to the same value as US06 (LF.20), then verify that Gear Ratio Reduction Parameter LN02 (LF.22) is set correctly. If the gear ratio is not correct, it is possible to decrease the value of LN02 (LF.22) in small (0.10) increments to reach contract speed.
     - Magnetek: Decrease the value of A1 Contract Mtr Spd.
   - If the car is running slower than contract speed parameter:
     - TORQMAX F5: Provided LS02 (LF.42) is set to the same value as US06 (LF.20), then verify that Gear Ratio Reduction Parameter LN02 (LF.22) is set correctly. If the gear ratio is not correct, it is possible to increase the value of LN02 (LF.22) in small (0.10) increments to reach contract speed.
     - Magnetek: Increase the value of the A1 Contract Mtr Spd parameter.

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 refer to "Learning Normal & Emergency Terminal Limit Switches" on page 4-8.)

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.

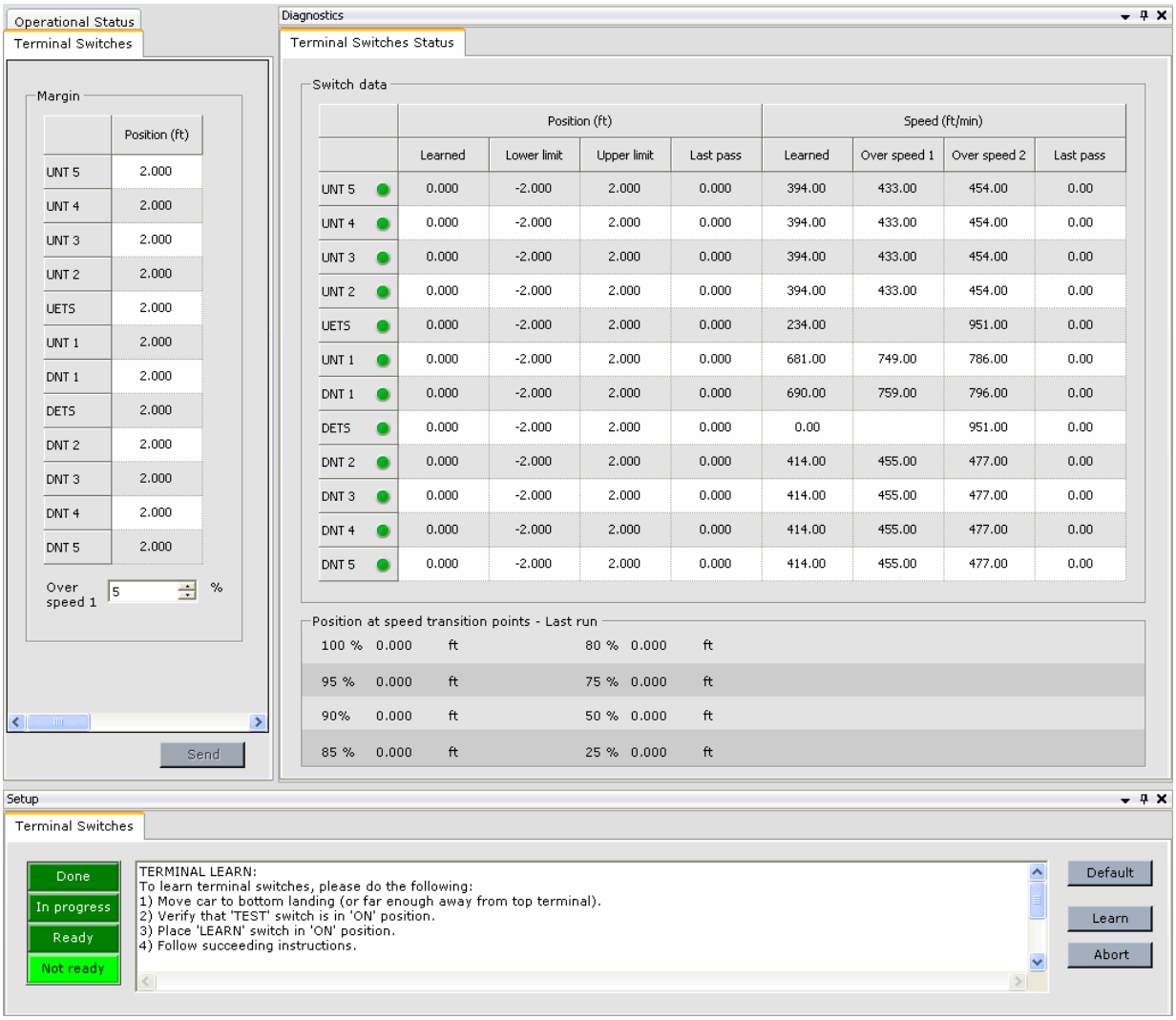
Learning Normal & Emergency Terminal Limit Switches

The Normal Terminal Slowdown Limit (NT) 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)



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4. Refer to the job prints to determine which Normal Terminal Limit switches (UNTn and DNTn) 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.

Fine Tuning the TORQMAX F5 Drive

This section describes fine adjustments to the TORQMAX drive.

Up/Down High Speed Difference

1. Verify that Pattern Scaling is set to 100%.
2. If car speed, at high speed, is not the same in the up and down directions, verify the following:
   - Drive gain parameters LC03, LC04 (LF.31) and LC08, LC09 (LF.32) are set properly. (If set too high, there may be oscillation in the car.)
   - Pattern voltage between (F4 terminals) X2-14 (Analog IN +) and X2-15 (Analog IN -) or (F5 terminals) X2A-1 and X2A-2 on the TORQMAX drive equals -10.00 VDC in the UP direction and + 10 VDC in the DOWN direction. If the UP/DN pattern voltage is different, perform the adjustments described in Section 2. (Please refer to "Following Error Margin" on page 2-76.)
3. Use the Actual Speed indication or a hand held tachometer to verify car speed. The elevator should now be running at or near contract speed in both up and down directions.
   - Verify LS02 High Speed (LF.42) is set to the same value as US06 Contract Speed (LF.20).
   - If the elevator is running at a lower speed than LS02 High Speed (LF.42), increase the value of LN02 Gear Reduction Ratio (LF.22) in small (0.10) increments to reach LS02 High Speed (LF.42).
   - If the elevator is running at a higher speed than LS02 High Speed (LF.42), decrease the value of LN02 Gear Reduction Ratio (LF.22) in small (0.10) increments to reach LS02 High Speed (LF.42).
   -

Car Does Not Reach High Speed

1. Verify that there is +10 VDC between (F4 terminals) X2-14 (Analog IN +) and X2-15 (Analog IN -) or (F5 terminals) X2A-1 and X2A-2 on the TORQMAX drive. If the voltage is not correct, refer to *Up/Down High Speed Difference* above.
2. Verify that the following drive parameters are set correctly:
   - **LM02** Rated Motor Speed (RPM) (LF.11)
   - **US06** Contract Speed (FPM) (LF.20)
   - **LN01** Traction Sheave Diameter (inches) (LF.21)
   - **LN02** Gear Reduction Ratio (LF.22)
   - **LN03** Roping Ratio (LF.23)
   - **LS02** High Speed (FPM) (LF.42)

Once tuning is complete, relearn the terminal switches. (Please refer to "Learning Normal & Emergency Terminal Limit Switches" on page 4-8.) Then perform the Shaping the Speed Profile procedure. (Please refer to "Shaping the Speed Profile" on page 4-12.)

Fine Tuning the Magnetek Drive

This section describes fine adjustments to the Magnetek HPV900 Series 2 drive.

Motor No-Load Current - Induction Motor only

Please see *Tuning Motor No-Load Current* in the appendix of the Magnetek Drive Technical Manual for the specific steps of this procedure.

- Running the car at reduced speed with a balanced load is used to perform this procedure. Motor torque should be below 15%.
  - Motor Torque, Flux Reference, and Est No Load Curr can be viewed via drive's D2 Power Data menu.
  - No Load Curr can be changed on the drive A5 Motor menu (900 series 2).
  - The car speed can be temporarily changed via Pattern Scaling on the controller Configuration > Pattern > Common tab.

Motor Flux Saturation Curve - Induction Motor only

Please see *Tuning Motor's Flux Saturation Curve* in the appendix of the Magnetek HPV900 Series 2 AC/PM Drive Technical Manual for the specific steps of this procedure.

- Running the car at full contract speed with a balanced load is used to perform this procedure.
  - Est No Load Curr can be viewed via the drive's D2 Power Data menu.
  - No Load Curr and Flux Sat Slope 2 can be changed on the drive's A5 Motor menu.

Motor Rated RPM - Induction Motor only

Please see *Tuning Rated Motor RPM* in the appendix of the Magnetek HPV900 Series 2 AC/PM Drive Technical Manual for the specific steps of this procedure.

- Running the car fully loaded at contract speed is used to perform this procedure.
  - Est Rated RPM can be viewed on the drive's D2 Power Data menu.
  - Rated Mtr Speed can be changed on the drive's A5 Motor menu.

System Inertia (Magnetek HPV900 Series 2 or Quattro)

In order to properly tune the speed regulator of the drive, a valid inertia value must be determined. Please see *Using the Software to Estimate the System's Inertia* in the appendix of the Magnetek AC Drive Technical Manual for the specific steps of this procedure.

- Running the car at full contract speed with a balanced load is used to perform this procedure.
  - Est Inertia can be viewed on the drive's D1 Elevator Data menu.
  - Inertia can be changed on the drive's A1 Drive menu.

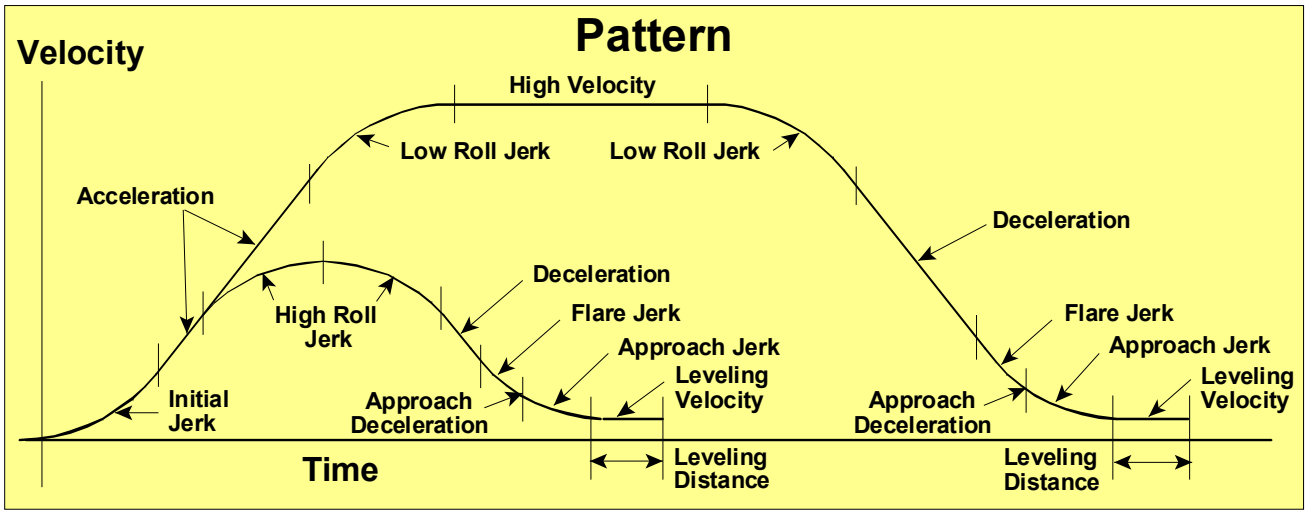
With the system inertia properly adjusted, final tuning of the speed regulator can be performed. The Response parameter on the drive's A1 Drive menu is one parameter that can be used to adjust the speed regulator.

Once tuning is complete, relearn the terminal switches. (Please refer to “Learning Normal & Emergency Terminal Limit Switches” on page 4-8). Then perform the Shaping the Speed Profile procedure. (Please refer to “Shaping the Speed Profile” on page 4-12).

Shaping the Speed Profile

The pattern graph below charts calls out the parameters that define profile shape. The value of pattern parameters is very important in determining the ride quality and overall elevator performance. The most critical parameters are Deceleration, Flare Jerk, Approach Deceleration, Approach Jerk and Leveling Speed. They define final stop and greatly affect floor to floor time.

Figure 4.2 Pattern Graph



Profile Parameters

- **Initial jerk** - 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/s^3 (1.219 to 2.438 m/s^3) with higher values resulting in a sharper start.
- **Acceleration** - maximum acceleration for the profile. Determines maximum current delivered by the AC Drive during acceleration. The maximum value is typically 4.0 ft/s^2 (1.219 m/s^2) and the minimum is usually not less than 2.5 ft/s^2 (0.762 m/s^2). Values higher than 4.0 ft/s^2 (1.219 m/s^2) 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/s^3 to a maximum of 8.0 ft/s^3.
- **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/s^3 to a maximum of 8.0 ft/s^3.

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- **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/s^2 and the minimum is usually not less than 2.0 ft/s^2 with more common values ranging from 2.75 ft/s^2 to 3.75 ft/s^2 (0.838 to 1.143 m/s^2). 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 the 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 Profile** - used under normal operating conditions. Unless otherwise specified, suggested profile parameter adjustments are assumed to be referring to Standard Profile parameters.
- **Earthquake Profile** - used if an earthquake is sensed by the elevator system during normal operation (EQI input activated). If you have earthquake operation, you will verify proper operation during testing.
- **Emergency Power Profile** - 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 Profile** - 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 down the car. Increasing this parameter will allow higher deceleration rates to be used for the Emergency Slowdown Profile.
- **Correction Profile** - 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 Profile** - 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 screen as the car is running, any discontinuity in the idealized speed profile can be observed.

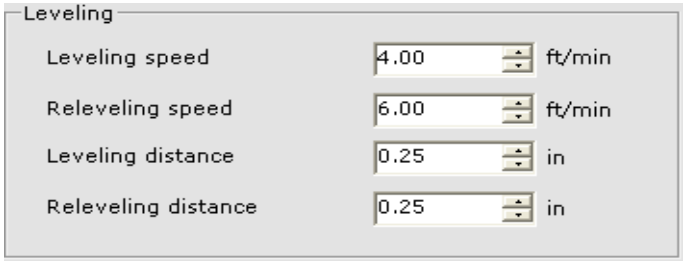
- On the iView Virtual Oscilloscope screen:
  - Set Test point 1 = *Pattern (Command)*
  - Set Test point 2 = *Speed Feedback*



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 AC 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 Virtual Oscilloscope Test point 2 set to *Speed Feedback*) to verify that there is no overshoot.
- **Motor Current Limiting** - If running out of motor current near the end of Acceleration becomes a problem, as is evidenced by the AC motor current on the Drive keypad during a full load UP operation:
  - TORQMAX F5 drive - set parameter LC30, LC31 (LF.36) Maximum Torque = 300 (3x LM07 (LF.17)). This will automatically adjust the current limit.
  - Magnetek - Increase A1 > Mtr Torque Limit.
  - If this does not help, reduce the value of Acceleration. Another possibility is to decrease the value of Low Roll Jerk so that there is a smooth transition from maximum acceleration to contract speed.
  - **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 (with Virtual Oscilloscope Test point 1 set to *Speed Feedback Filtered*). To get approximately equal acceleration and deceleration speeds 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 different ways. If tracking accuracy is very good, you can probably program as follows on the iView Pattern > Common tab:
  - Leveling speed = Your desired leveling speed. A typical number is from 2 to 4.
  - Leveling Distance = your choice. A typical number 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. Also, verify that:
  - TORQMAX Drive - At lower speeds the drive automatically selects a lower carrier frequency to produce more current from the drive. If required, adjust LX02 (LF.38) Switching Frequency = 0. This will set the carrier frequency to 8 KHz. In addition, reduce drive gain value, LC03, LC04 (LF.31) and LC08, LC09 (LF.32). DO NOT reduce LC03, LC04 (LF.31) below 1200 or LC08, LC09 (LF.32) below 800 as a loss of control will result.
- **Bunching up of Deceleration Rate** - If you are observing a bunching up of deceleration rate (an increase in the deceleration rate as you reach the last few feet of approach to the floor), it is generally due to inaccurate tracking.
  - Increase lag compensation via Lag Delay on the controller's Configuration > Pattern > Common tab.
  - Improve tracking 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/s^3 is often as low as you can go).

Controlling Initial Start of Car Motion

Some **gearless** machines may exhibit rollback at the start of car motion. Geared machines rarely exhibit rollback. To control rollback at the start of car motion:

- Pretorque implementation for systems with analog load weighers
- Adjust drive control parameters specifically designed for the start of motion
- Perform a sophisticated brake adjustment (iField Brake Module only)

Pretorque Adjustments

For installations using an analog load weigher, load information can be used to provide **pre-torquing** of the hoist motor as necessary to accommodate load changes at a floor and prevent sagging or rollback.



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

Pretorque adjustment includes:

- Load weigher sensor adjustment
- Balanced load determination
- Pretorque gain control adjustments

Load Weigher Sensor Adjustment

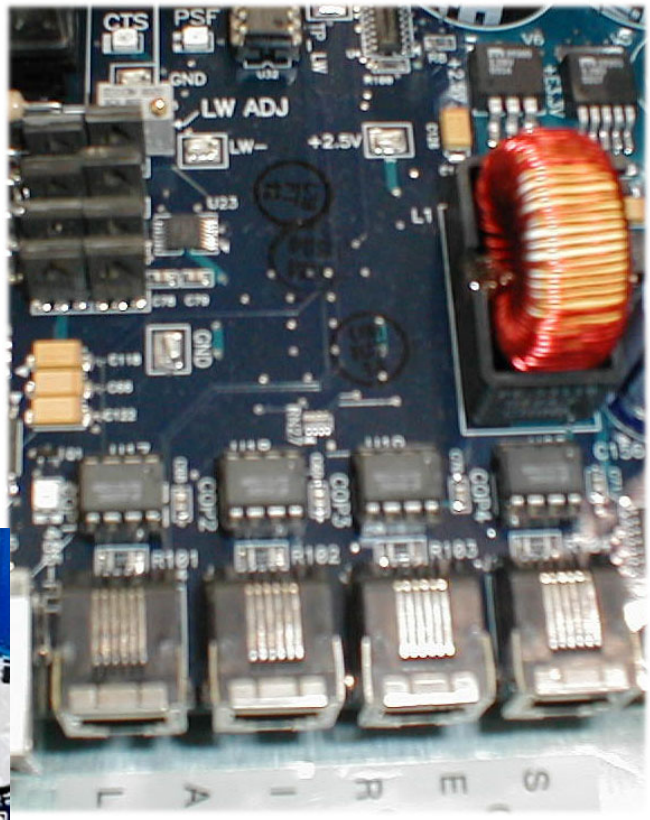
Review the installation and adjustment instructions for the load weigher and verify that all steps have been completed, including:

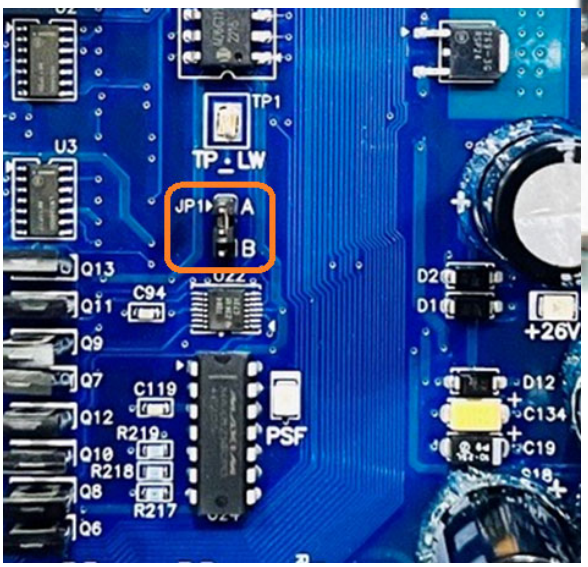
- Rope Tension Sensing Load Weigher - perform the procedures described in the EMCO Load Weigher instruction.
- Crosshead Deflection Load Weigher - perform the procedures described in the “Adjustments” section of the K-Weigh Instruction Manual.
- Isolated Platform Load Weigher - perform the adjustment 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 where 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 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 trimpot LW ADJ on the CTP (cartop) board in the iLink enclosure to achieve the correct reading.
5. If the Load Weigher readings seem 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.





4

Pretorque Gain Adjustments

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.
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.
10. Remove the weights from the car and move the car to one floor below the top landing.
11. 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.
12. 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.
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-though 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 4-31.

Drive Control Adjustments

In AC Flux Vector drive applications, when Run Enable (RE) is active, the control system picks the main power contactor (PM Contactor) and enables the drive unit. The drive applies voltage to the AC motor to build up magnetic flux. The amount of time it takes to build up flux in the AC motor (from 200 to 500 ms) depends upon motor characteristics and temperature. AC drive logic detects the build up of flux in the motor and generates the Drive ON output. At this time, the motor may have developed enough torque to hold the load.

The motor no load current value is not high enough to hold the car at zero speed when the drive is enabled. The normal setting for no load current is 30% to 40% of full load current. Pick delay (Configuration > Brake > Control tab) is used to coordinate the picking of the brake with the build up of flux. If the delay is not sufficient, the flux will not build up fully and a DRO fault will occur. Speed pick delay 1 is used to delay the application of the pattern signal to the drive to prevent the car from moving under the brake.

- Pick delay must be adjusted to achieve a smooth start, prevent rollback, and prevent DRO faults.
- Speed pick delay 1 must be adjusted to prevent movement of the car under the brake.

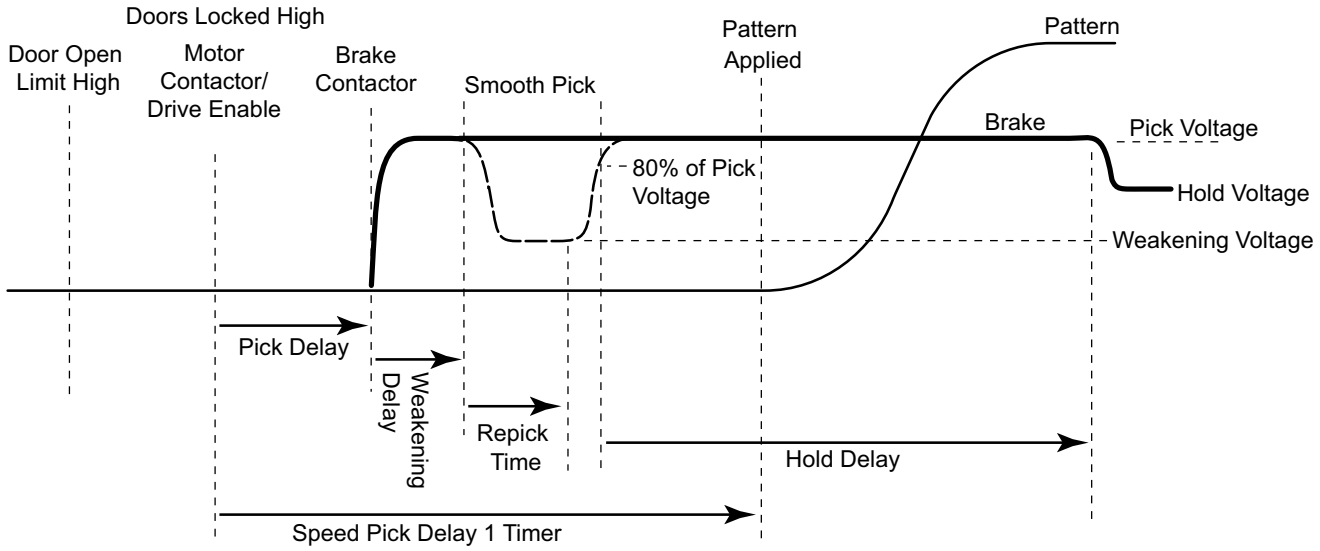
Brake Parameter Adjustments

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 ½ 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.

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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

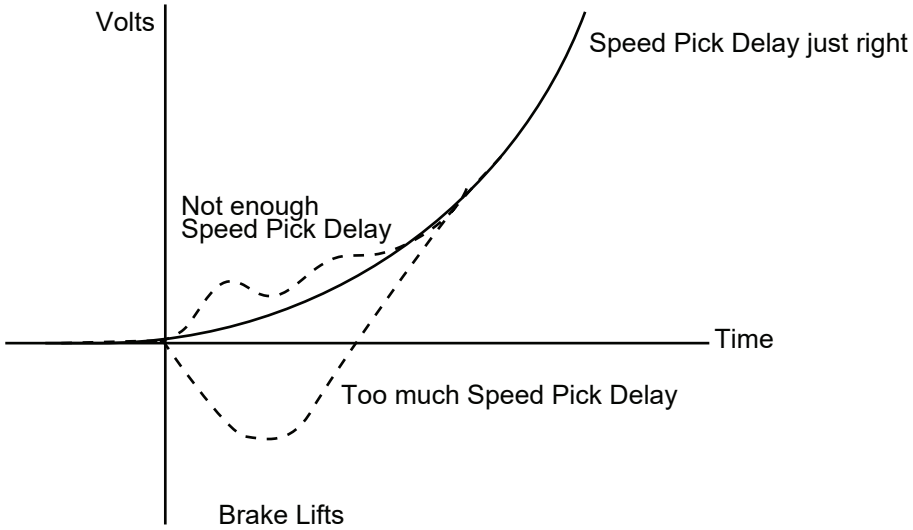
It is important to realize that full brake Pick voltage is *automatically* applied for about a second at the end of the brake Weakening delay, just after the brake has cleared the braking surface, thereby guaranteeing full lifting after a smooth transition through the zone of pressure release. After 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 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 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 4-26.

Floor offset calibration procedure

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

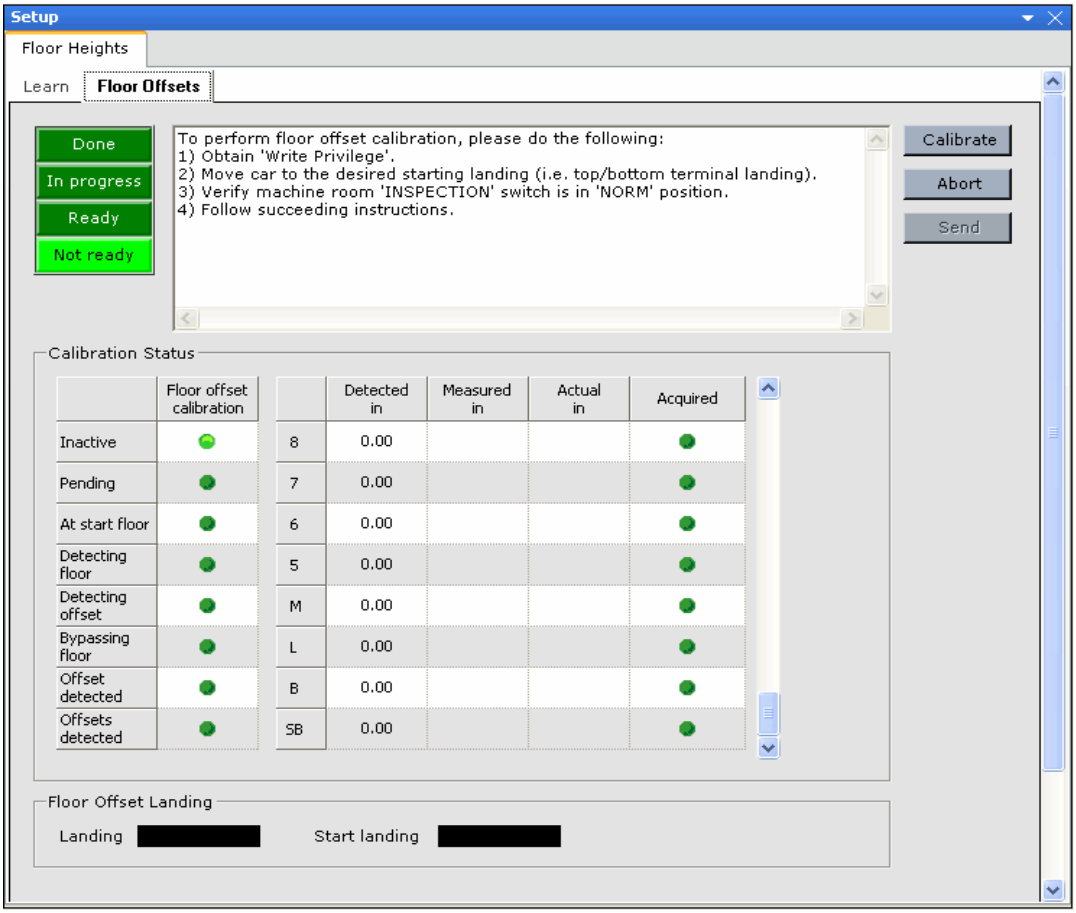
Floor offset calibration can be performed by one or two persons. You will move the car to each floor that you want to calibrate, and the distance between the car sill and landing sill must be measured. You can use the form provided to record your measurements (See "Floor Offset Calibration Record" on page 4-25). 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.



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 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 the stops are consistent.

Final Stop

There are many items to consider in establishing 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.
- **Brake Release Time** - The TORQMAX drive has an adjustable parameter (LF.70 Speed Pick Delay) that determines how long the drive will keep current flowing to the motor when the car reaches zero speed and the direction input is removed. This allows the motor to hold the load while the brake engages. The normal setting for LF.70 is 0.300 second, but it should always be kept below 0.800 second.
- **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 releveling 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 relevel 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.



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

1. Choose a floor in the middle of the hoistway so that the car can reach contract speed when approaching the floor from either direction.
2. Start with the default Dead zone distance (Configuration > Pattern > General 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.

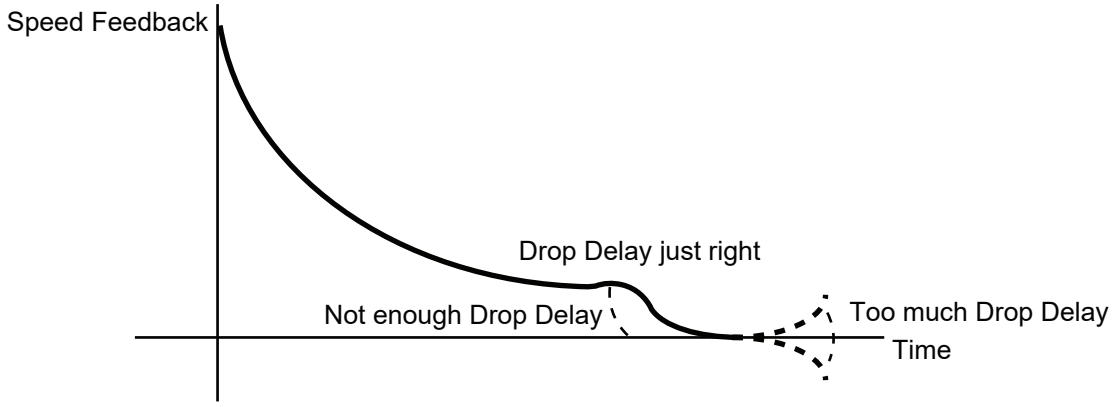
Brake Coordination for Smooth Stops

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.
   - TORQMAX drive - Adjust LF.78 Delay in turning off the drive (delay to turn off the motor current after direction is dropped), which can hold the car electrically until the brake is dropped.
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 (Brake Configuration/ 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. 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.
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 Inspection Access.
4. On Inspection Access, move the car up about 3” above the floor. Turn off Inspection Access 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” above the floor or 1/8” below the floor, etc.).
5. On Inspection Access, move the car down about 3” below the floor. Turn off Inspection Access 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” above the floor or 1/8” below the floor, etc.).
6. If the car consistently stops at the same position, (for example, 1/8” 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 the elevator load changes, thereby causing releveling. To make the system more tolerant of this movement, the Releveling 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

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

- For a TORQMAX F5 Drive, consider the following:
  - LC03 Kp Speed Accel
  - LC04 Kp Speed Decel
  - LC08 Ki Speed Accel
  - LC09 Ki Speed Decel
  - LC25 Kp Speed High
  - LC41 System Inertia
  - LC42 FFTC Filter
  - LC43 FFTC Gain
  - LC44 Torque Cmd Filter
- For a Magnetek drive, consider the following:
  - A1 - Response
  - A1 - Gain Reduce Mult
  - A1 - Gain Chng Level
  - C1 - Hi/Lo Gain Src
  - A1 - Inertia
  - D1 - Est Inertia
- The speed control loop gains may not be adjusted properly. Please refer to the Magnetek Elevator Drive Technical Manual.
- Motor shaft encoder may not be mounted securely, causing bouncing or slight variation in speed feedback 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 visible 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 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 (isolated platform or crosshead deflection) provide a signal (analog voltage) corresponding to measured load. The signal is conditioned and digitized by the control system. The resulting value is used to calculate 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 it is stopped at a landing with doors open. 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.

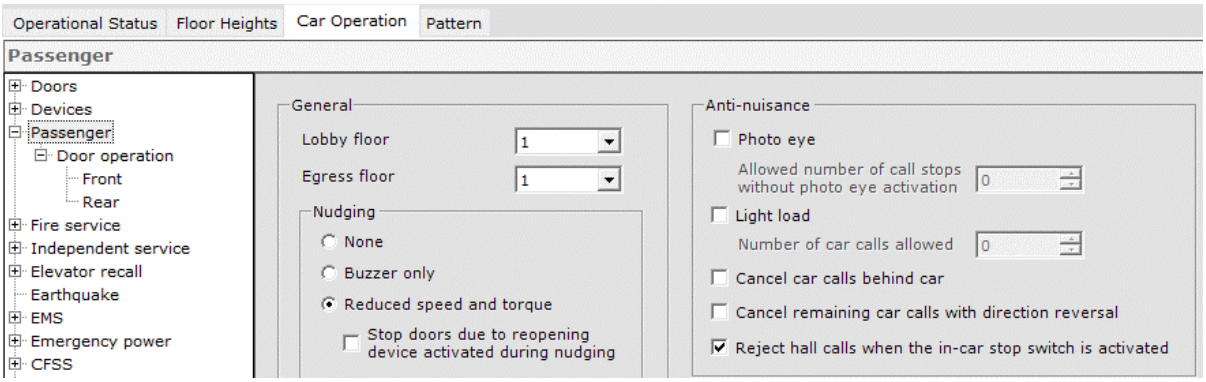
Note: If you are preparing to do safety testing, including governor and buffer tests, you might want to do them first, then adjust the load weigher because re-calibrating the load weigher is recommended following buffer safety tests.

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 overridden 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.



- **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.

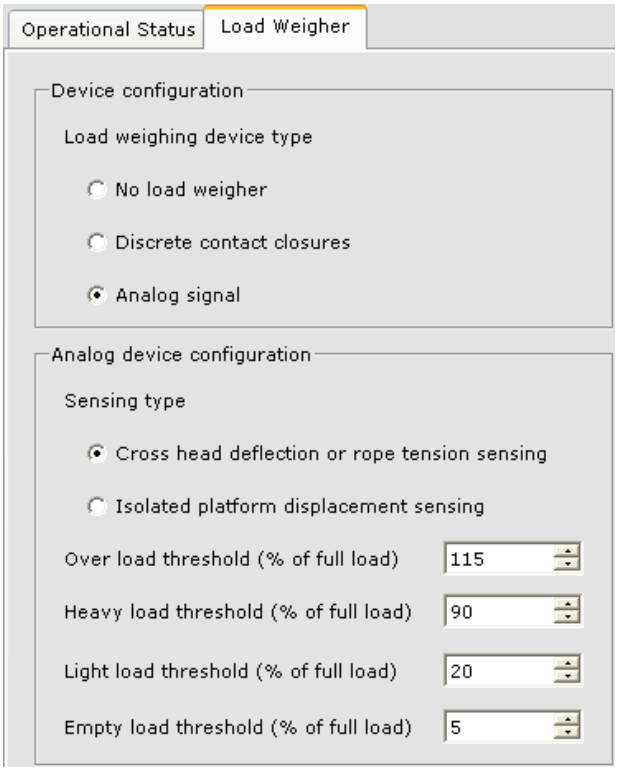
Load weighing logical functions such as Anti-Nuisance, Heavy Load, and Overload will be inactive until both the full and empty load values have been learned and saved.

Load Weigher Configuration

Once the load weigher is installed, you need to "tell" iControl what kind of load weigher you are using and 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 deflect6ion 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 4-31.
   - 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 4-31.
   - 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 4-31.
   - 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 4-31.
   - 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 an 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 tension sensing” or “cross-head deflection sensing” type, the car must travel the hoistway, stopping to learn the load values at each floor.

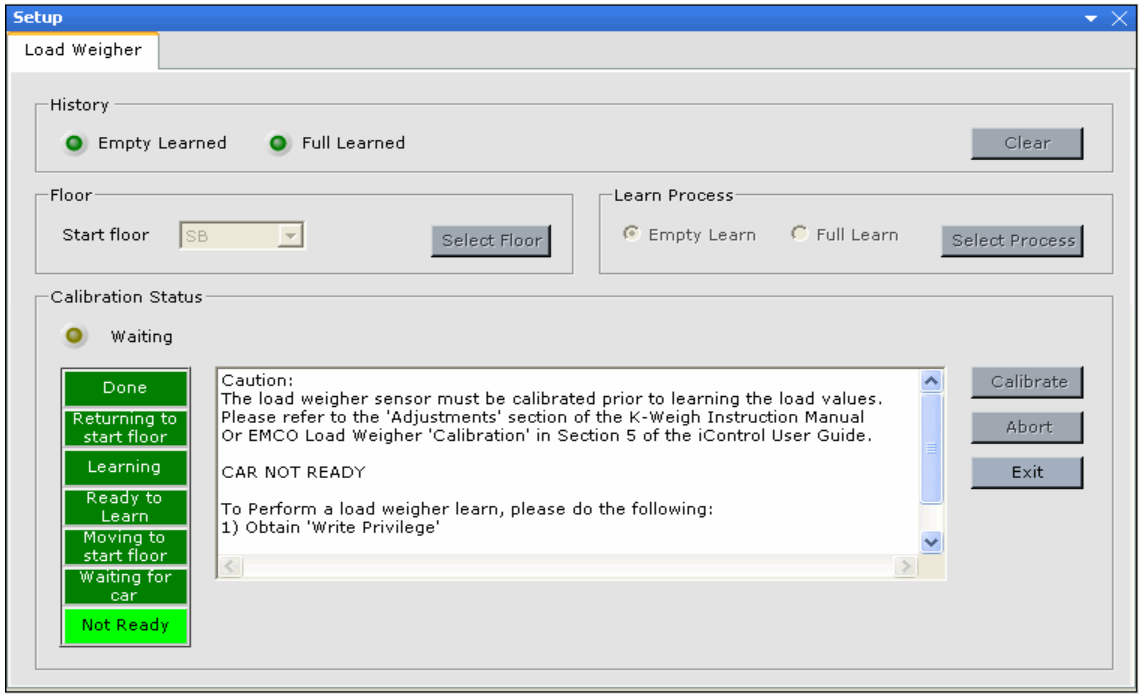


Caution

The load weigher sensor must be calibrated prior learning the load values. Please refer to “Load Weigher Sensor Adjustment” on page 4-16. 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.



4

Abort Calibration If necessary during a learning process, click on 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 Learn indicators mean that the processes have been successfully run and values stored. Clicking on the Clear button will immediately erase the stored values. You must then repeat the learning process to learn and store new values.

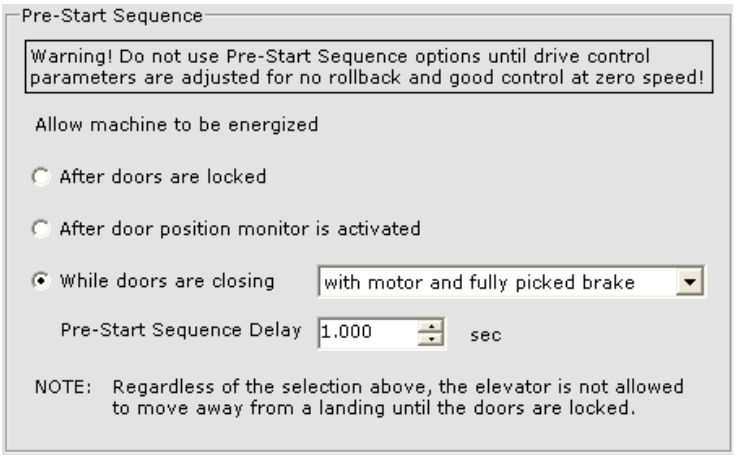
Pre-Start Sequence

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:

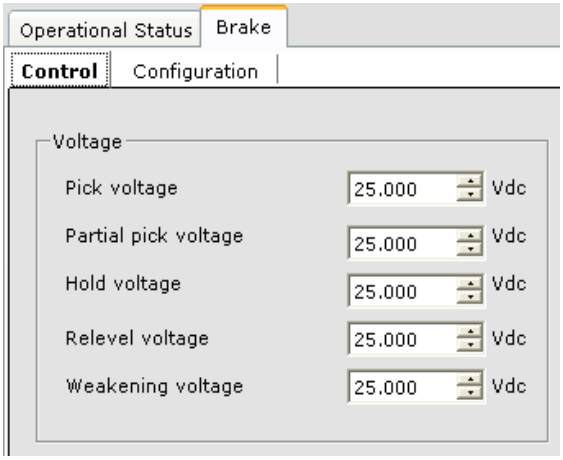
Allow machine to be energized

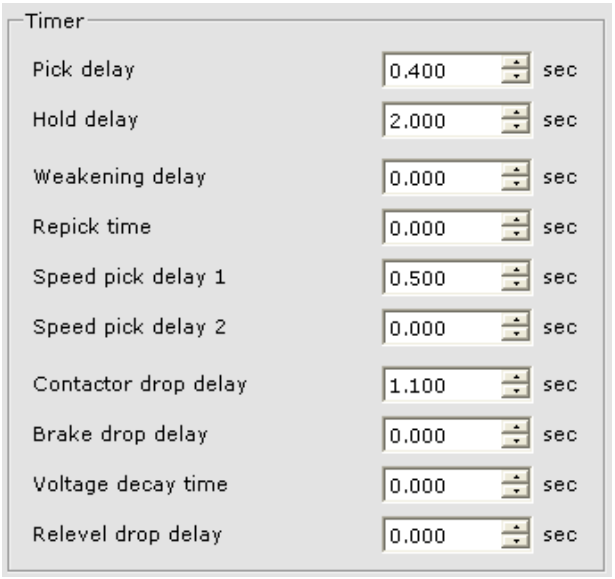
- After doors are locked
- After door position monitor is activated
- While doors are closing:
  - with motor only
  - with motor and partially picked brake
  - with motor and fully picked brake



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.





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.

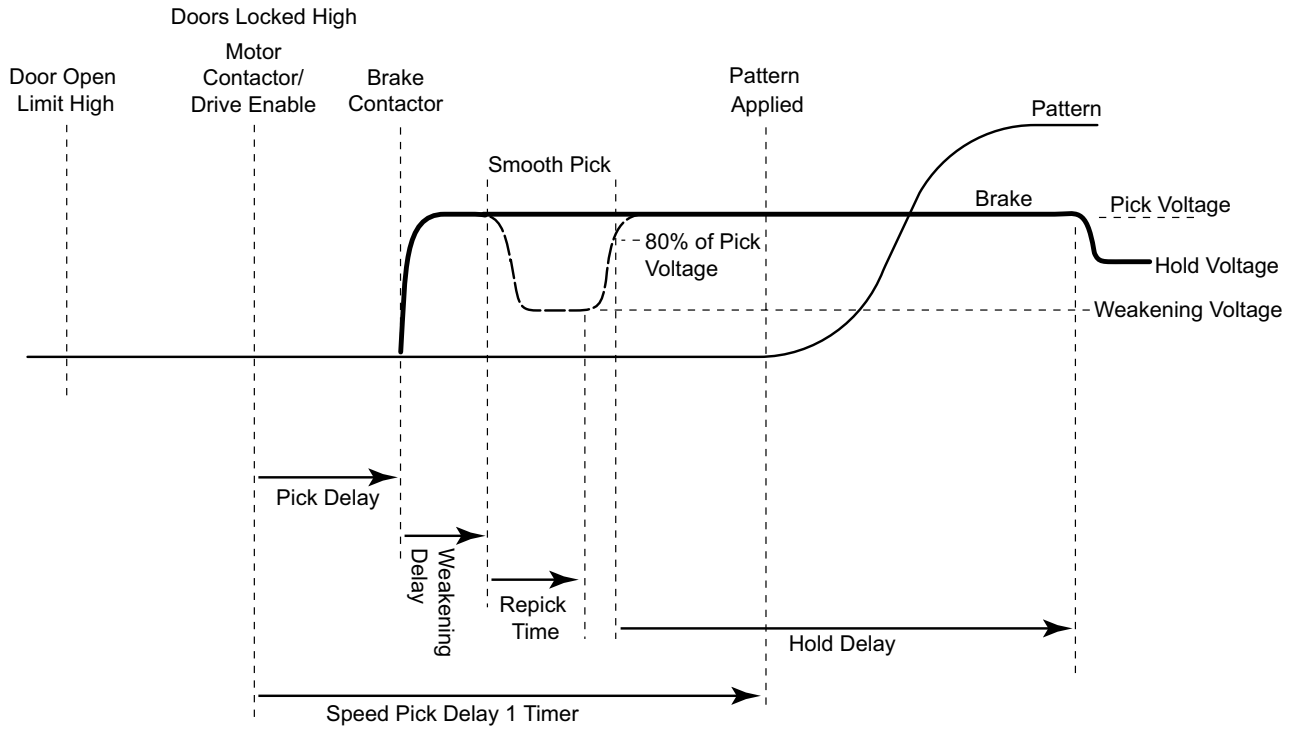
Caution

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

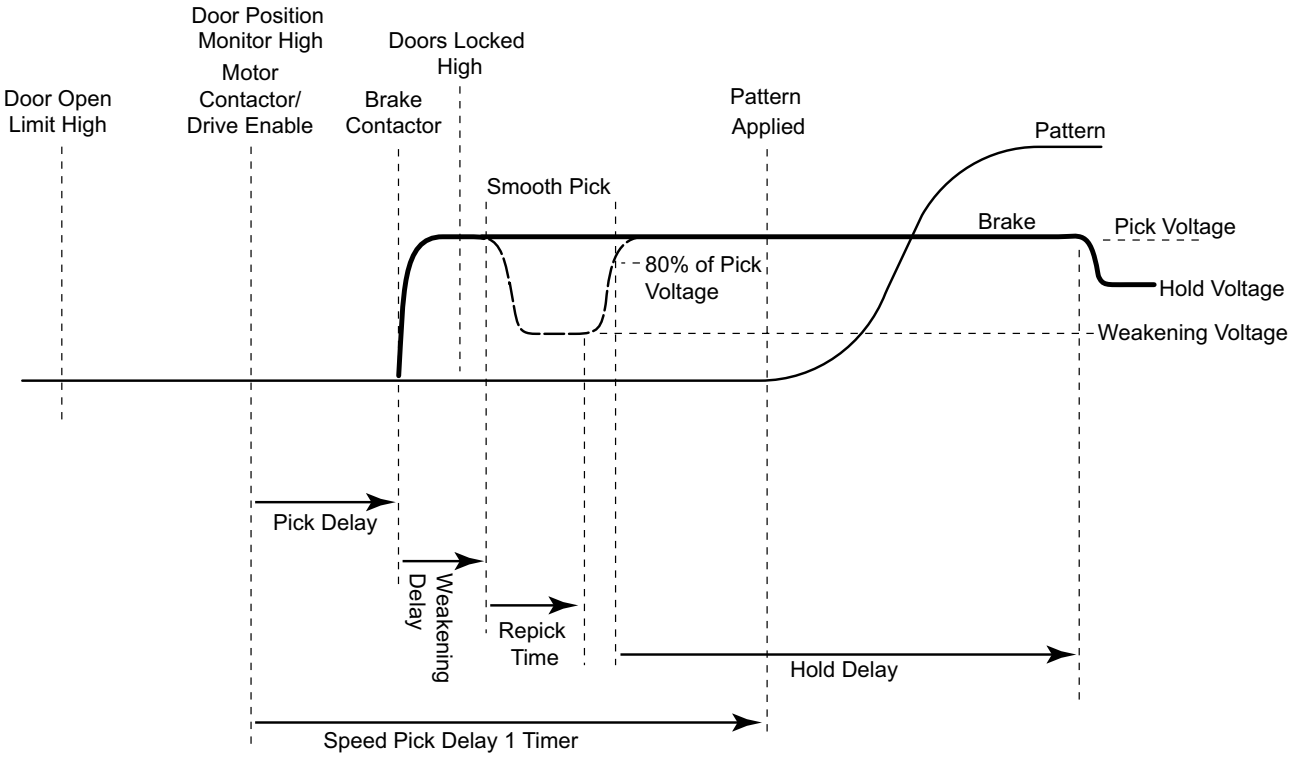


For a detailed description of the brake parameters associated with "smooth picking" and instructions for adjusting them, see "Brake Parameter Adjustments" on page 4-20.

Allow Machine to be Energized When Door Position Monitor 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.

Allow machine to be energized after door position monitor is activated

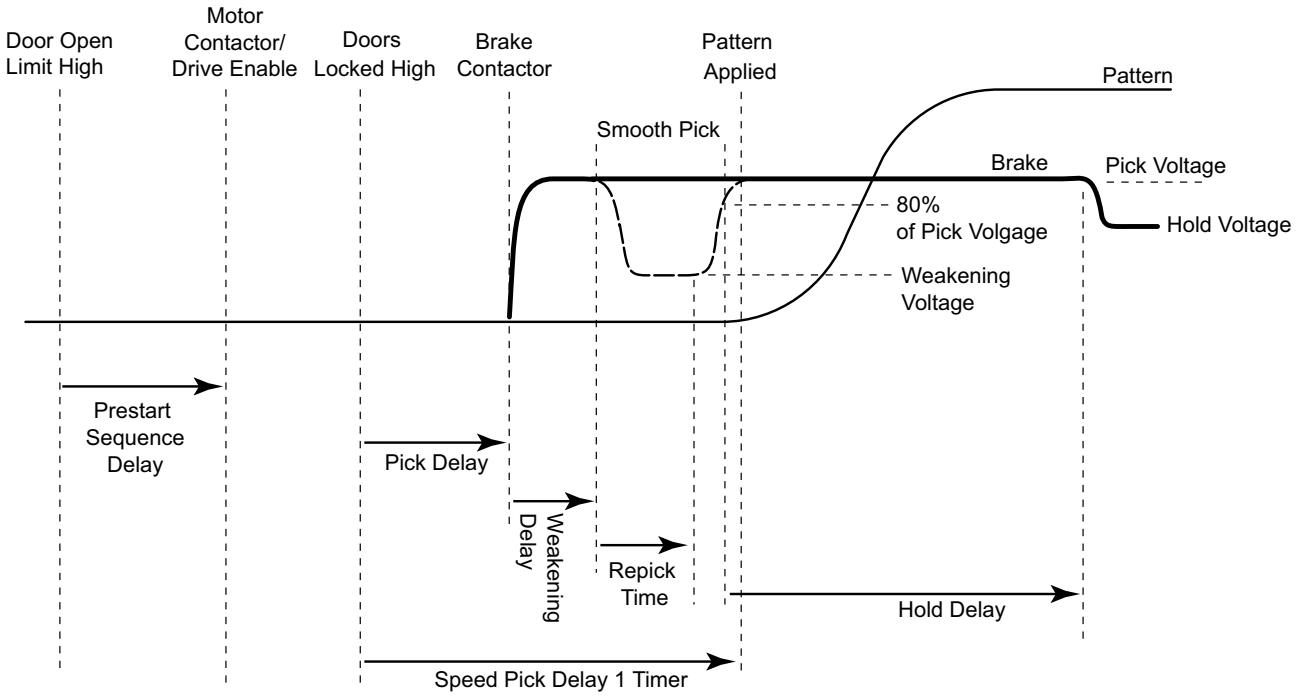


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Allow Machine to be Energized While Doors are Closing with Motor Only

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



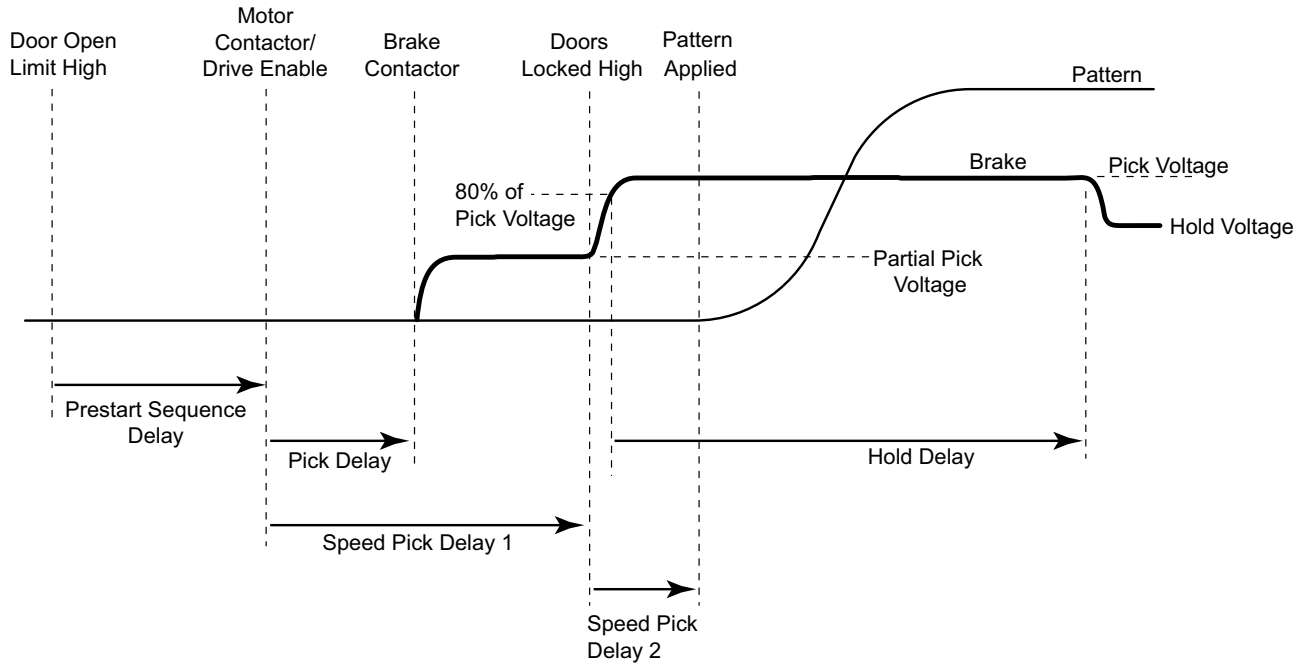
For a DC control, Pick Delay can be set to zero so long as the Pre-Start Sequence Delay is adjusted so that the motor is energized and able to hold the car at zero speed when the doors become locked.

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 and 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.

Prestart Sequence with Motor and Partially Picked Brake

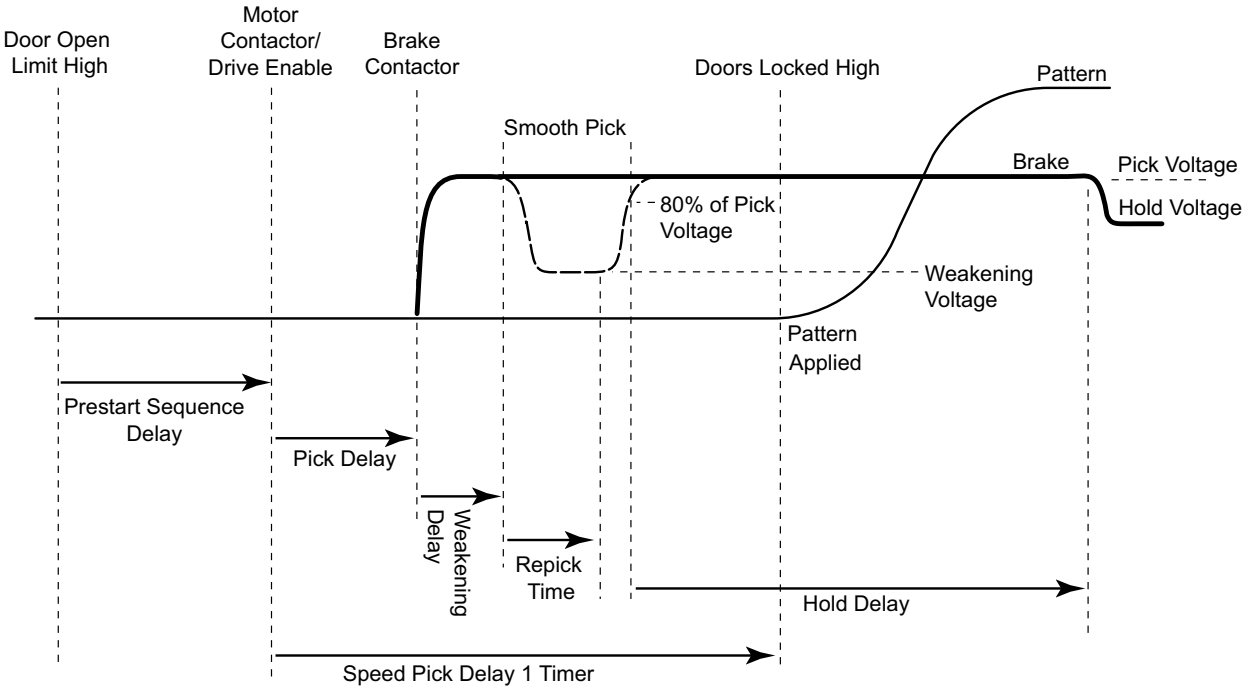


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Allow Machine to be Energized While Doors are Closing with Motor and Fully Picked Brake

This Pre-Start Sequence option allows the motor and brake to be fully energize 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.

Prestart Sequence with Motor and Fully Picked Brake



Calibration and Verification of Safety Functions

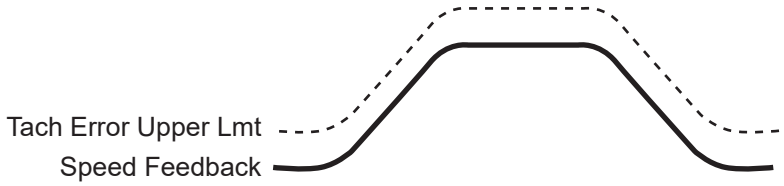
Before performing the calibration and verification of safety function please do the following:

1. Verify that the car performs the releveling operation properly. Please refer to “Verify Releveling” on page 4-5 and see “Releveling Operation” on page 4-29.
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 4-8.

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. Please refer to "Following Error Margin" on page 2-76.
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.



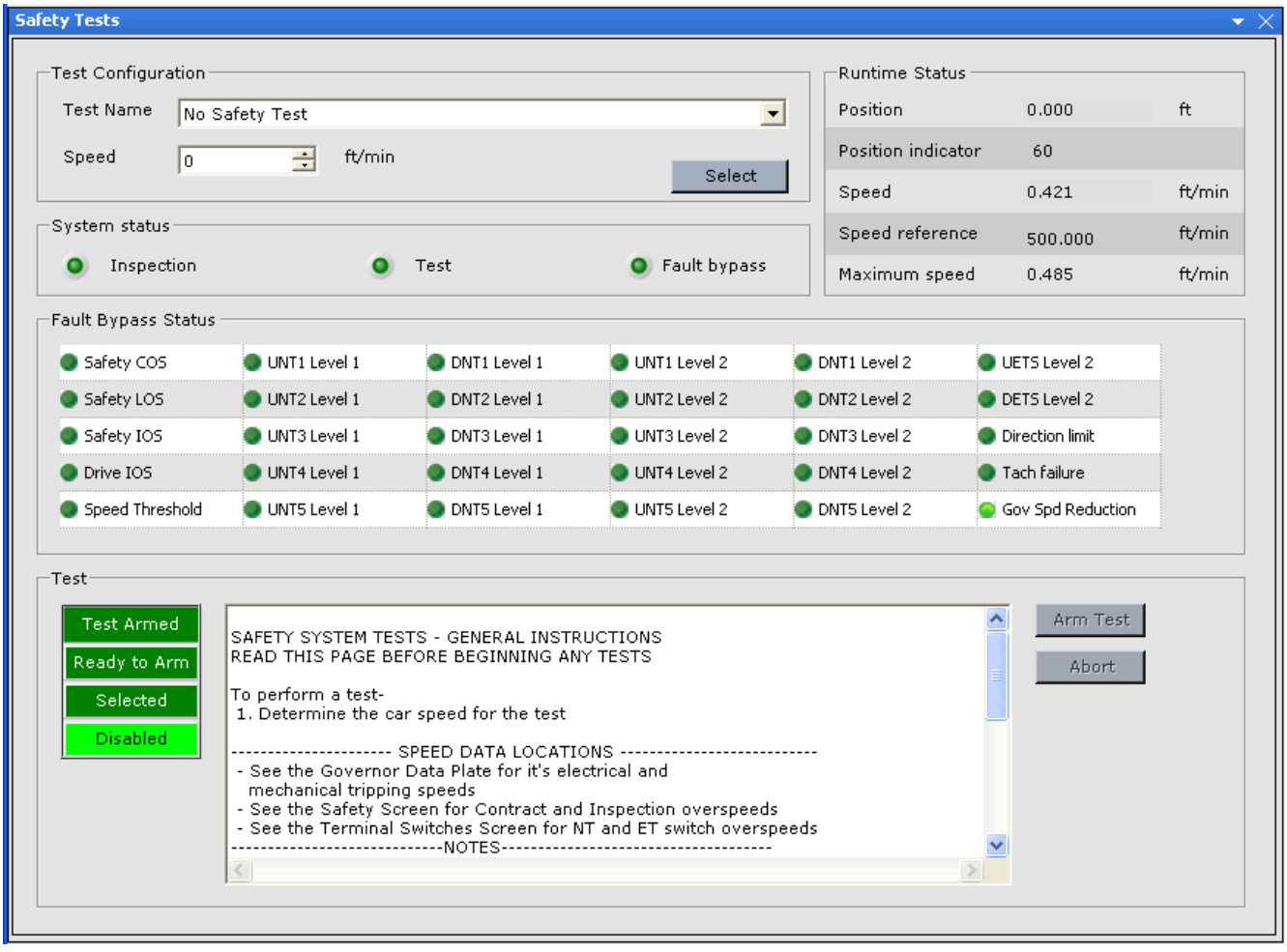
Verify Tach Error Does Not Trip on Emergency Stop

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.

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 4-44
- Electrical Governor Test, page 4-46
- Contract Overspeed Test, page 4-46
- Inspection Overspeed Test, page 4-47
- Car/Counterweight Buffer Test, page 4-47
- Leveling Overspeed Test, page 4-49
- Emergency Brake Test, Unintended Motion, page 4-49
- Ascending Car Overspeed Test, page 4-52
- Normal Terminal Switch Overspeed Tests - Level 1, page 4-54
- Emergency Terminal Switch Overspeed Tests, page 4-55
- Normal and Emergency Terminal Switch Position Tests, page 4-55



Running a Test



Danger

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.

1. Put the iBox in Test mode.
2. Select the desired test on the iView > View > Safety Tests > Test Configuration tab.
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.)
   - For tests that require the car to overspeed it may be necessary to set up the AC drive for the overspeed test using the drive keypad:
     - For TORQMAX F5 v3.xx: Set LL16 Overspeed Test speed = speed selected in iView. Then set LL15 Overspeed Test = **Start with Scaling.**
     - For TORQMAX F5 V1.71 or later, set LF.49 Overspeed Function Test = overspeed as a % of Contract speed. Then set LF.3 = OStSt and press **ENTER**.
     - For Magnetek, set A1 > Overspeed Mult = **overspeed** as a % of Contract Speed. Then set U4 > Overspeed Test = Yes. The car will over speed for one run only.
   - To calculate the *Test* speed as a percentage of Contract speed, divide Test speed by Contract speed and multiply by 100, e.g. if Test speed = 375 and Contract speed = 350, 375 /350 x 100 = 107% overspeed as a percentage of Contract speed.
   - 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.
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 on test screen.
7. Press **Arm Test**.
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.

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.

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. To perform the Car Safety test:

1. Place a full load in the car.
2. Position the car some distance away from the bottom landing (about 10-feet per 100 feet-per-minute of contract speed).
3. On the iView, Configuration > Pattern > Modes tab, verify that Deceleration and Approach deceleration are set no higher than 2ft/s2 to avoid tripping the drive.
4. Place a jumper between the #3 bus and the GOV terminal on the iBox to bypass tripping the governor overspeed.
5. On the View > Safety Tests > Test Configuration, enter a speed sufficient to trip the mechanical governor (trip speed from the governor name plate plus 5 to 10%).
6. Calculate the overspeed as a percentage of Contract speed (see **Running a Test** on page 4-42) and set up the AC drive for an **Overspeed test**.
   - **For TORQMAX F5 software v1.7x or later, on the drive keypad:**
     - Set LF.49 Over Speed Function Test = overspeed as a % of Contract speed.
     - Set LF.3 = OStSt Over Speed Test Function. With LF.3 displayed, press FUNC to display the present value. Press UP/DOWN until OStSt is displayed, and then press ENTER to load the value. The car will over speed for one run only, after which parameters are automatically reset.
   - **For TORQMAX F5 software v3.xx, on the drive Keypad:**
     - On the drive's Home > Diag > Tune Parameters menu, set LL16 to the speed selected on the controller for the test.
     - To activate the drive's Overspeed Test, set LL15 to **Start with Scaling** on the drive's Home > Diag > Tune Parameters menu.
     - Run the elevator to perform the test.
     - When the run completes, the drive's Overspeed Test will automatically deactivate.
   - **For Magnetek:**
     - Set A1 > Overspeed Mult = overspeed as a % of Contract Speed.
     - Set U4 > Overspeed Test = Yes. The car will over speed for one run only.
7. On the iView > Controller > View > Safety Tests tab, select the Car/Counterweight Safety Test and click Select. Complete on-screen instructions.
8. Place a car call distant enough to allow the car to reach the necessary speed. If necessary, you may end the test and bring the car to an emergency stop using the iBox Stop switch.
9. Remove jumpers placed for the test in steps above.
10. Check the hoistway ropes to make sure they are still in their proper grooves before attempting to move the car.
11. 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.

12. 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, no drive adjustments are required.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. Also, remember to remove jumpers when tests are complete.

1. Position the empty car near the bottom landing and arrange to over-speed in the up direction.
2. On the controller, activate the test.
3. Run the elevator to perform the test.

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 (Controller > View > Setup > Safety > Configuration tab). Set a test speed sufficient to trigger the Contract Overspeed but not high enough to trip the mechanical governor.
3. Calculate the percentage of Contract speed represented by the *Test* speed and set up the AC drive for an overspeed test (see “Running a Test” on page 4-44).
4. Select the Electrical Governor test and click **Select**. Complete on-screen instructions.
5. Place a car call that will allow the car to reach the necessary speed.

Contract Overspeed Test

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

1. Position the car in the middle of the hoistway.
2. The test Speed must exceed the programmed Contract Overspeed value shown on the Controller > View > Setup > Safety tab (typically 107% of contract speed), but not high enough to cause the electrical or mechanical governor to activate. Contract Overspeed plus 15 fpm should be sufficient. You may have to physically bypass the electrical Governor switch.
3. Calculate the percentage of Contract speed represented by the test *Speed* and set up the AC drive for an overspeed test (see “Running a Test” on page 4-44).
4. On the Controller > View > Safety Tests tab, select the Contract Overspeed test.
5. Enter the desired test *Speed* determined in step 2 and then click **Select.**
6. Follow the on-screen instructions.
7. When the car exceeds the programmed contract overspeed value, the car must perform an emergency stop.

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* = 200 fpm.
5. Select the Inspection Overspeed test and click **Select.** Follow on-screen instructions.
6. Use the inspection buttons to move the car when ready.

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

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 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.

1. Be certain that the pit is prepared, buffers ready, final 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. On the View > Safety Test tab, select the Car/Counterweight Buffer test. Follow on-screen instructions.
6. Set the 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 by releasing ENABLE + UP or DOWN switches. The car must strike the buffer, compress it fully, and cause the hoist motor to break traction.
8. For 2010 code compliance, continue to press ENABLE + UP or DOWN and verify that within 15 to 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.
9. Check the hoistway ropes to make sure they are still in their proper grooves before attempting to move the car.
10. 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.

Note: These tests may cause the load weigher to go out of calibration. Please refer to "Learning Load Values" on page 4-34.

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/s^2.
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.

Emergency Brake Test - Unintended Motion - Rope Brake



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 is to be used for installations using a rope brake for the emergency brake. 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 (Rope Brake) to be deployed and that such deployment will stop the elevator. This test also demonstrates that the emergency brake will stop the car within 48” from the floor level if it drifts. No Test speed entry is required for this test.

1. Load the car as required, empty car going up or 125% of full load going down.
2. Move the car to the landing where the test is to be performed.
3. For safety, station a mechanic at the landing where the test is to be performed.
4. On the iView Safety Tests tab, select the Emergency Brake Test - Unintended Motion (View > Safety Tests > Test Name parameter).
5. Follow on-screen instructions **To perform an unintended motion test**.
6. Once the test has been armed and the car doors have been opened, place a car call to the top or bottom terminal landing. The car will start to move with it’s door open and trip an Unintended Motion Fault.
7. The emergency brake must activate and stop the car within 48” (1220 mm). Power is removed from the driving machine and brake. Place the car on Inspection and press the iBox **Fault Reset** button to reset the fault.

Emergency Brake Test - Unintended Motion - Machine Brake

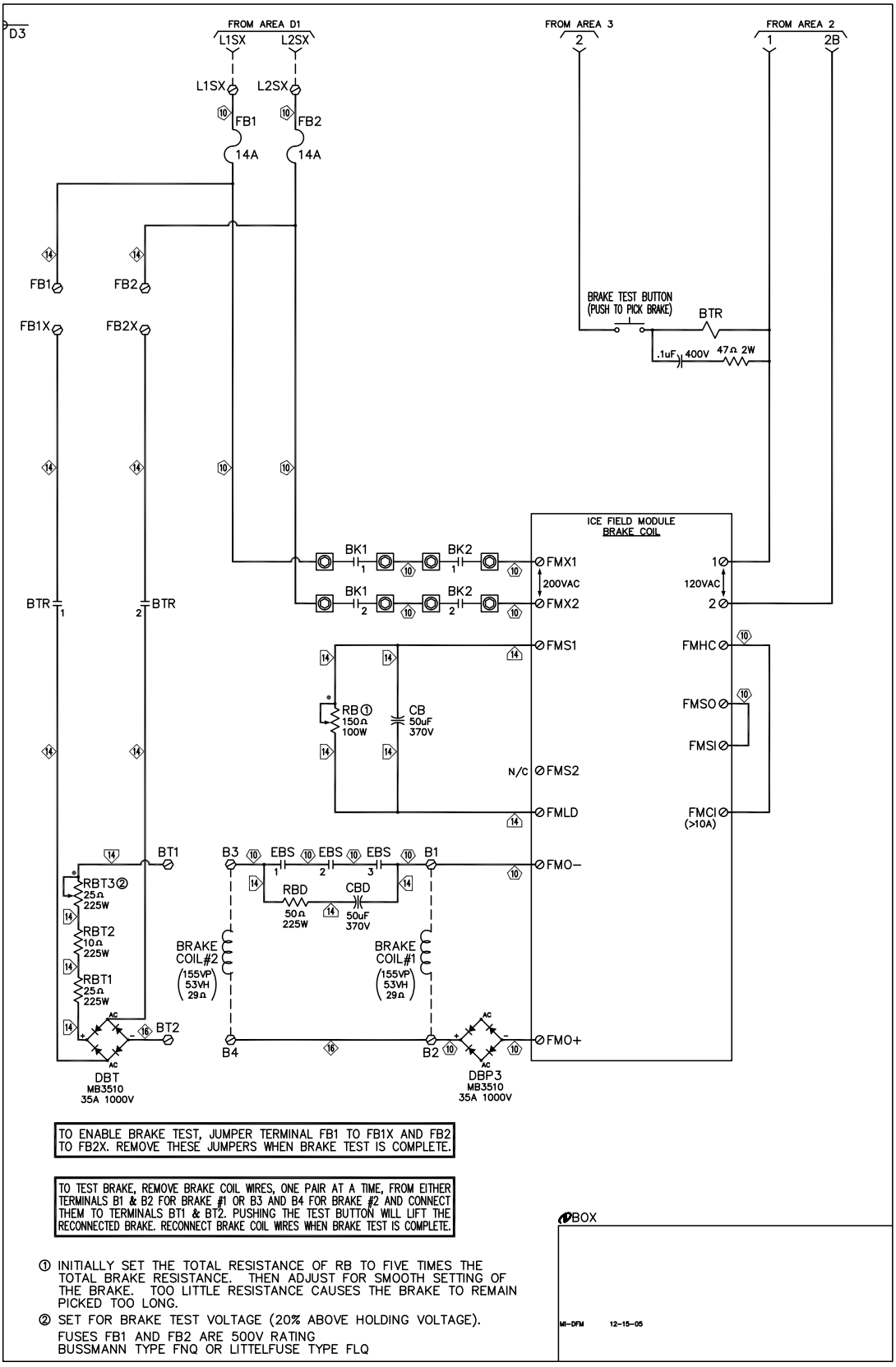
Danger

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 is to be use for installations where one or more machine brakes are used for (designated as) the emergency brake. 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 (Machine Brakes) to be deployed and that such deployment will stop the elevator. This test also demonstrates that the emergency brake will stop the car within 48" from the floor level if it drifts. Please refer to "Typical Brake Test Circuit: Machine Brake Emergency Brake" on page 4-51.

1. Load the car as required, empty car going up or 125% of full load going down.
2. Move the car to the landing where the test is to be performed.
3. To enable the brake test, place jumpers from terminal FB1 to FB1X and from FB2 to FB2X (see Figure 4.6).
4. To test the emergency brake, remove the brake coil wires of the main brake from their normal terminals, e.g., B1 & B2, and connect them to terminals BT1 & BT2. Note: If the machine has a set of two or more brakes designated as the emergency brake, move the brake coil wires for all brakes *not* being tested to terminals BT1 and BT2.
5. For safety, station a mechanic at the landing where the test is to be performed.
6. On the iView Safety Tests tab, select the Emergency Brake Test - Unintended Motion (View > Safety Tests > Test Name parameter).
7. Follow on-screen instructions **To perform an unintended motion test**.
8. Click the **Arm Test** button. The car doors will open.
9. Press and hold the **BRAKE TEST BUTTON** to lift the brakes not being tested, and then place a car call to the top or bottom terminal landing. The car will start to move with its door open and trip an Unintended Motion Fault.
10. The brakes being tested must activate and stop the car within 48" (1220 mm). Power is removed from the driving machine and brake. Release the **BRAKE TEST BUTTON** once the car has fully stopped. Place the car on Inspection and press the iBox **Fault Reset** button to reset the fault.
11. Return the brake coil wires connected to terminals BT1 and BT2 to their normal terminals.
12. Repeat the test for the main brakes, leaving the brake coil wires for the main brake connected to their normal terminals and moving the brake coil wires for the brakes designated as the emergency brake to terminals BT1 and BT2. Repeat steps 5 through 11.
13. When the tests have been completed, return all brake coil wires to their normal terminals and remove the jumpers from terminal FB1 to FB1X and FB2 to FB2X.

Figure 4.6 Typical Brake Test Circuit: Machine Brake Emergency Brake



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. Calculate the percentage of Contract speed represented by the test Speed and set up the AC drive for an overspeed test (see “Running a Test” on page 4-44).
6. Acquire **Write privilege** and then click the **Select** button.
7. Follow on-screen instructions **ELECTRICAL GOVERNOR TEST SETUP** and **To perform and Electrical Governor test**.
8. Once the test is **Armed**, place a car call distant enough to allow the car to reach the necessary speed.
9. When the electrical governor is activated the rope brake will be deployed. Power is removed from the driving machine and brake. Place the car on Inspection and press the iBox **Fault Reset** button to reset the fault.

Ascending Car Overspeed Test - Machine Brake

This test is to be use for installations where one or more machine brakes are used for (designated as) the emergency brake. This test verifies that the emergency brake (machine brake) will stop an empty car that is over-speeding in the up direction. Please refer to “Typical Brake Test Circuit: Machine Brake Emergency Brake” on page 4-51.

1. Move the empty car to the bottom of the hoistway.
2. To enable the brake test, place jumpers from terminal FB1 to FB1X and from FB2 to FB2X (see Figure 4.6).
3. To test the emergency brake, remove the brake coil wires of the main brake from their normal terminals, e.g., B1 & B2, and connect them to terminals BT1 & BT2. Note: If the machine has a set of two or more brakes designated as the main brake, move the brake coil wires for all brakes *not* being tested to terminals BT1 and BT2.
4. Check the mechanical governor nameplate for its tripping speed. Check the Contract Overspeed setting (Controller > View > Setup > Safety > Configuration tab).
5. On the iView Safety Tests tab, select the Electrical Governor Test (View > Safety Tests > Test Name parameter).
6. Enter a Speed sufficient to trigger the Contract Overspeed but not high enough to trip the mechanical governor.
7. Calculate the percentage of Contract speed represented by the test Speed and set up the AC drive for an overspeed test (see “Running a Test” on page 4-44).
8. Acquire **Write privilege** and then click the **Select** button.
9. Follow the on-screen instructions **ELECTRICAL GOVERNOR TEST SETUP** and **To perform and Electrical Governor test**.
10. Once the test is **Armed**, press and hold the **BRAKE TEST BUTTON** to lift the brakes *not* being tested, and then place a car call distant enough to allow the car to reach the necessary speed.
11. When the electrical governor is activated the machine emergency brake will be deployed. Power is removed from the driving machine and brake. Release the **BRAKE TEST BUTTON** once the car has fully stopped. Place the car on Inspection and press the iBox **Fault Reset** button to reset the fault.
12. Return the brake coil wires connected to terminals BT1 and BT2 to their normal terminals.
13. Repeat the test for the main brakes, leaving the brake coil wires for the main brake connected to their normal terminals and moving the brake coil wires for the brakes designated as the emergency brake to terminals BT1 and BT2. Repeat steps 5 through 11.
14. When the tests have been completed, return all brake coil wires to their normal terminals and remove the jumpers from terminal FB1 to FB1X and FB2 to FB2X.

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 4-56.
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 4-56.
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 4-8)

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.



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 4-55.



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.



Nidec MCE

System Options

About System Options

This section contains supporting information for optional iControl system components, including:

- 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 5-33).
- Serial COP (Car Operating Panel): Description and installation instructions for the Serial COP system and boards (see page 5-36).
- EMCO Load Weigher: Refer to the EMCO Load Weigher instruction.
- MCE Load Weigher: Refer to the MCE load weigher instruction.

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 upon request.

Cabinet Installation

Installation of the iCentral cabinet is similar to the installation of an iController cabinet. Please refer to “Machine Room Preparation” on page 2-3.

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

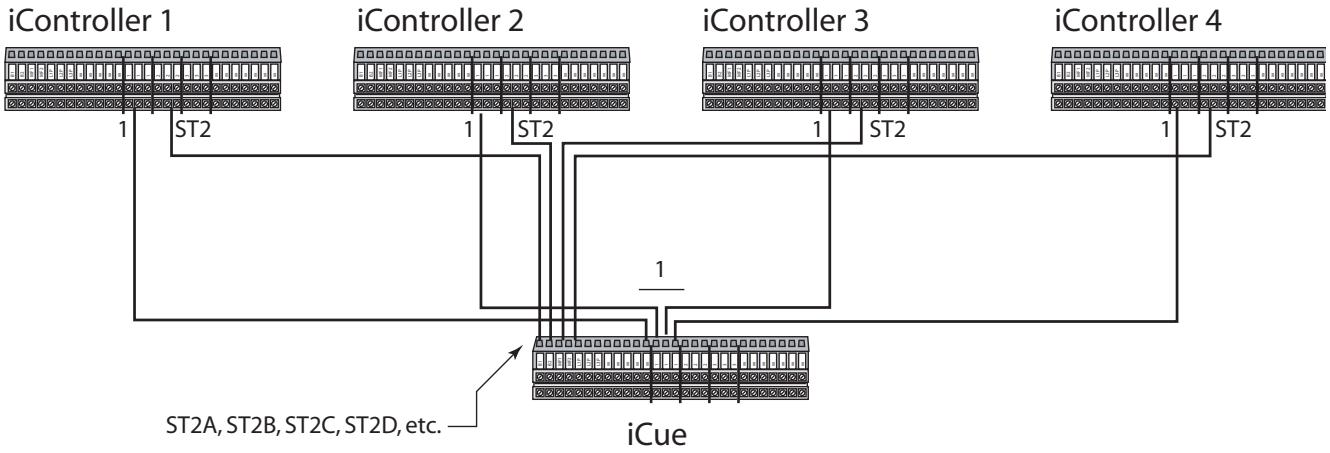
All 2 bus power from cars to the iCue cabinet must be in phase. **Connecting out-of-phase power WILL cause damage**.

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.

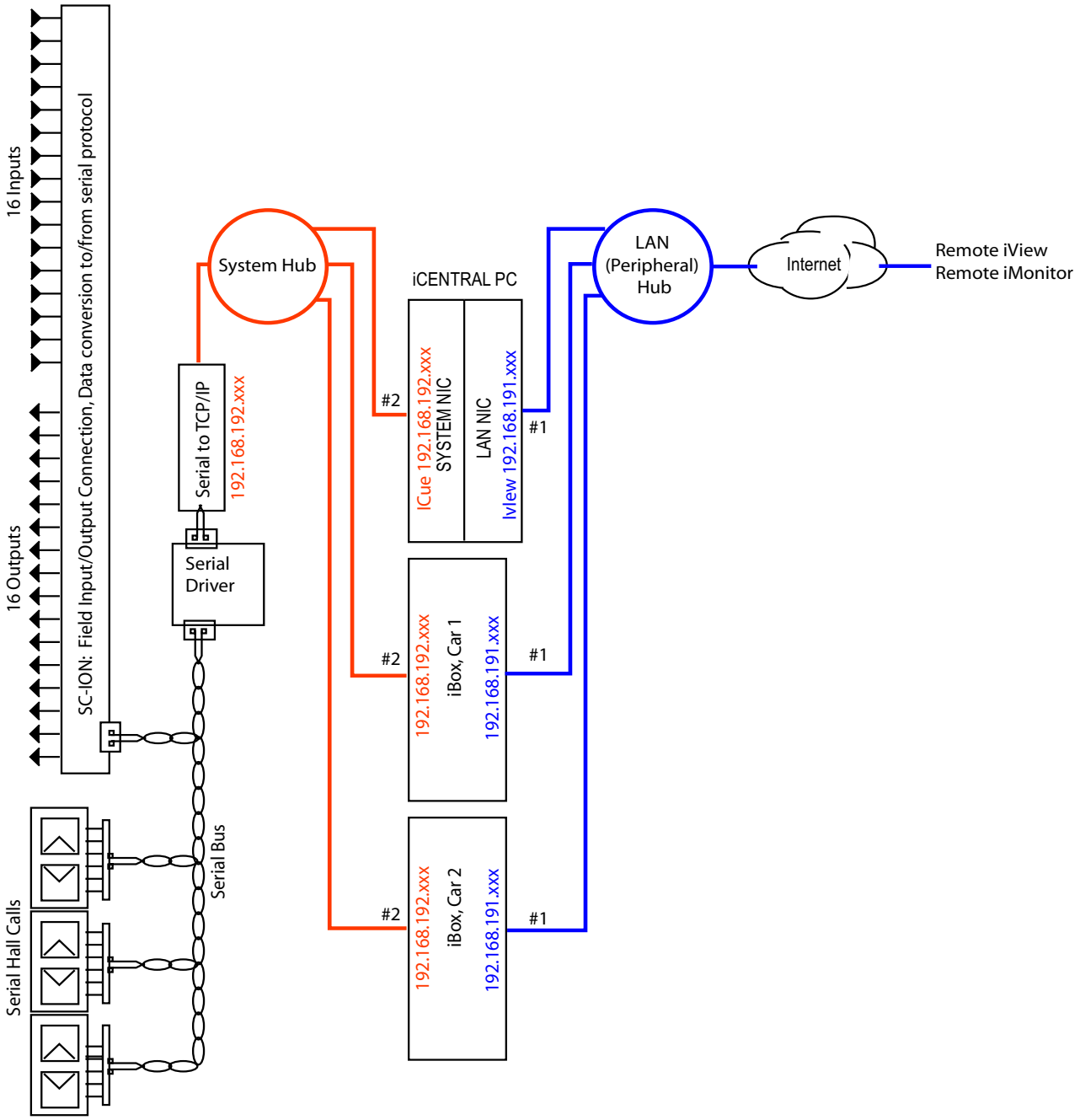
1. Power up the elevator controllers.
2. Power up the group controller.
3. If a controller fails to power up, refer to the job prints and check supply connections and fuses.
4. Measure from each iCue ST2 bus terminal to a Common (#1) terminal. Verify 120VAC.
5. If any bus voltage is missing, check the 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).

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



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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**.

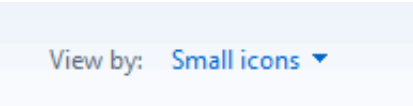
If you received your iCentral PC from MCE, the NIC addresses for LAN and SYSTEM connections are already set as shown in the job prints. You DO NOT need to set them.

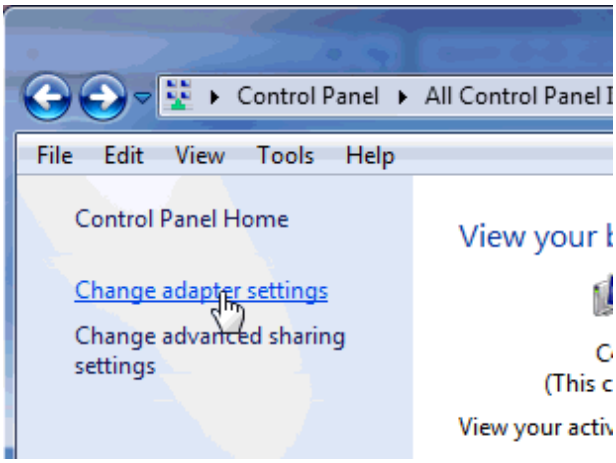
If you are replacing the LAN NIC card in the iCentral PC with an NIC provided by MCE, follow the instruction included with the NIC.

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).

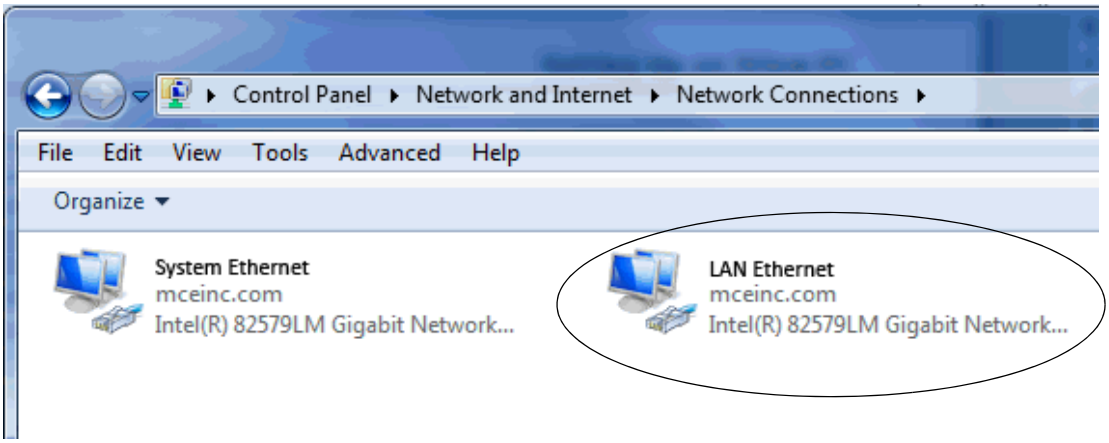
The following example is for the Windows 10 operating system.

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).

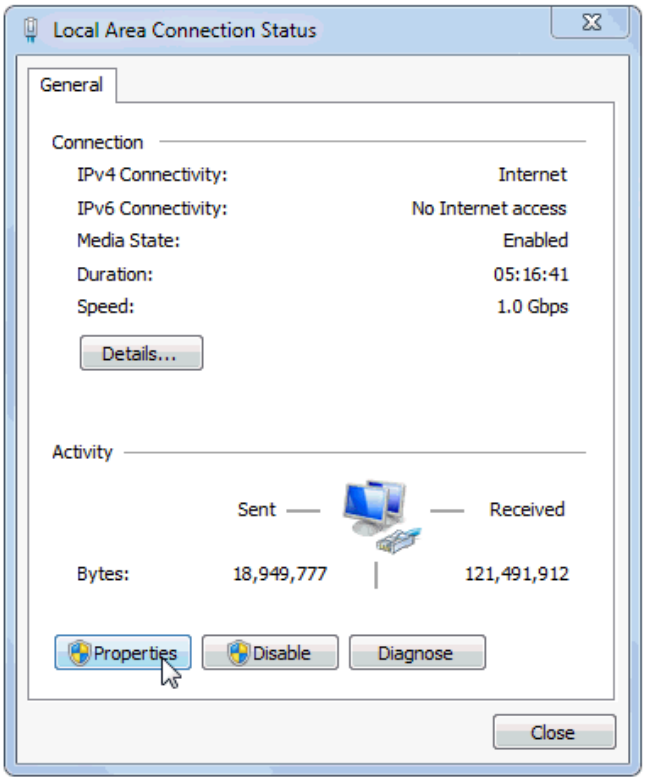




3. Double click **Network and Sharing Center** to open the Network and Sharing Center dialog. Click **Change Adapter Settings** to open the Network Connections dialog.
4. You will see two connections; one for the System Ethernet and one for the LAN Ethernet.
5. Double-click the **LAN Ethernet Connection**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

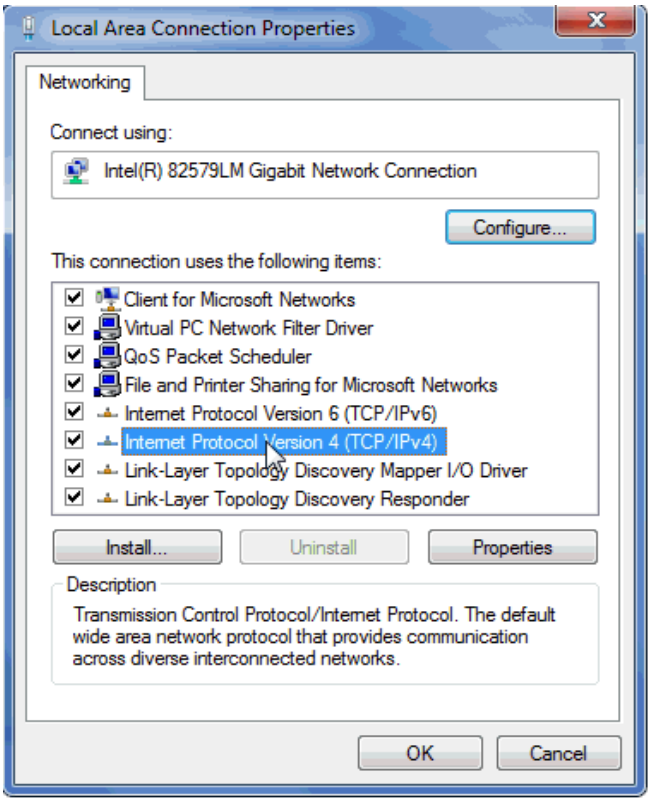


6. Click **Properties** to open the Local Area Connection Properties dialog.

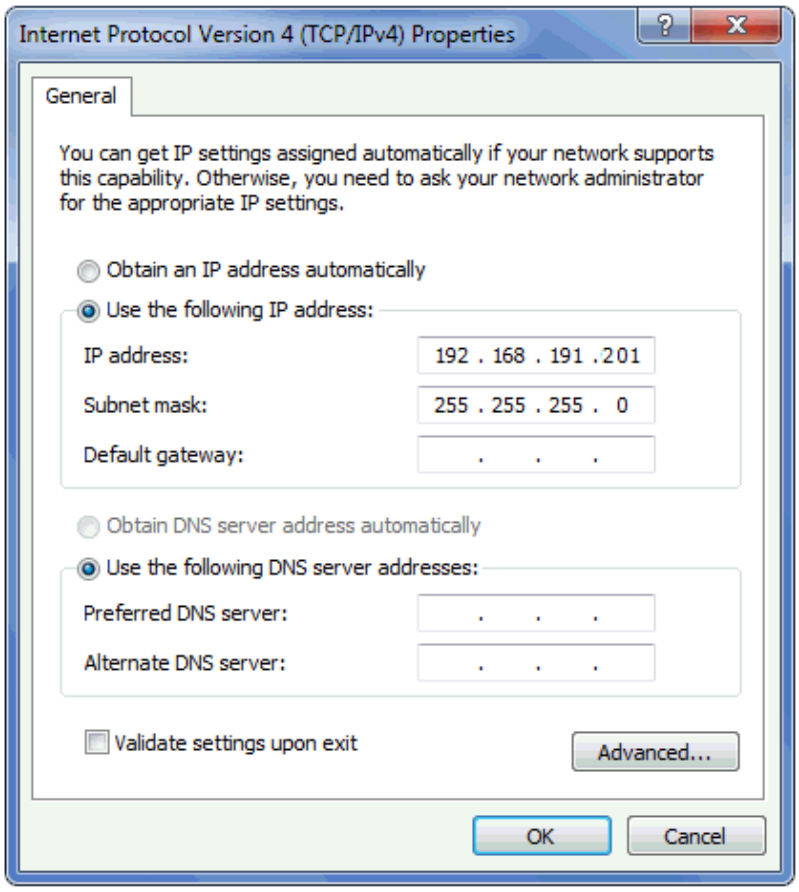


7. In the Local Area Connection Properties dialog, select **Internet Protocol Version 4 (TCP/IPv4)**.

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.



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**.

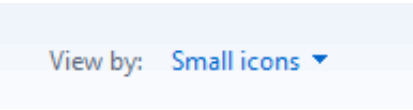
If you received your iCentral PC from MCE, the NIC addresses for LAN and SYSTEM connections are already set as shown in the job prints. You DO NOT need to set them.

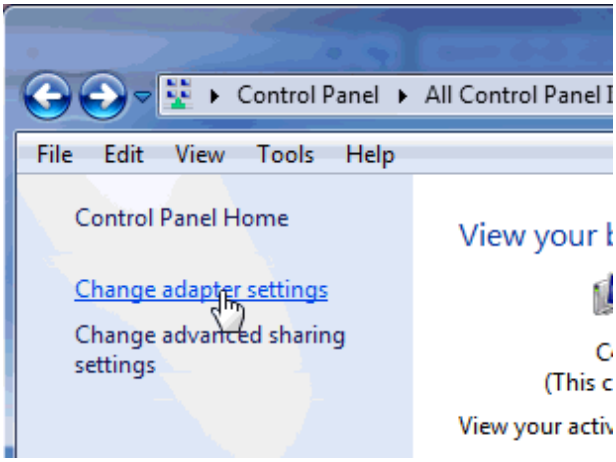
If you are replacing the SYSTEM NIC card in the iCentral PC with an NIC provided by MCE, follow the instruction included with the NIC.

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).

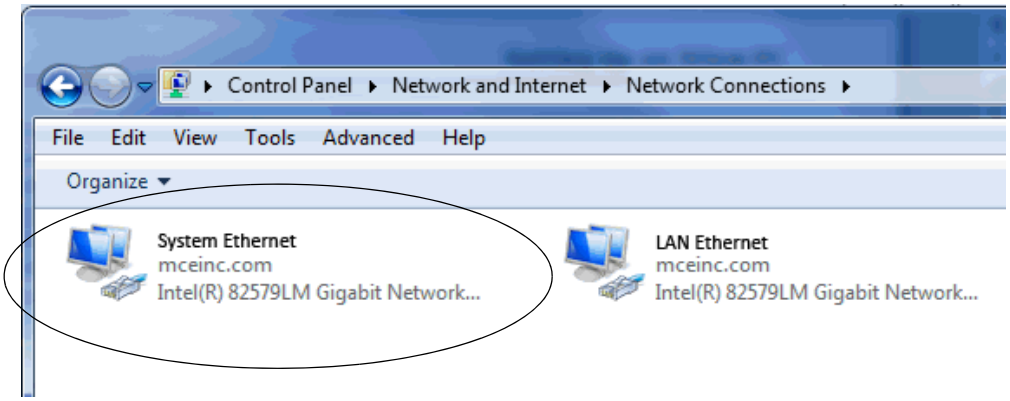
The following example is for the Windows 10 operating system.

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

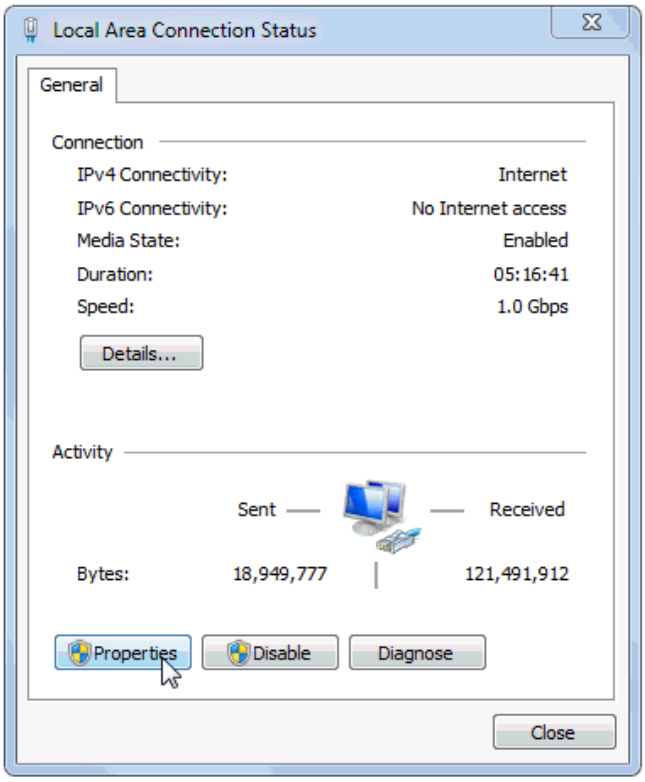




3. Double click **Network and Sharing Center** to open the Network and Sharing Center dialog. Click **Change Adapter Settings** to open the Network Connections dialog.
4. You will see two connections; one for the System Ethernet and one for the LAN Ethernet.
5. Double-click the **SYSTEM Ethernet Connection**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

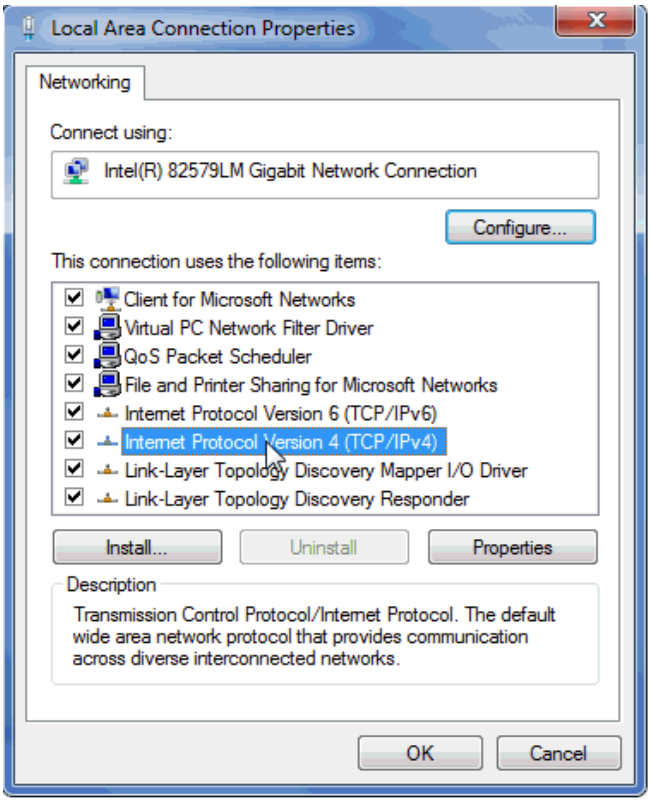


6. Click **Properties** to open the Local Area Connection Properties dialog.

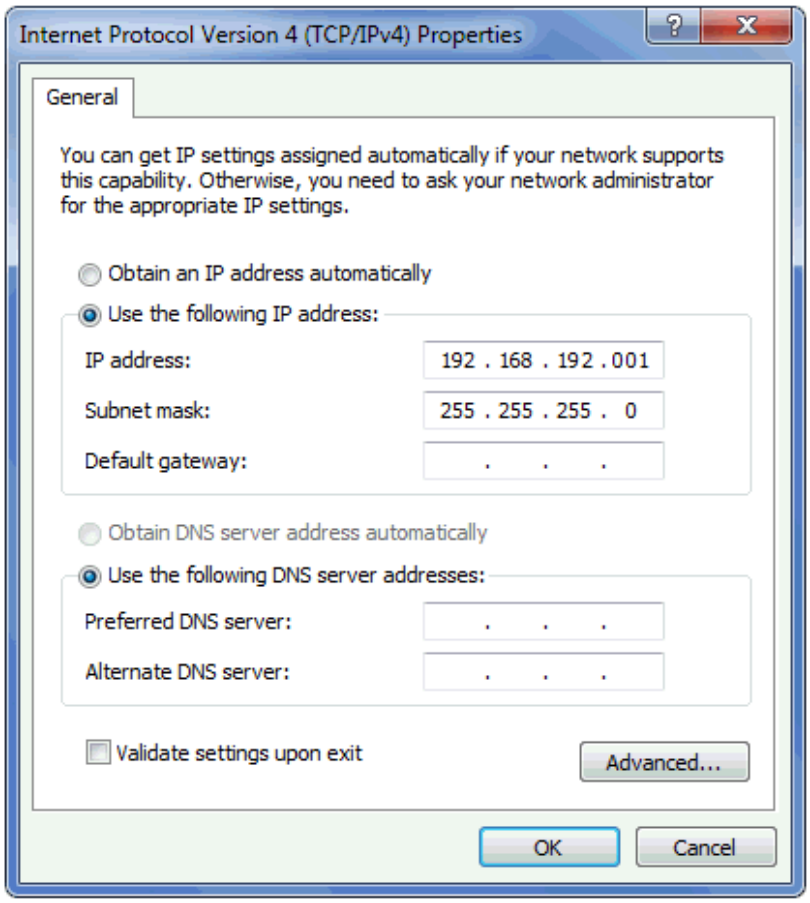


7. In the Local Area Connection Properties dialog, select **Internet Protocol Version 4 (TCP/IPv4)**.

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

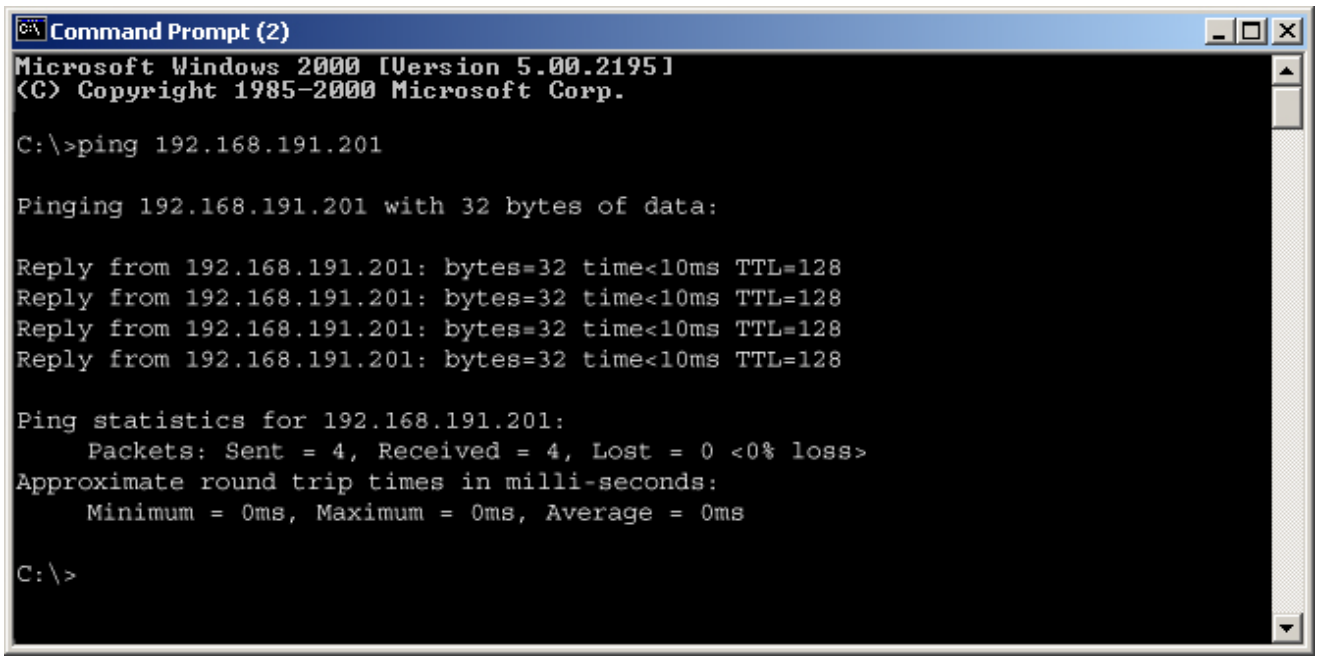


9. Set the IP Address to 192.168.192.001.
10. Set the Subnet Mask to 255.255.255.0.
11. Leave the Default gateway blank.
12. Click **OK** and follow any instructions to save the changes you made.



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

To ping:

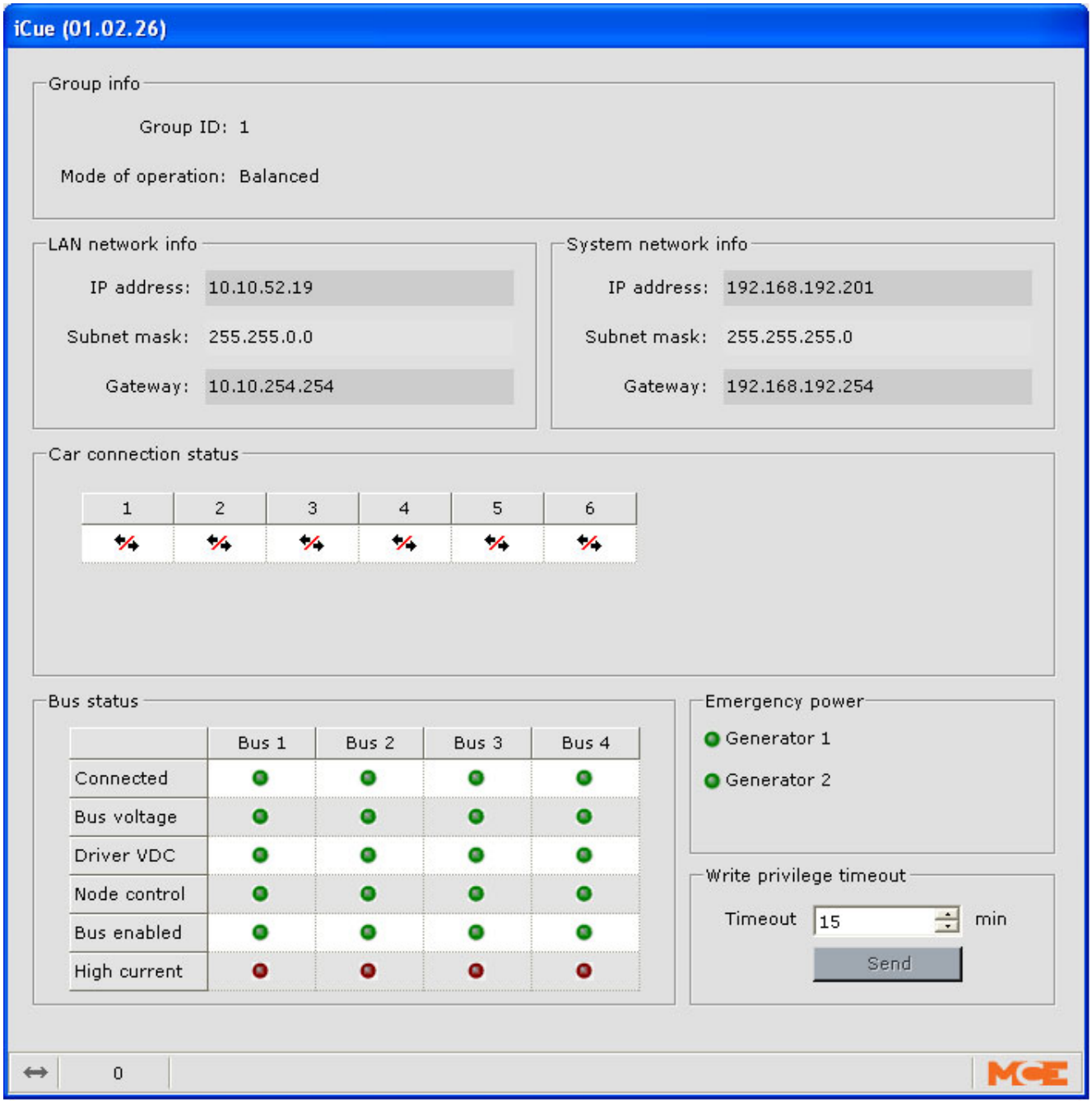
1. Select Start/All Programs/Windows System/Command Prompt from the Windows Start menu (window pane icon at the bottom left).
2. Type in ping and the IP address of the device you want to check. For example:

```
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.

iCue User Interface

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



- 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 some one 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. Write requests from the iView/iCue PC in iCentral are granted automatically.

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

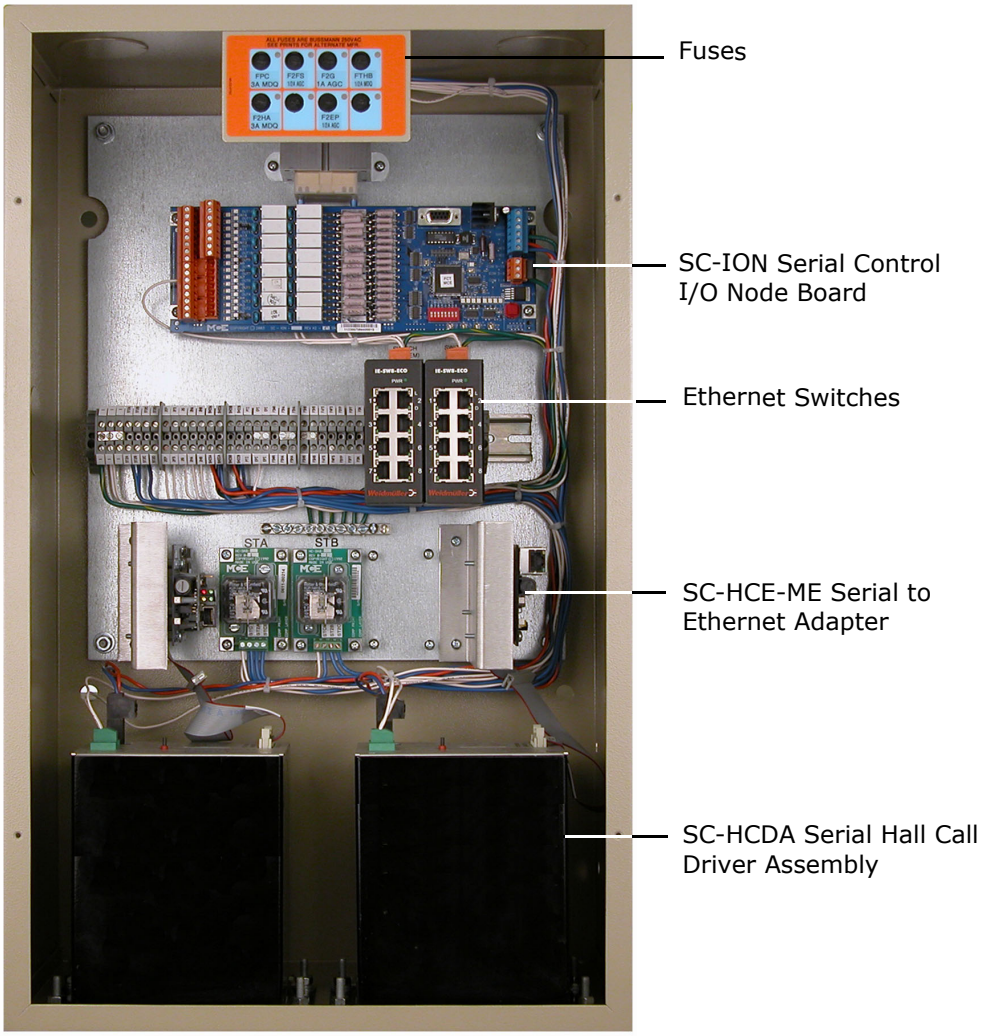
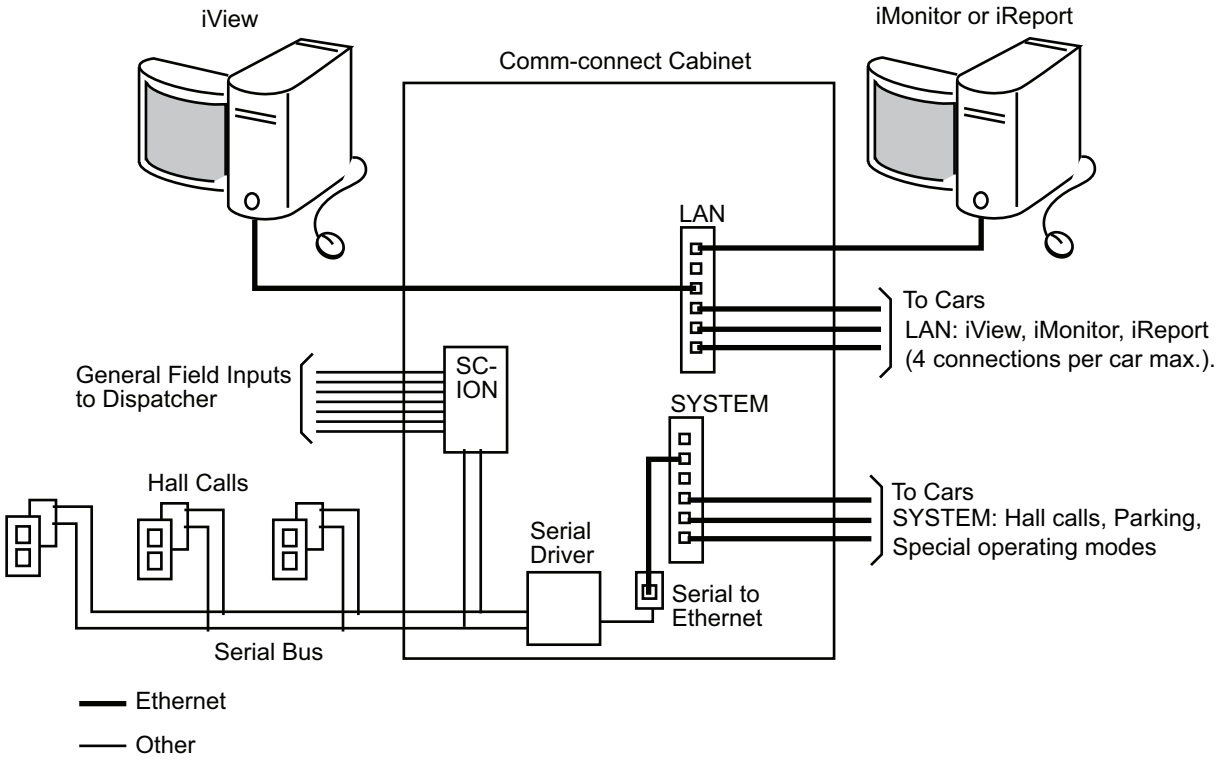


Figure 5.4 Comm-Connect Interconnection



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).

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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

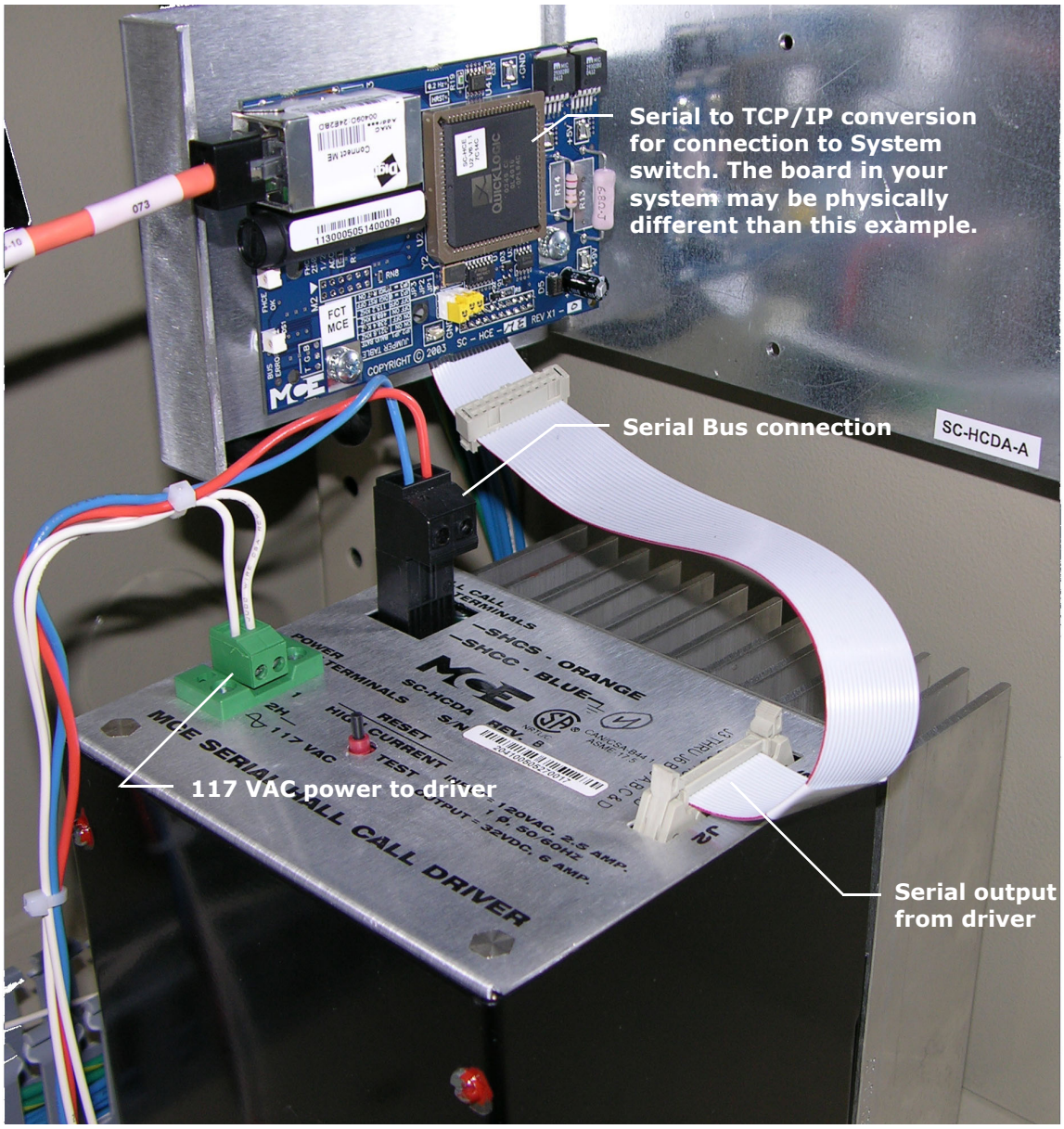


Figure 5.6 Typical iCentral Serial Hall Call Connections

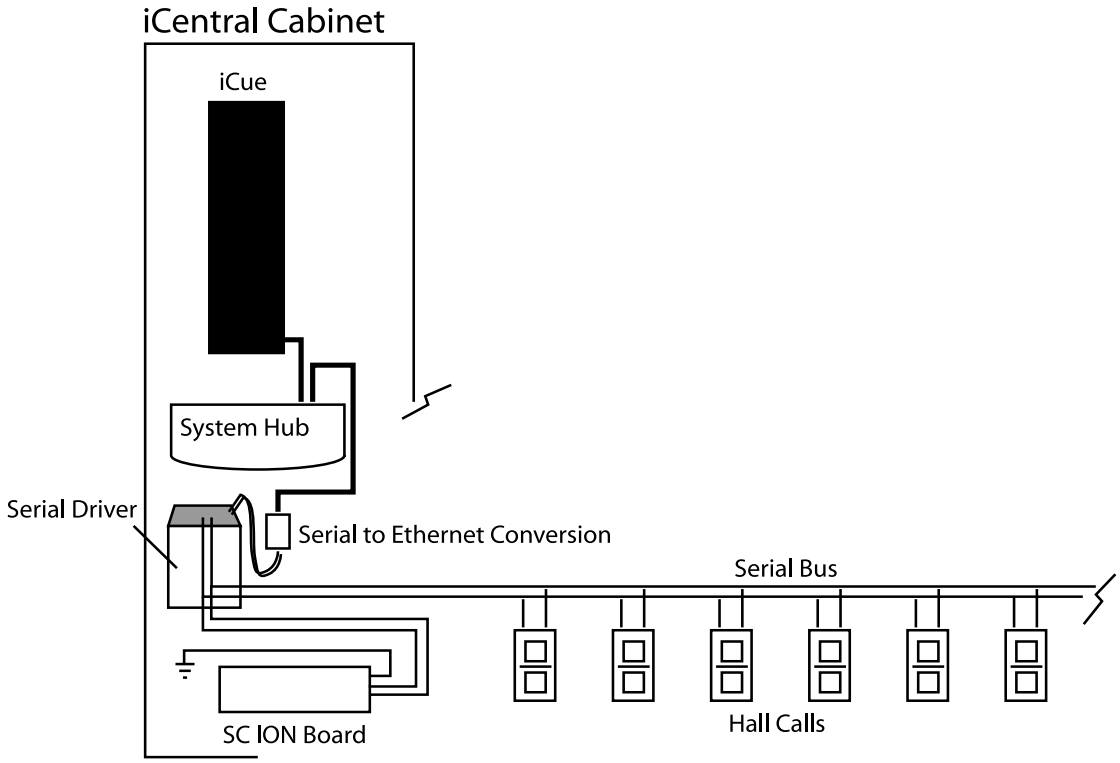
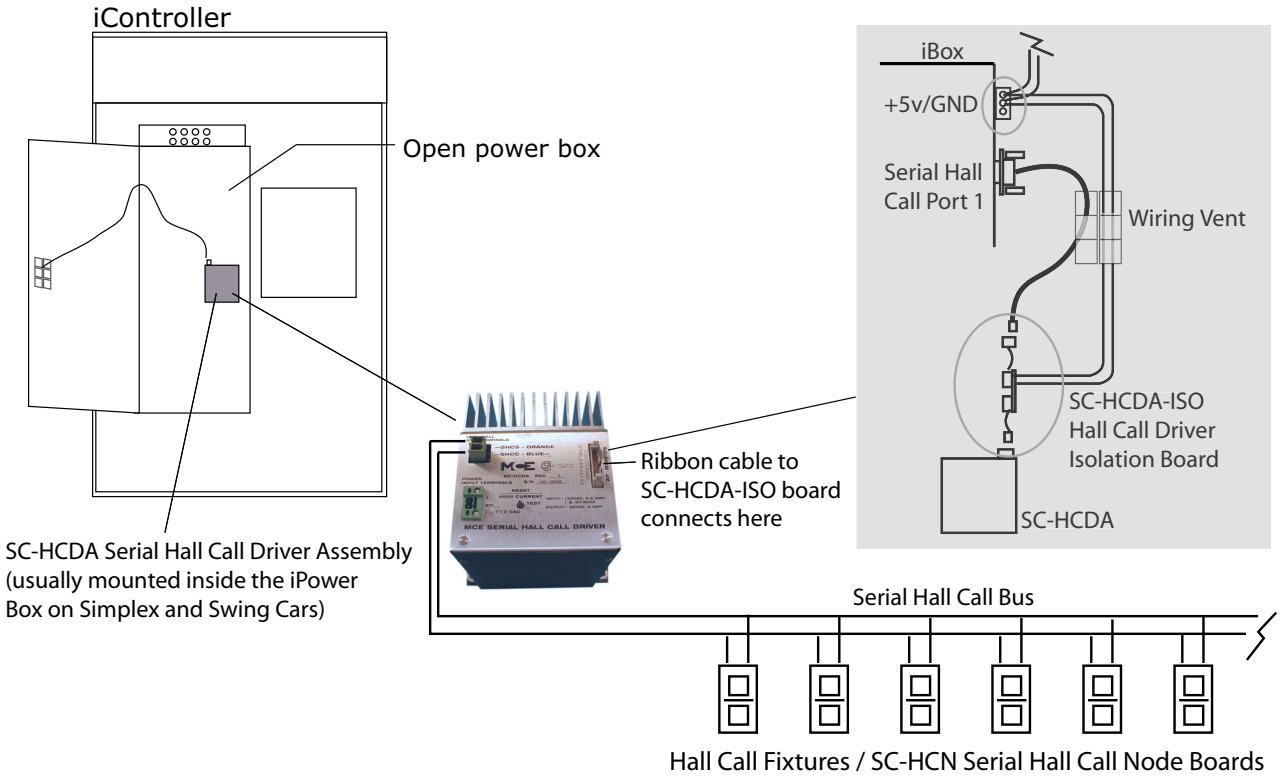


Figure 5.7 Typical Serial Hall Call Connections for a Simplex or Swing Car



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Hall Call Installation

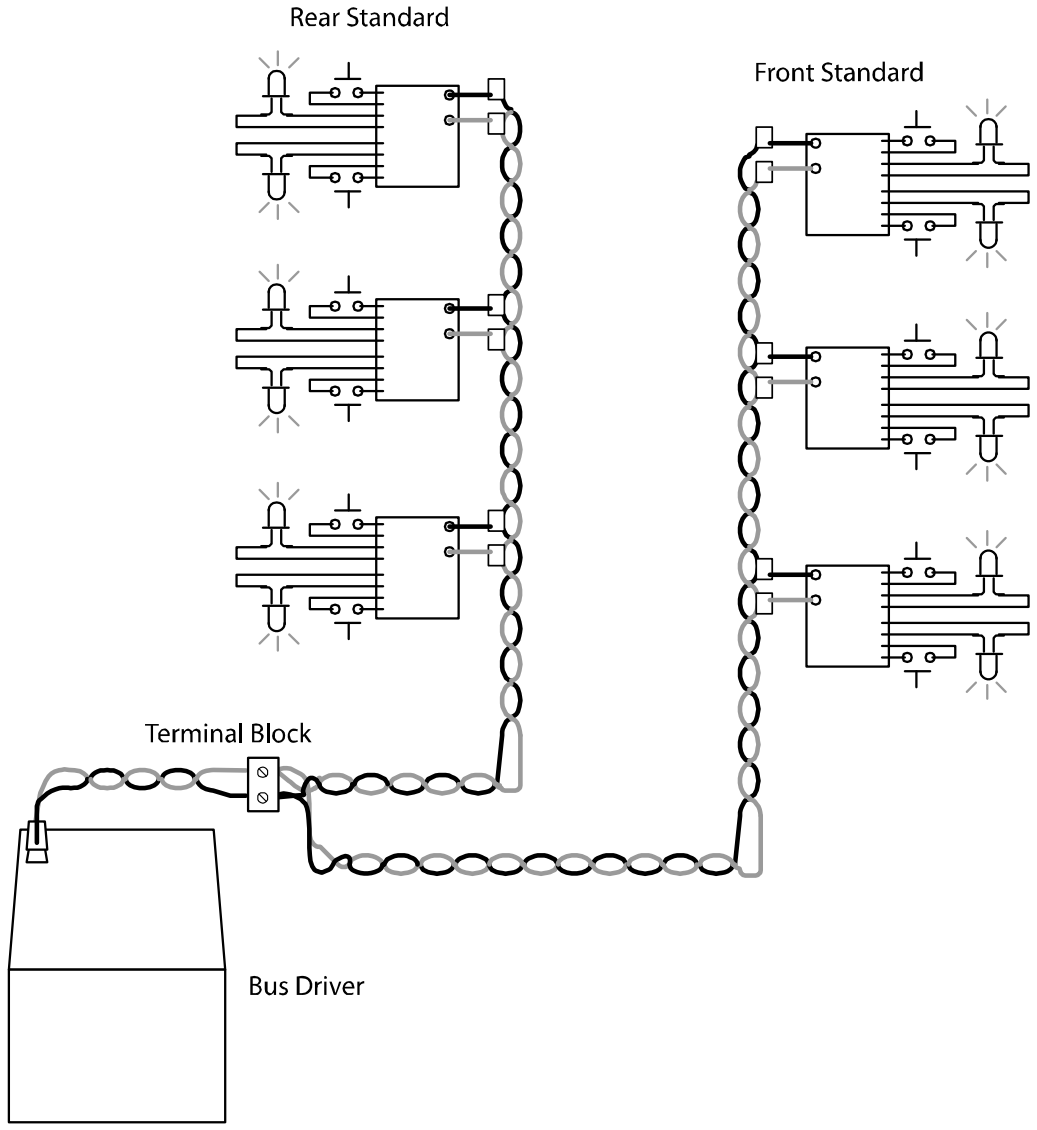
Installing a serial hall call system includes:

- 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

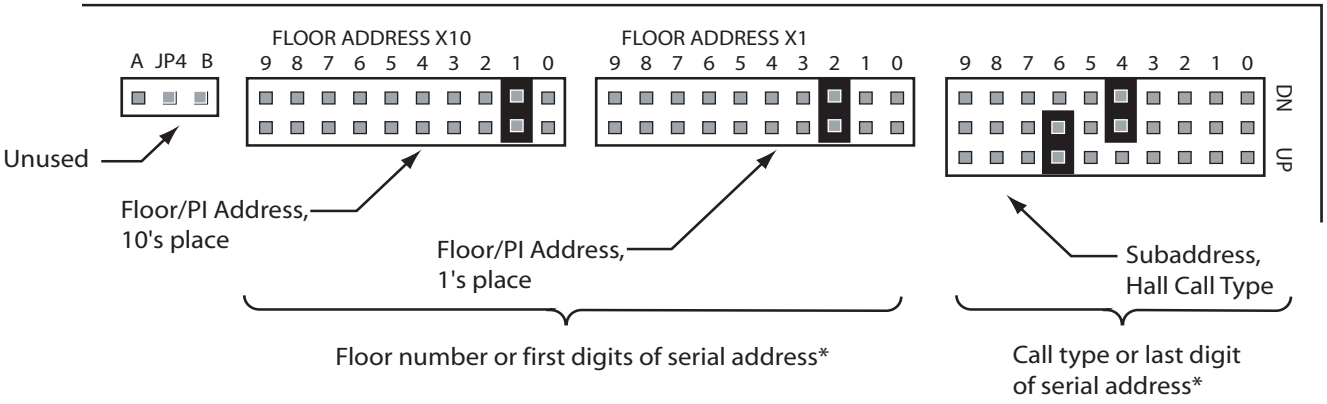


Setting Node Board Addresses

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."

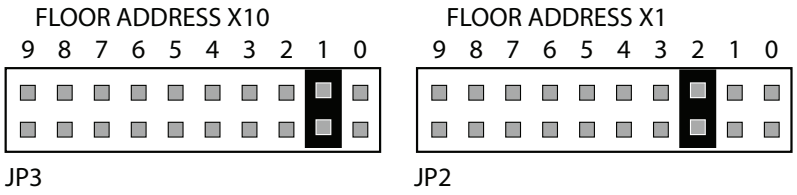
In a typical installation, a node (HCNT) board is mounted in each hall call receptacle. The blue and orange wires of the serial bus connect to one end of the board, the hall call buttons and lamps or LEDs connect to the other end (as shown in the job prints depending upon lamp or LED connection). During 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.

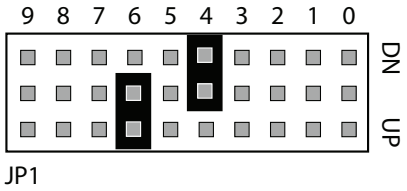


Table 5.1 Floor Sub-Addresses (Call Type) Jumper Settings

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

Note

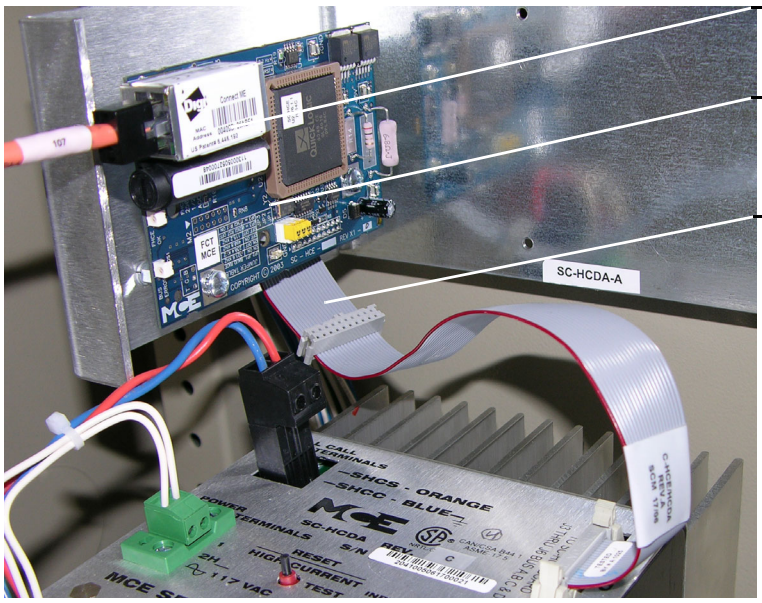
Only the Sub-address jumper, JP1, can have more than one jumper inserted. (It can have a maximum of two — one to complete the DN address, the other to complete the UP address.) All other node board jumpers can have ONLY ONE jumper inserted. If more than one jumper is inserted in JP2 or JP3, the system 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.

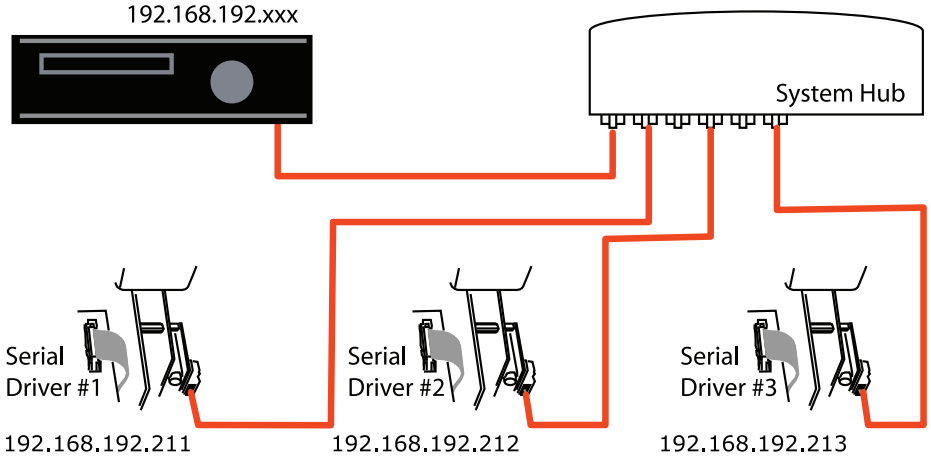
Checking Serial to IP Connections

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.)

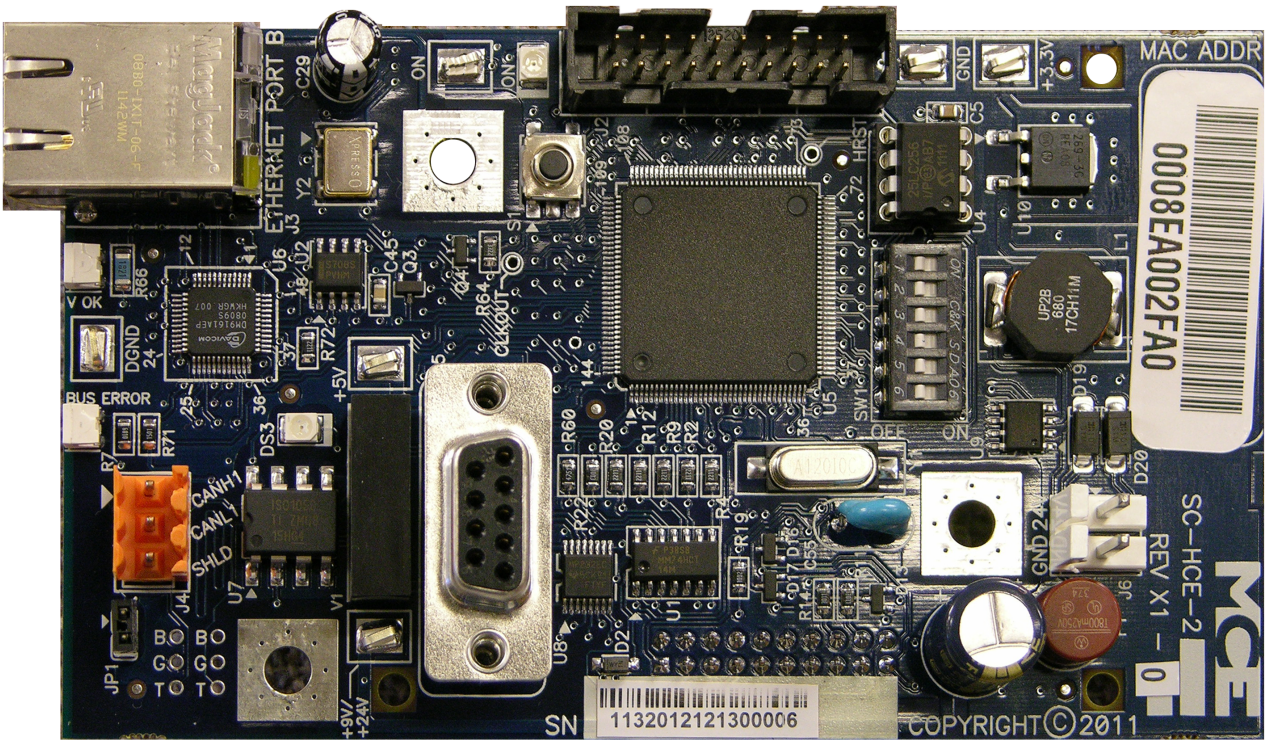
SC-HCE Assemblies

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.

5

After making changes to SC-HCE-2 settings, reset the iCue computer so that it can rebuild internal tables.

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



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

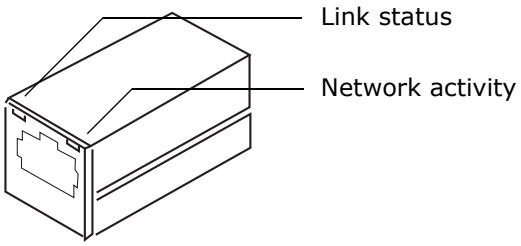


Table 5.2 Ethernet Port LEDs

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.

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

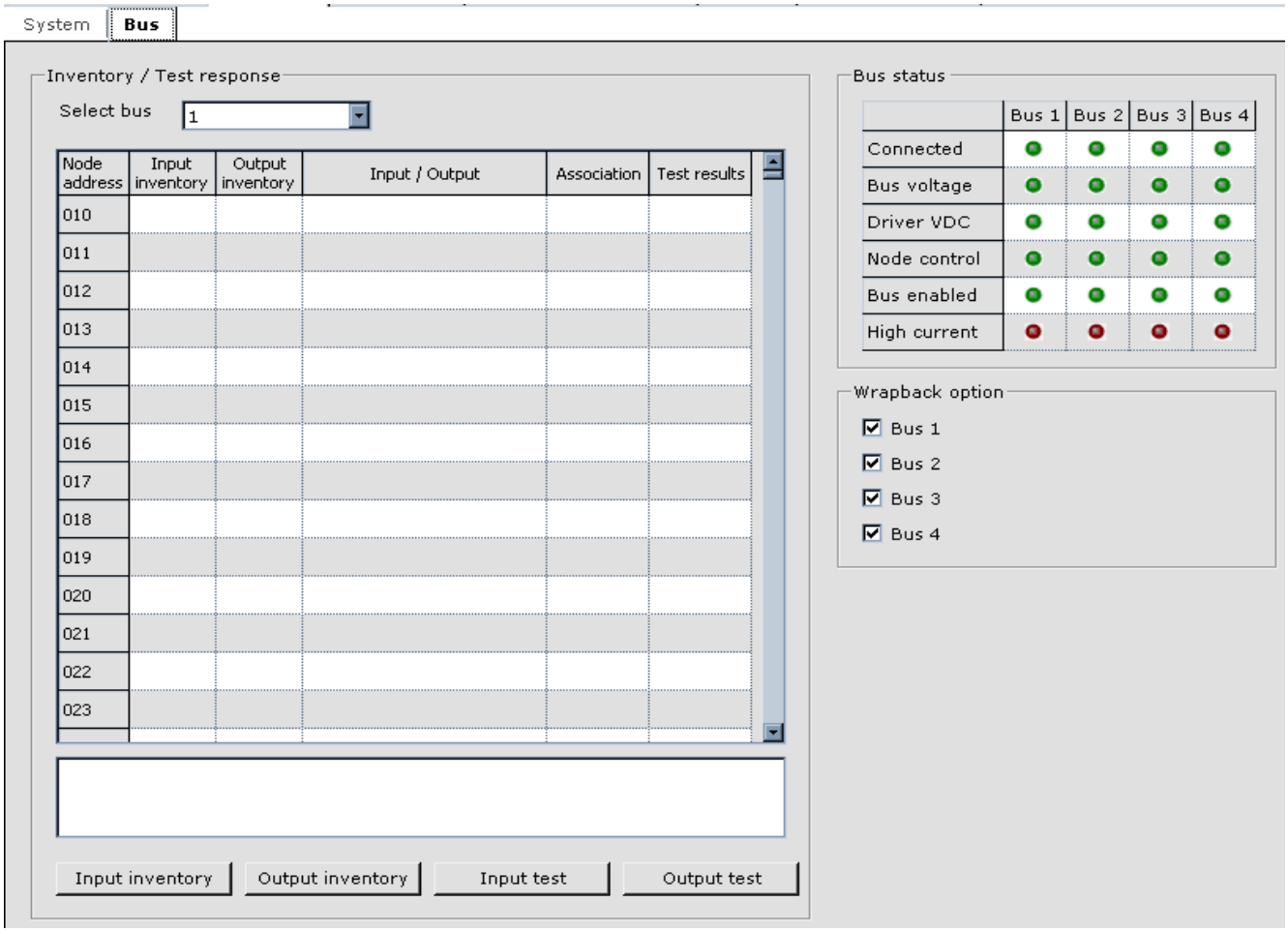
- During power up, -2 Boards:
  - Two red SC-HCE board LEDs (V OK and Bus Error) should remain on for 30-40 seconds after the Hall Call Driver is powered-up.
  - After solid-on, LEDs will cycle through a period of start up activity then indicate normal operation as described below.
- During power up, -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

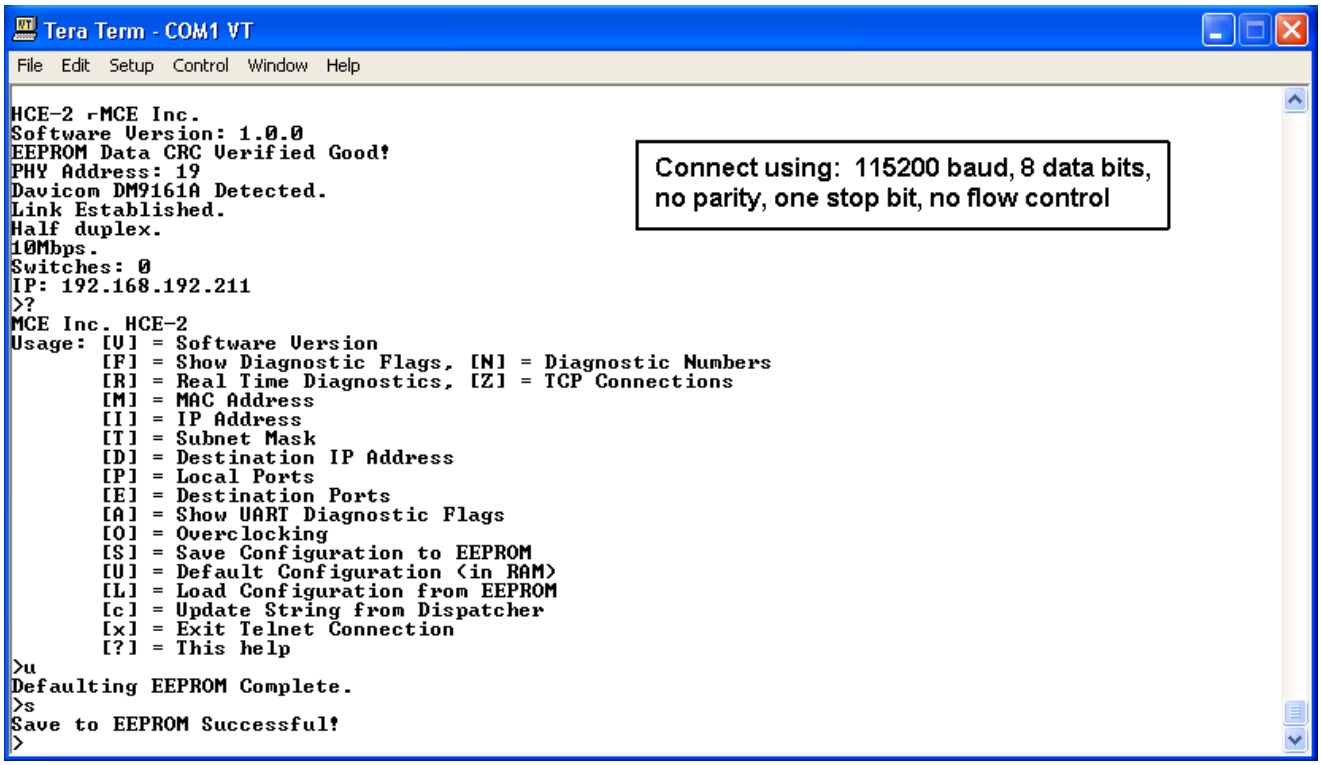
1. Check all power and data cable connections.
   - Port status LED on System hub/switch should light when the Ethernet cable is plugged in between the hub/switch and the serial/Ethernet board.
   - Ribbon cable (if used) seated properly on the hall call driver and the serial/Ethernet board.
   - Use 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%.

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).



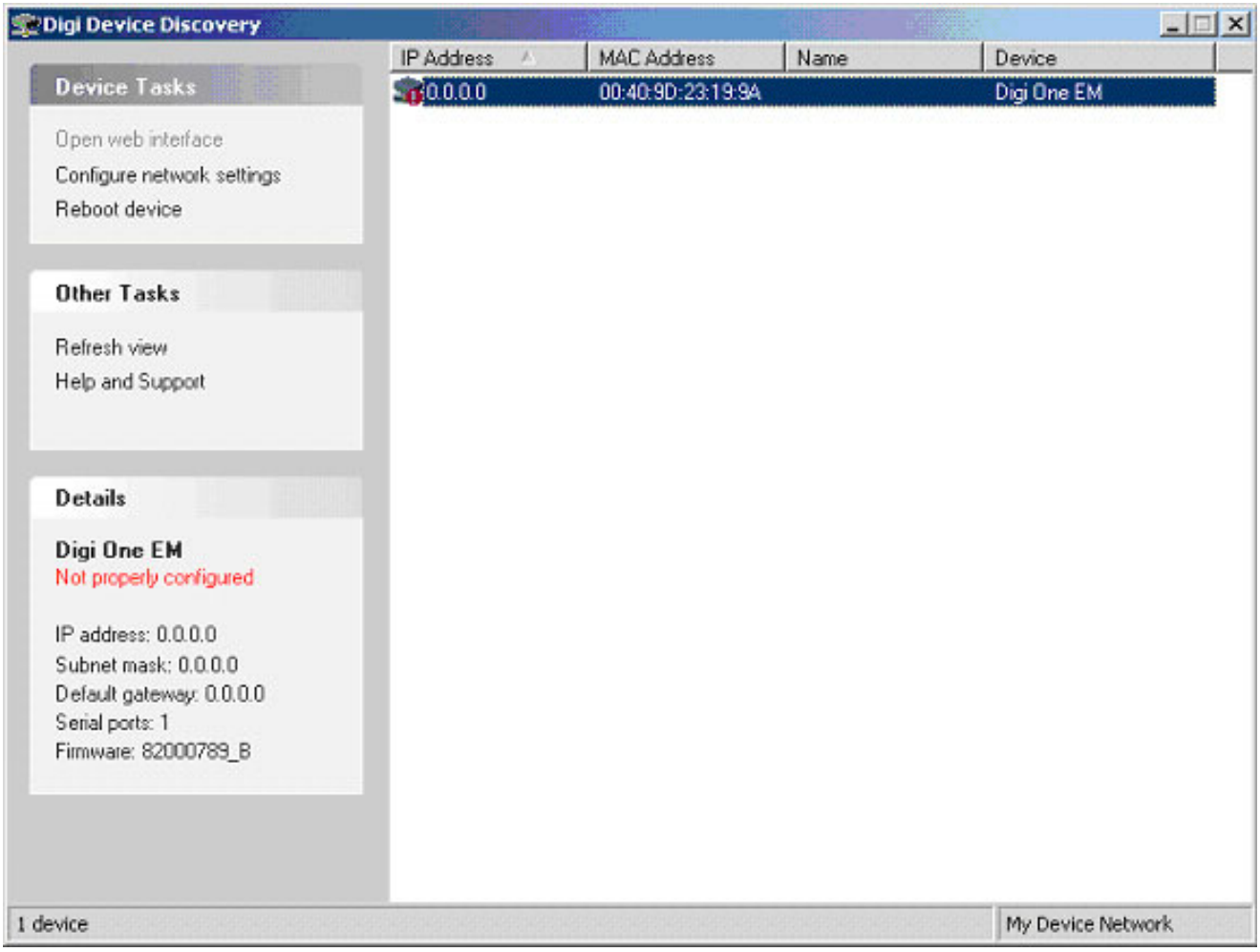
Serial Connection Check, -2 Board The Hyperterminal utility may be used to check or default internal settings on SC-HCE boards. Contact MCE for information.



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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.



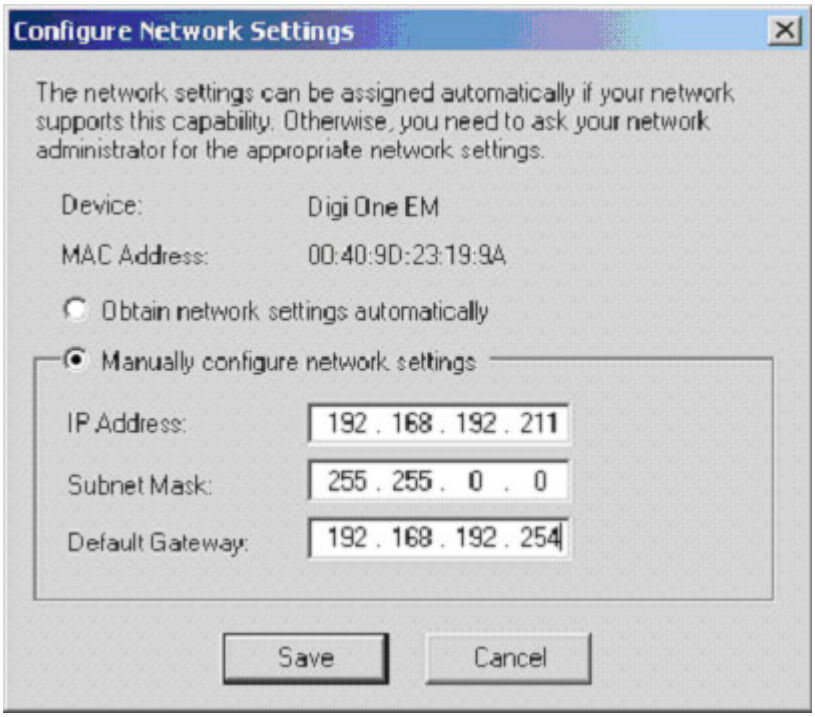
2. Select the device. Click on Configure Network Settings.

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

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

5

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

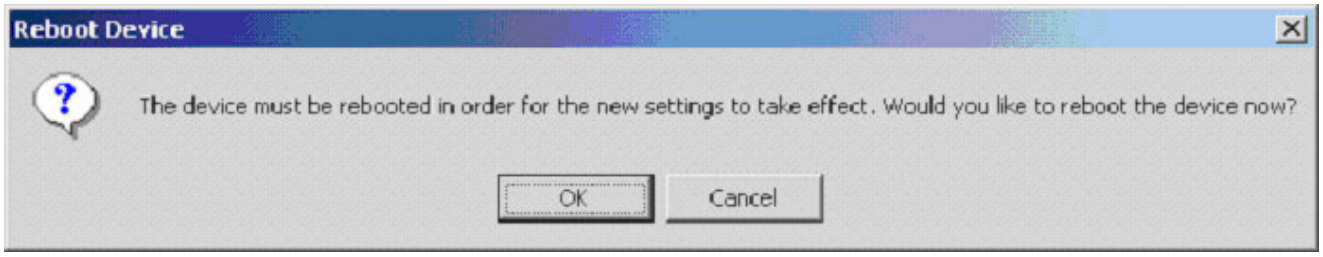


4. Check the drawing package for the dispatcher or the Ethernet Address examples drawing in the manual.
5. If the IP address of the device is incorrect, set it appropriately.

Note

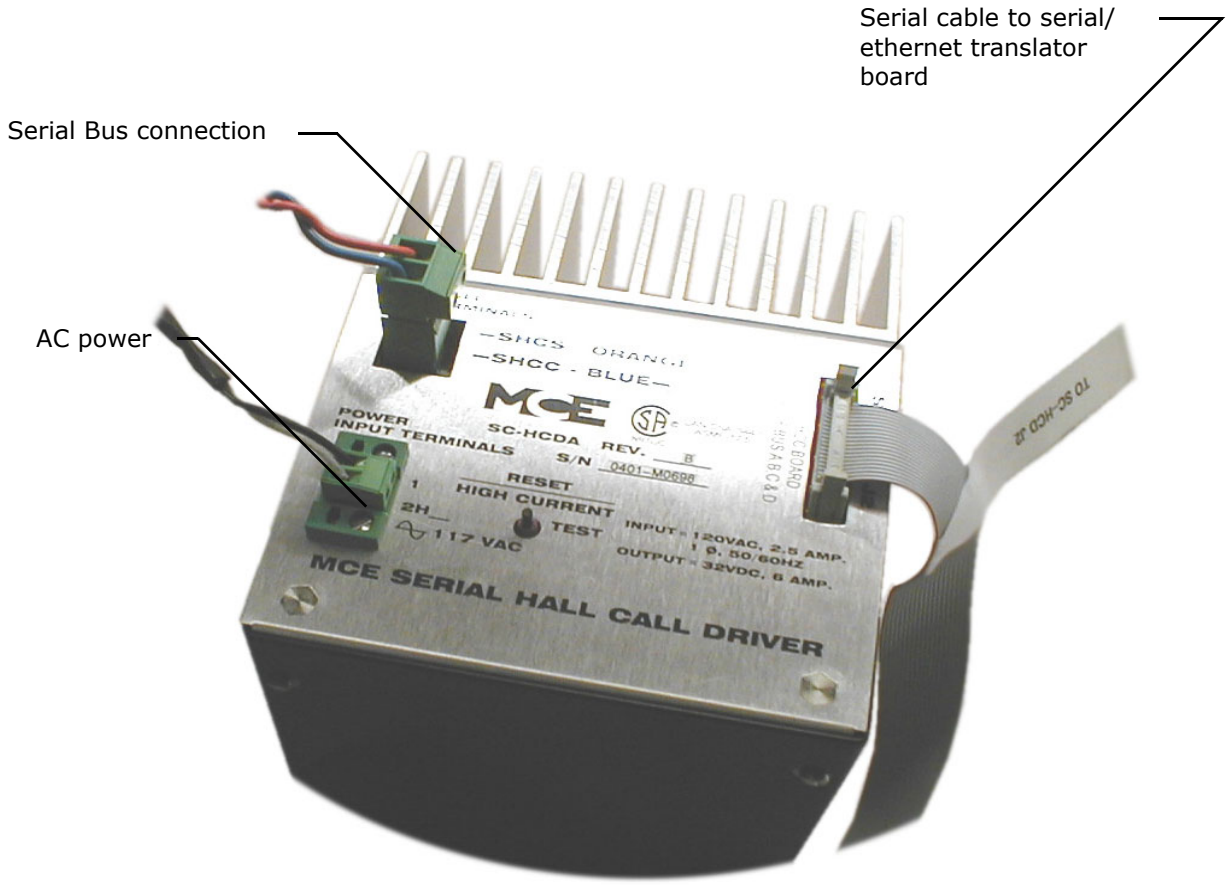
When entering the IP address, do not enter leading zeros. For example, in the address 192.168.192.056, 056 is entered as 56, with no leading zero.

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



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.)

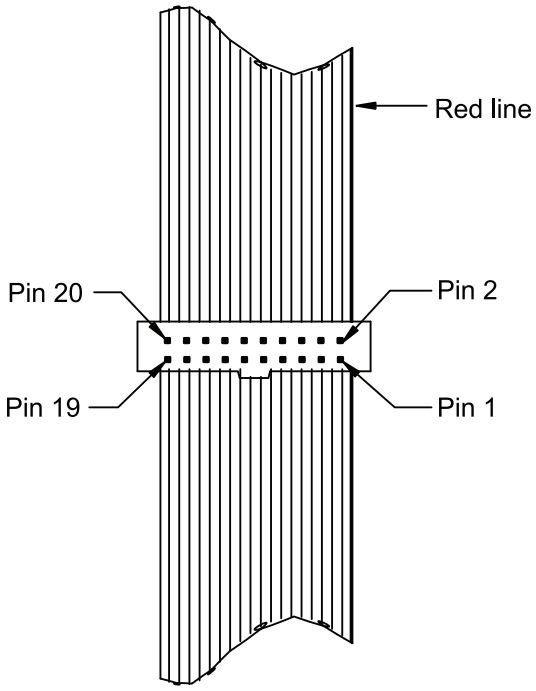
If this voltage is present, the driver is probably operating properly.

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.

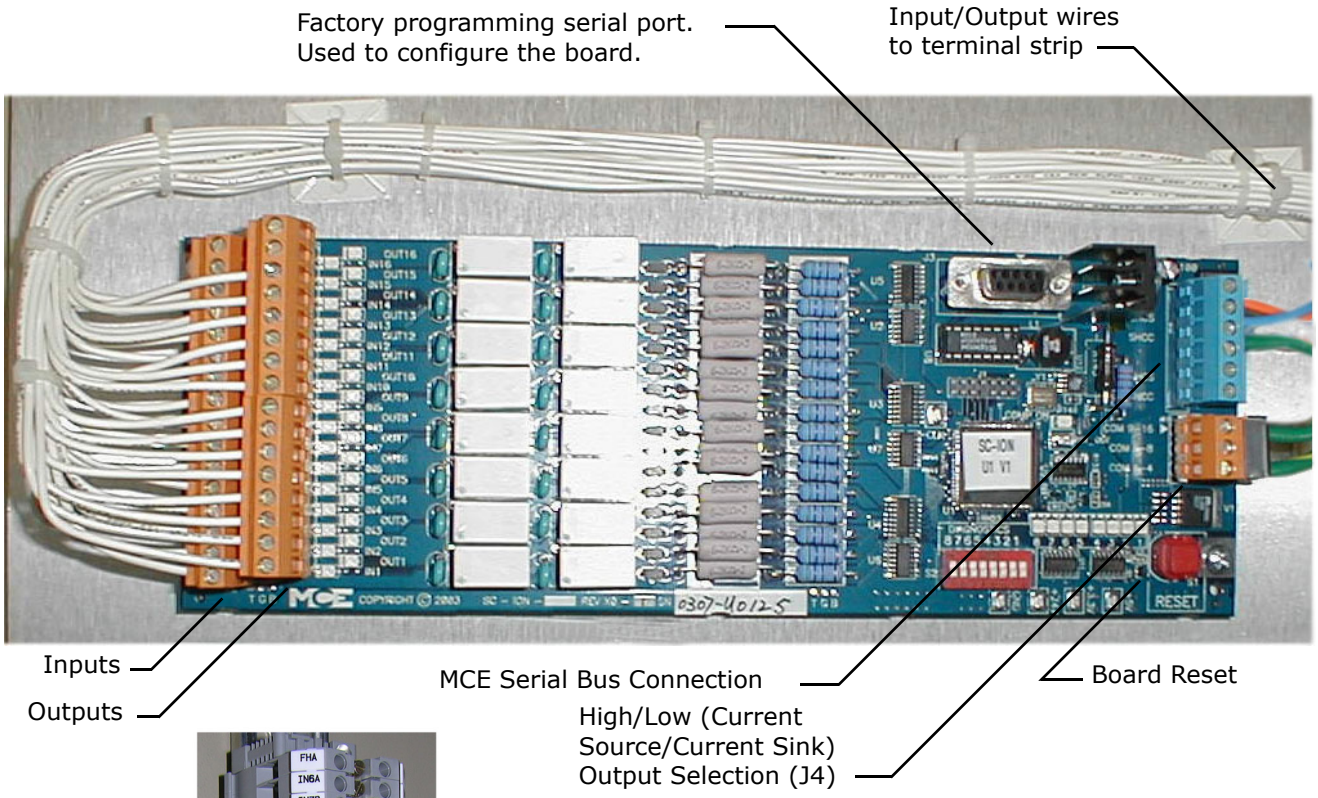
Flexible I/O

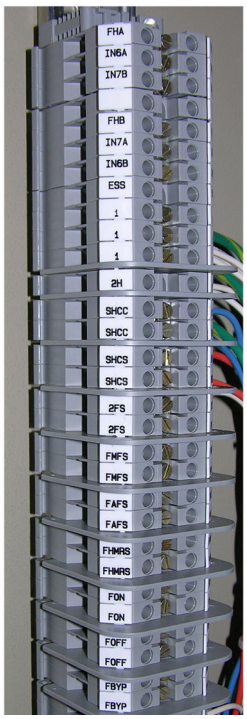
iCue makes extensive use of a serial bus to handle a range of communication and control needs. The serial bus is used to service the MCE Serial Hall Call System and to control I/O through one or more SC-ION boards (input/output expansion boards). Each SC-ION board provides 16 user-configurable inputs 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.

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





In this configuration, inputs and outputs have been routed to clearly labeled terminal strips for easy user identification and connection.

Terminal strips are located behind the hinged panel inside the iCentral cabinet, mounted for convenient user access.

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

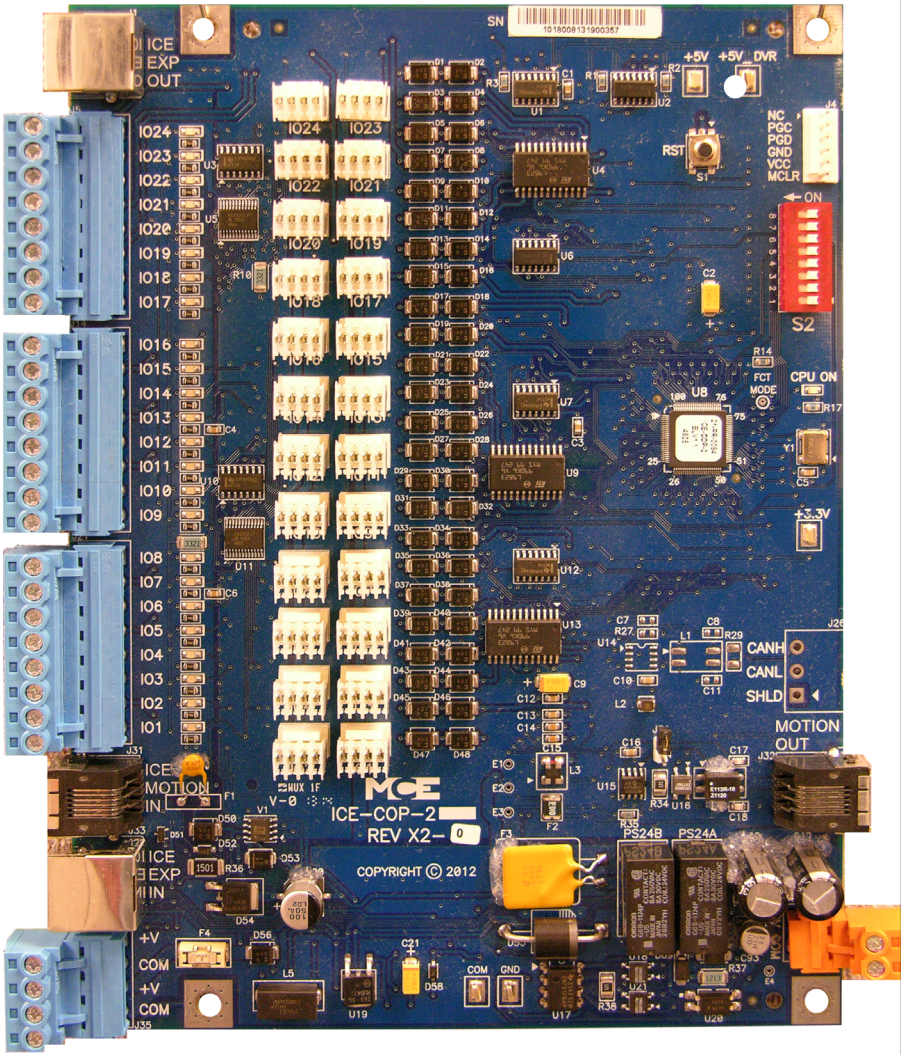
The commons for the groups are determined by the connections made to board connector J4. The appropriate connections are determined during the job survey. Each system is configured before shipment. You need only connect the inputs and outputs as shown on the job prints.

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 iView, System I/O screen, is used to set individual addresses and also to set the address range (10-488 or 10-988) used for the job. To configure the board, the iView PC must be connected through a serial cable to the board serial port.

Serial COP

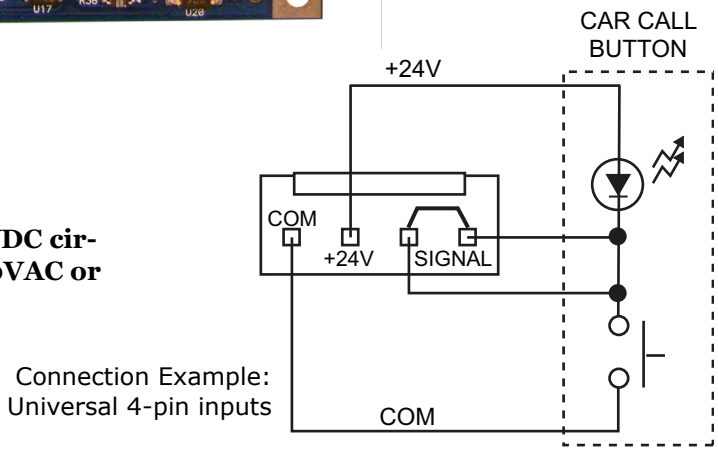
With the Serial Car Operating Panel system, car call buttons connect directly to a serializing board located in the car station enclosure. Multiple Serial COP boards daisy-chain together to accommodate high-rise installations with a lot of call buttons.

Figure 5.13 Serial COP board - Typical Installation



Caution

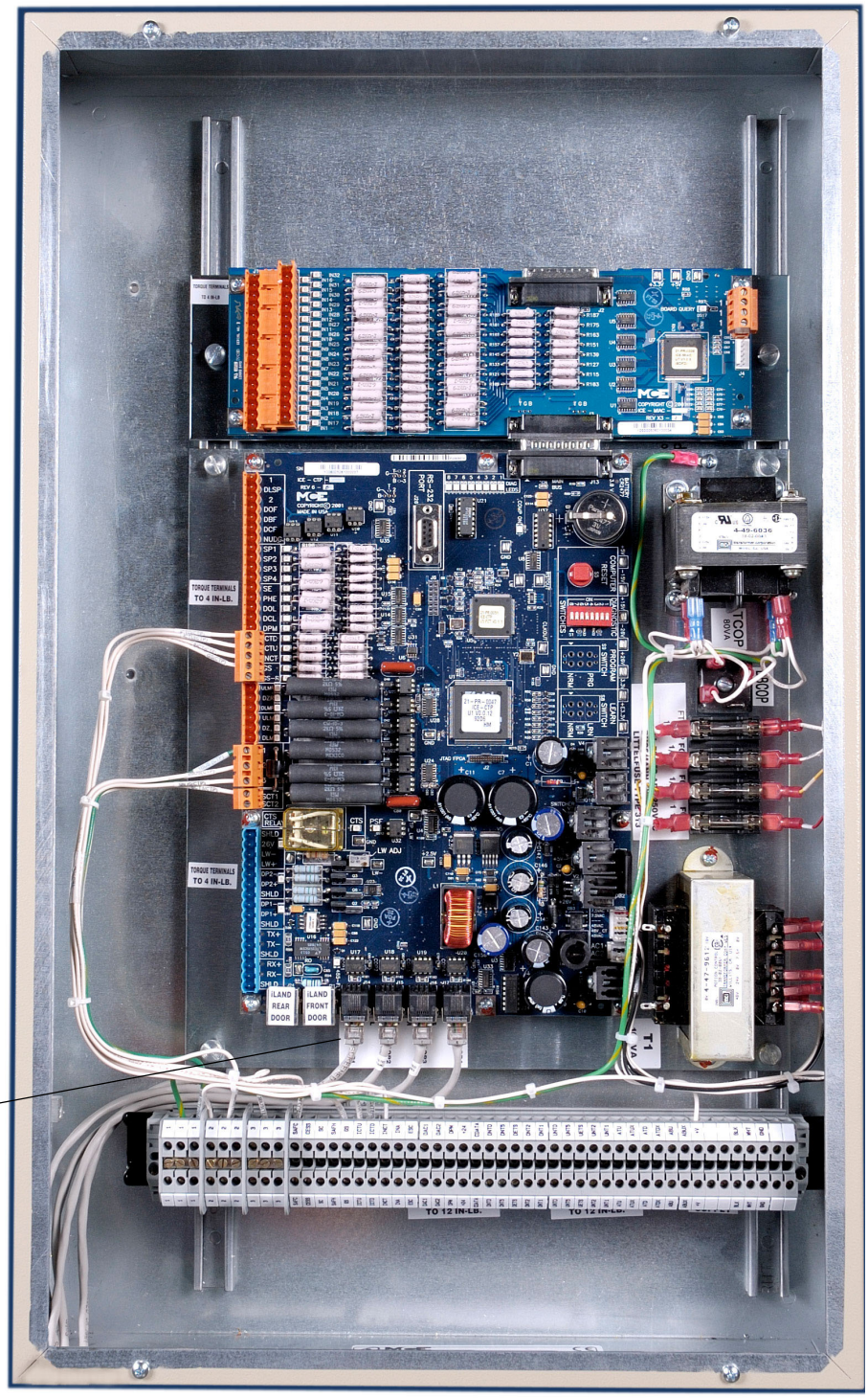
This system is designed for 24 VDC circuits maximum. Connecting 120VAC or DC will open the input fuses.



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



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 6-84.

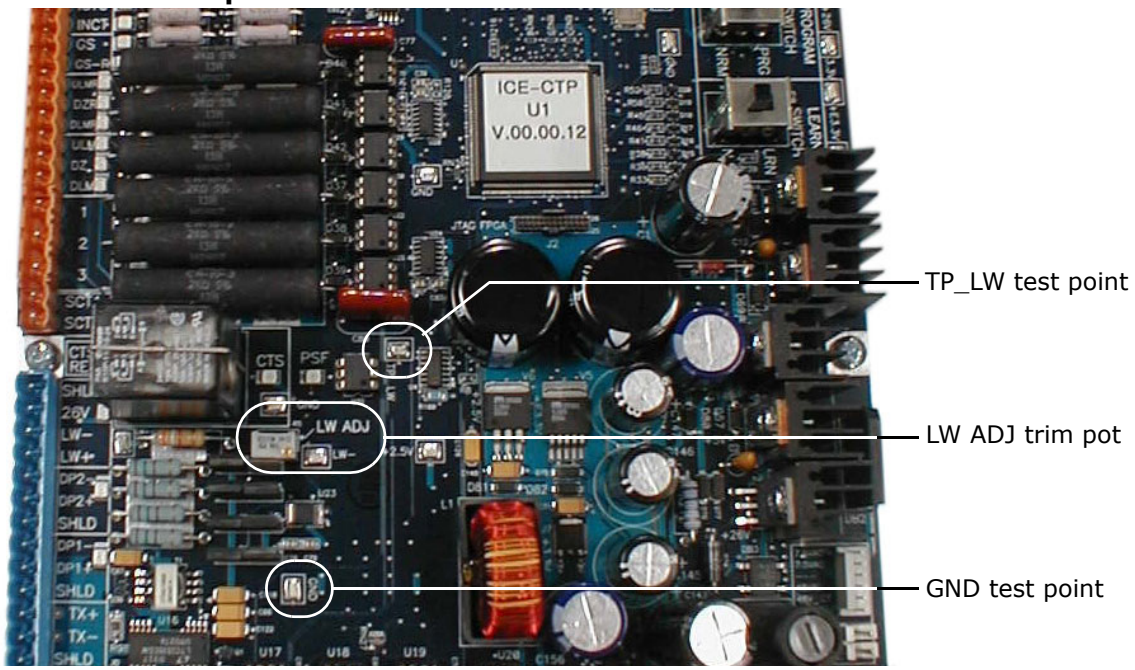
Load Weighers

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



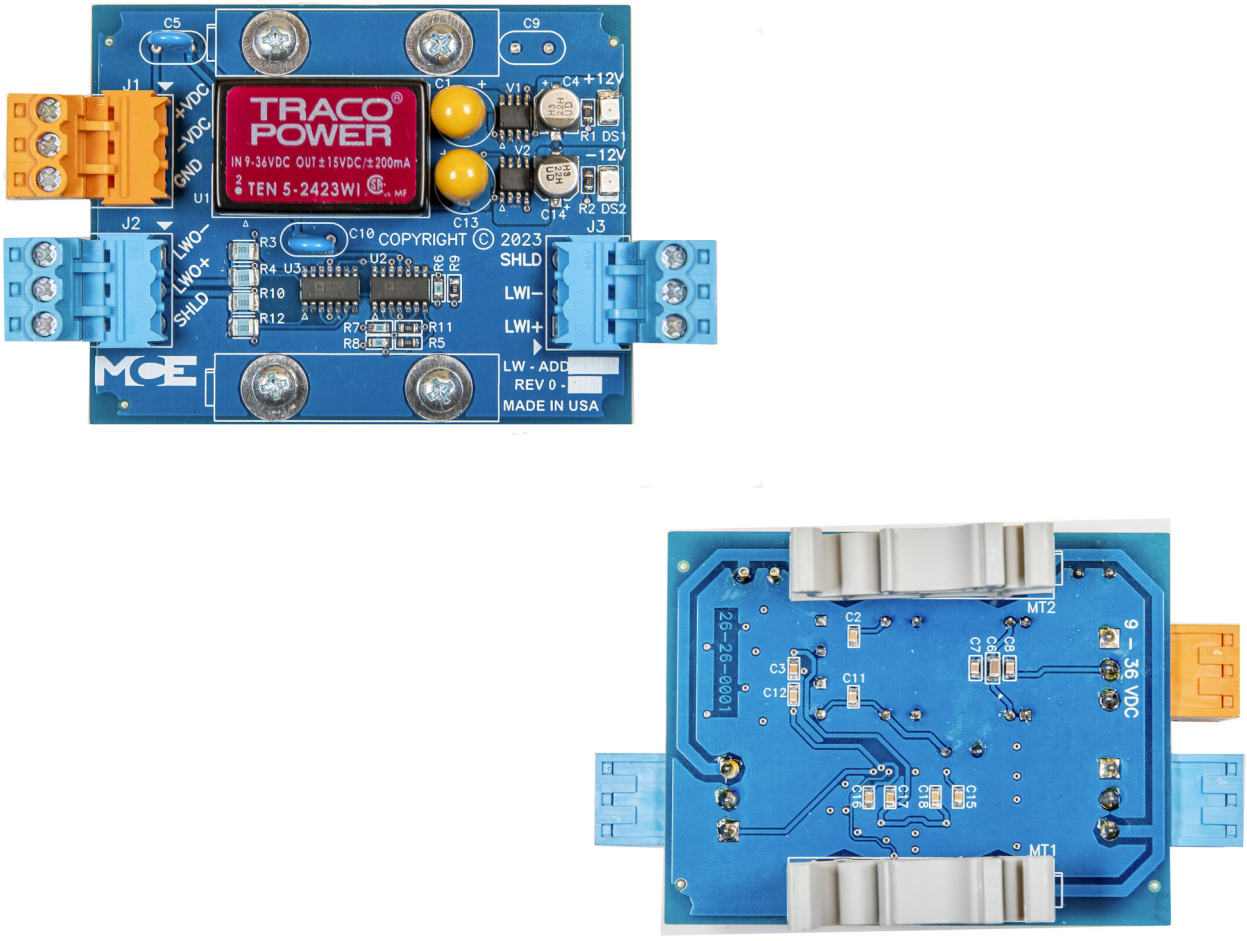
2. To view load weigher voltages using the iView Virtual Oscilloscope:
   - Connect to the controller; display the Virtual Oscilloscope (View > Virtual Oscilloscope)
   - Select Load Weigher (Raw) for Test point 1
   - Observe Load Weigher voltage values on the digital display.
3. To verify the linearity 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*.

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).

LW-ADD Board

The LW-ADD (Load Weigher - Analog Differential Driver) board takes the single ended analog output from the load weigher and converts it to a differential output that can travel much longer distances, such as through the traveler cable. This is useful for 2:1 roping configurations where the load weigher is mounted near the machine room. The differential nature of the output signal reduces the level of noise and error in the signal read by the ICE-CTP-2 board locates on top of the elevator car.

Figure 5.1 LW-ADD Board



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Installing the LW-ADD Board

1. One side at a time, latch the plastic mount on the back side of the LW-ADD board onto the DIN rail.



The LW-ADD board can be removed from the DIN rail using a small flat screwdriver to pry open the latch on the plastic mounts to release one side of the board.

2. Connect the wires to the screw terminals as shown in the prints.

Table 5.9 LW-ADD Connections

Terminal	Wires
J1	
LWI+	Positive Input from the Load Weigher
LWI-	Negative Input from the Load Weigher
SHLD	Shield Ground
J2	
LWO+	Positive Output to the ICE-CTP-2
LWO-	Negative Output to the ICE-CTP-2
SHLD	Shield Ground
J3	
+VDC	Positive Power Supply Input (9-36VDC)
-VDC	Power Supply Ground
GND	LW-ADD board digital ground (OK to leave unconnected on most jobs)

Troubleshooting

1. If either LED (Labeled DS1/DS2) is off, check that the board has power. If the LEDs are still off, replace the LW-ADD board.
2. The measured voltage between the input LWI+ and LWI- should be roughly the same as the output voltage measured between LWO+ and LWO-.
3. If the measured voltage between the LWI pair and the LWO pair is greater than **1VDC**, replace the LW-ADD board.



About Troubleshooting

This section contains general troubleshooting information. 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 6-80
Replacing Circuit Boards	Instructions for removing and replacing circuit boards.	page 6-82
Circuit Board Quick References	Descriptions of circuit board connections, indicators, jumpers and test points.	page 6-83
COP Board Diagnostics	Use to diagnose problems with Serial COP boards.	page 6-86
iLink Cartop Diagnostics	Use to diagnose problems with iLink.	page 6-89

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 event captured. 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 “Control Messages” on page 6-15.

iView provides an extensive toolset to help you diagnose problems:

- Hoistway: The Hoistway window (Controller > View > Hoistway) shows the current position of the car, registered calls, 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, Safety and Cartop processor status, safety circuits, leveling sensors and door locks. 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 guide. Please refer to “Control 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 guide. Please refer to “Control 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 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 status 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.
- 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. 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 made. Once the safety string is complete again, you must immediately remove the bypass jumper.

The safety string bypass location for iControl 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.

The safety bypass 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

Message Tables

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 associated iControl message names. 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)
41	Elevator Recall Operation (Switch 6)

ID #	iControl Message (iBox Event Log and iView Controller Event Log)
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
92	Load learn process deactivated

ID #	iControl Message (iBox Event Log and iView Controller Event Log)
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
151	Loss of Position or Speed Indicators

ID #	iControl Message (iBox Event Log and iView Controller Event Log)
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
199	Safety B DETS Level 2 Speed Fault

ID #	iControl Message (iBox Event Log and iView Controller Event Log)
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
248	Insufficient Motor Field Feedback Fault

ID #	iControl Message (iBox Event Log and iView Controller Event Log)
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
297	Down Emergency Terminal Switch Shutdown

ID #	iControl Message (iBox Event Log and iView Controller Event Log)
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 Acknowledgement
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
347	Serial COP Buss 2 Comm Fault

ID #	iControl Message (iBox Event Log and iView Controller Event Log)
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
395	Heat Detectors Recall Complete

ID #	iControl Message (iBox Event Log and iView Controller Event Log)
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
443	IMP Switch Fault - Learn

ID #	iControl Message (iBox Event Log and iView Controller Event Log)
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
516	Developer Data Trap Triggered

ID #	iControl Message (iBox Event Log and iView Controller Event Log)
517	Developer Data Trap Tested
518	GrouGroup Communication Established to iCue 1
519	GrouGroup Communication Established to iCue 2
520	GrouGroup Communication Established to iCue Local Dispatcher
521	Earthquake Slow Speed Hoistway Scan Activated
522	Earthquake Slow Speed Hoistway Scan Deactivated
523	Earthquake Slow Speed Hoistway Scan Complete
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 Pick Fault
569	Brake Two Pick Drop Fault

iControl Messages

Table 6.3 Control Messages

iControl Messages
Alternate Floor Smoke Sensor Recall, ALTERNATE FLOOR SMOKE
Description: Recall to main fire floor due to active smoke 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: Alternate Speed Profile enabled via 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: Fault tripped if the elevator is traveling up, 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 and brake contactors immediately dropped. Rope brake drops if installed. If no RG (Rope Gripper) or EB (Emergency Brake) board in controller, 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: Elevator in Attendant Service. Generally initiated via input (switch or button) at car panel.
Car Reaction: Car operates under attendant mode.
Troubleshooting: 1. Related input: Attendant service as indicated on the job prints.
Automatic Stop
Description: 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. Doors will open and remain open for a user-defined time.
Troubleshooting: 1. Check parameters on the Configuration > Car Operation > Auto Stop tab for proper configuration.
Backup Power Direction Reversal
Description: Backup power reverse direction input activated (TAPS Traction Auxiliary Power Supply).
Car Reaction: Direction of travel reversed unless car is on Earthquake operation and *CW1/CW2 inputs* (Counterweight movement sensor) are active and reversal would move the car towards counter weight.
Backup Power Recall OFF
Description: The *Backup power recall* input has been deactivated.
Backup Power Recall ON, BACKUP POWER RECALL
Description: Backup power recall input activated (signal from the TAPS Traction Auxiliary Power Supply).
Car Reaction: If not currently at a floor, car will move to a floor and cycle doors. If no load weigher used, car will move to closest floor. If load weigher used, direction dependent on car load and Counterweight percentage. If load weight greater than Counterweight percentage, car moves down; if not, up.

Table 6.3 Control Messages

iControl Messages
Backup Power Unit Failure Activated, Backup power unit failure, BACKUP POWER FAILURE
Description: *Backup power unit failure* input is low.
Car Reaction: None. The event is displayed and logged.
Troubleshooting: 1. Check UPS unit for faults. 2. Check connection to the *Backup power unit failure* input. 3. It may be necessary to replace batteries.
Backup Power Unit Failure Deactivated
Description: *Backup power unit failure* 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: IMP board battery B1 below 2.22 VDC and must be replaced. Otherwise 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 car switches from Local to Local Dispatcher, parameters and connections to other cars must stabilize. During this time new Local Dispatcher will reject 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 persists for more than 30 seconds or if it seems to come and go for extended periods of time, the car may be confused as 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.
Car Reaction: None
Troubleshooting: None
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 Control Messages

iControl Messages
Brake One Drop Fault, BRAKE ONE DROP FAULT
Description: Brake contact input (Brake One Switch) not in the state required by "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 removed from service.
Troubleshooting: 1. On the 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 Switch when the brake is dropped. 2. Verify operation of brake and brake switch (open or closed, see step 1) when brake is fully dropped. 3. With brake dropped, verify 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 reset the fault.
Brake Two Drop Fault, BRAKE TWO DROP FAULT
Description: Brake contact input (Brake Two Switch) not in the state required by "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 removed from service.
Troubleshooting: 1. On the 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 the brake is dropped. 2. Verify operation of brake and brake switch (open or closed, see step 1) when brake is fully dropped. 3. With brake dropped, verify 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 reset 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 running, car will continue to answer current call. After car is stopped at a floor, it will not be allowed to run until the overheat condition clears.
Troubleshooting: 1. Check machine room 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 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.

Table 6.3 Control 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: 1. Verify proper operation of brake module while running on machine room inspection: • Does brake pick voltage match setting on the Configuration > Brake tab? • Does brake hold voltage match setting on the Configuration > Brake tab? 2. Verify proper operation of brake module while performing Brake Calibration: • Does voltage max out and then slowly ramp down to about 10% of maximum supply voltage? • Does current max out and then slowly ramp down to about 10% of maximum supply current? If brake module is constantly outputting maximum voltage and current based on testing in steps 1 and 2, main IGBT on module is most likely damaged. The module must be replaced. CAUTION: An open or damaged RB resistor can cause IGBT failure. Remove the resistor center tap. Measure value of entire resistor. Do this before replacing brake module.
Brake One Pick Fault, BRAKE ONE PICK FAULT
Description: Brake contact input (SP2D on Brake One Switch) not in the state required by "Brake is picked when SP2D or Brake Switch terminal is high (low)" parameter, indicating that brake was not fully picked during one entire run or was late going low (or high) indicating a slow picking brake during three consecutive runs. This fault may be bypassed on the Controller > Diagnostics > Fault Bypass tab.
Car Reaction: Car completes nearest run and is removed from service.
Troubleshooting: 1. See Controller > Configuration > Brake > Control tab, check "Brake is picked when SP2D or Brake Switch terminal is high (low)" to determine the proper state of terminal SP2D or Brake One Switch when the brake is picked. 2. Verify operation of brake and brake pick switch (open or closed, see step 1) when brake is fully picked. 3. With brake picked, verify 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 reset the fault.
Brake Pick Fault Off (See: Brake Pick Fault)
Brake Two Pick Fault, BRAKE TWO PICK FAULT
Description: Brake contact input (Brake Two Switch) not in the state required by "Brake is picked when SP2D or Brake Switch terminal is high (low)" parameter, indicating that brake was not fully picked during one entire run or was late going low (or high) indicating a slow picking brake during three consecutive runs. This fault may be bypassed on the Controller > Diagnostics > Fault Bypass tab.
Car Reaction: Car completes nearest run and is removed from service.
Troubleshooting: 1. See Controller > Configuration > Brake > Control tab, check "Brake is picked when SP2D or Brake Switch terminal is high (low)" to determine the proper state of Brake Two Switch when the brake is picked. 2. Verify operation of brake and brake pick switch (open or closed, see step 1) when brake is fully picked. 3. With brake picked, verify 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 reset the fault.
Brake Voltage Not Off Fault, BRAKE V NOT OFF FAULT
Description: 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 iFIELD-MODULE, or a shorted TRIAC or IGBT in the iFIELD-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 brake IGBT is shorted. Test pad C on the PCBA
Troubleshooting: **iFIELD-MODULE**: With power off, check resistance with a multimeter between test point C (+ meter lead) and FMSO terminal (- meter lead) on ICE-FMP (bottom board of stack) of brake module. Less than 500 ohms indicates the brake IGBT is shorted..

Table 6.3 Control Messages

iControl Messages
Troubleshooting: **iFIELD-MODULE-L**: Check for a shorted TRIAC (Q5) or IGBT (M1). To check for shorted IGBT, with power off measure resistance with a multimeter between FMO- terminal (- meter lead) and DTP terminal (+ meter lead) on the ICE-FM board. There should be > 250k ohms. If the IGBT is shorted, it will measure less than 5 ohms. To check for shorted TRIAC, measure resistance between FMX1 (- lead) terminal and pin 1 of the M1 IGBT (+ lead) on the ICE-FM board. That should read > 2 mega-ohms.
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. 2. Verify FB1 and FB2 fuses are good. 3. Verify BRAKE connector (25 pin DSUB) on right side of iBox is seated properly. 4. Verify brake output voltage with multimeter on terminals B1 and B2. 5. Recalibrate brake module if applicable. 6. 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. 7. (For iFIELD-MODULE-L only) If this fault occurs randomly as a nuisance fault, observe brake current on iView's operational screen (with car idle), then adjust R44 trimpot on ICE-FM board to achieve 0.00A.
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 canceling 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.

Table 6.3 Control Messages

iControl Messages
Troubleshooting: 1. Check the related option. Uncheck it if this operation is not desired.
Capture Input OFF (see Capture Input ON)
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: 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: Capture mode switch on the iBox has been placed in 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: 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: 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: 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: 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: 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.

Table 6.3 Control Messages

iControl Messages
Car Dispatch Load. Not currently used.
Car Door Bypass, CAR DOOR BYPASS
Description: Car Door Bypass switch on iBox is in Bypass position. (View-only on iView Safety screen, enabled/disabled by MCE according to safety jurisdiction.)
Car Reaction: 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: 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 programmed "Heavy Load Threshold"; adjust if needed (Load Weigher Configuration screen). 2. Determine if load in car exceeds Heavy Load Threshold. Calibrate load weigher if needed. 3. For discrete input load weighers, check Heavy Load Input shown on job prints.
Car Heavy Load - Deactivated
Car out of service with doors closed, CAR OS DOORS CLOSED
Description: Delayed car with closed doors has remained so for excessive period of time (determined by user-programmed timer, Car Operation Screen/Passenger tab.
Car Reaction: 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: Delayed car with closing doors has remained so for excessive period of time (determined by a user-programmed timer, Car Operation Screen/Passenger tab.
Car Reaction: 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: Delayed car with invalid doors has remained so for excessive period of time (determined by a user-programmed timer, Car Operation Screen/Passenger tab.
Car Reaction: 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: Delayed car with open doors has remained so for excessive period of time (determined by a user-programmed timer, Car Operation Screen/Passenger tab.
Car Reaction: 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.

Table 6.3 Control Messages

iControl Messages
Car out of service with doors opening, CAR OS DOORS OPENING
Description: Delayed car with opening doors has remained so for excessive period of time (determined by a user-programmed timer, Car Operation Screen/Passenger tab.
Car Reaction: 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: Delayed car with stalled doors for excessive period of time (determined by user-programmed timer, Car Operation Screen/Passenger tab.
Car Reaction: Car removes itself from car/hall call service (car calls canceled, hall calls canceled/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: 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 in error, verify/adjust Over Load Threshold. 2. Determine if load in car exceeds Over Load Threshold. Calibrate 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: 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 placed in inspection mode using switch on car operation panel.
Car Reaction: If running, car makes emergency stop removed from passenger service. Car uses inspection pattern settings and can only be moved using car panel inspection 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 Control 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. 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 (EMP) has detected the presence of the EPM manager and is no longer shut down.
Car Reaction: Car gets its emergency power command from its group which gets them from the EPM manger
Troubleshooting: None
Car shut down due to emergency power operation with no supervisor (Activated)
Description: iControl detected an emergency power condition and has not established communication with emergency power supervisor (typically a group controller).
Car Reaction: Car not allowed to move to prevent overloading emergency generator. If car moving when event occurs, car makes emergency stop. motor and brake contactors immediately dropped. Car is also shut down (calls and all other demands are canceled).
Troubleshooting: 1. If condition exists and system is NOT on emergency power, see job prints to 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 with no communication to dispatcher resolved. Communication established or emergency power ended.
Car Reaction: Emergency power on: Movement determined by group controller. Recall, emergency power operation user-determined (iView/Car Operation/Emergency Power, iCue Emergency Power Configuration).
Car Stop Switch Open, CAR STOP SWITCH OPEN
Description: 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. Car is not allowed to run again until car panel stop switch is moved to 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 iView Event Log for preceding activity. 2. Correct initiating problem.
Cartop Communication Established
Description: Communication between iControl (iBox) and iLink ICE-CTP board established. This communication is through twisted-pair, shielded cabling in the traveler cable.
Cartop Communication Fault, CARTOP COMM FAULT
Description: Communication between iControl and iLink failed. This communication is through twisted-pair, shielded cabling in the traveler cable.
Car Reaction: Emergency Stop. Cancel all calls.
Troubleshooting: 1. Check connections at iBox and iLink ends. Refer to -CW job prints. 2. If connections are clean and tight, use an oscilloscope to check TX and RX signals. Or, if practical, connect iBox end of connection to another iControl and see if that controller can communicate with iLink. 3. If required, replace iLink Cartop board or iBox as appropriate.

Table 6.3 Control Messages

iControl Messages
Cartop Emergency Stop
Description: Cartop processor detected a fault and initiated emergency stop. Cartop Safety relay has opened in response to 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: Cartop Exit Switch input dropped. Input normally on when configuration states switch is installed. Input may be bypassed by: 1) car on car top or car panel inspection while on earthquake, and 2) safety bypass jumper 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 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 status of Car Top Exit parameter (Safety tab). 2. Verify status of Counter weight displacement detection parameter (Car Operation - Earthquake tab).
Cartop Firmware Update Mode, CARTOP FW UPDATE MODE
Description: Cartop processor waiting for or processing 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) now OK.
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.
Cartop Inspection Unintended Motion Fault, CARTOP INSP UIM FLT
Description: Unintended motion fault detected while car was on Cartop Inspection.
Car Reaction: Car motion stopped after 24 inches of travel. The safety circuit is opened.
Troubleshooting: 1. Check iView Event Log for related events. 2. Troubleshoot and correct any initiating problems. 3. Press iBox Fault Reset.Test.

Table 6.3 Control Messages

iControl Messages
Cartop Power Loss
Description: Loss of power detected by 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 at Floor Activated, CFSS 1 at Floor. See CFSS Mode 1 In-car Activated.
CFSS Mode 1 In-car Activated, CFSS 1 In-car.
Description: Commandeer For Special Services is a special operating mode. When activated, car recalls to that floor. Two CFSS modes may be configured on Car Operations screen/CFSS tab (Mode 1, Mode 2). Typically, one of the two used for Hospital Operation, second as user determines. Once recall activated, car disposes of existing calls per CFSS tab, then moves to recall floor. At recall floor, In-Car CFSS activated by in-car switch or as configured on CFSS tab (In-Car).
Car Reaction: As configured on the Car Operations screen/CFSS tab.
CFSS Mode 1 Recall Activated, CFSS 1 Recall. See CFSS Mode 1 In-car Activated.
CFSS Mode 2 at Floor Activated, CFSS 2 at Floor. See CFSS Mode 1 In-car Activated.
CFSS Mode 2 In-car Activated, CFSS 2 In-car. See CFSS Mode 1 In-car Activated.
CFSS Mode 2 Recall Activated, CFSS 2 Recall. See CFSS Mode 1 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 active, car panel operation switches are ignored. Car can only be moved using Machine Room or Cartop Inspection. Place car on Machine Room or Cartop Inspection and use switches to move car.
Construction Cartop Inspection Operation, Cnstr Cartop Insp, Cnstr CT Insp
Description: Car on Construction mode/Cartop Inspection. When iBox in construction mode, it is always "on inspection." It will only operate in Cartop or Machine Room inspection. Cartop has precedence. If neither modes is selected, controller enters non-specific inspection mode, will not run for any inspection 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 on Construction mode, hoistway access switches ignored. Car can only move on Machine Room, Cartop Inspection. Place car on inspection and use switches to move.
Construction Inspection Operation, Cnstr Inspection
Description: Car in Inspection mode and Construction setting selected on Safety Configuration screen.
Car Reaction: Car will operate using Inspection pattern on Cartop or machine room inspection 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 is taken out of normal service. In this mode, car can be moved using iBox Inspection Up and Down switches.
Troubleshooting: 1. Related inputs: MachineRoomInspection: Normally high
Controller Main Computer Startup
Description: iBox main processor booting up.

Table 6.3 Control Messages

iControl Messages
DBD Mode Activated
Description: Destination Based Dispatching active.
DBD PHE Anti-nuisance
Description: DBD Photo Eye Anti-nuisance option set and although a call had been assigned to car per source floor entry, photo eye has registered no passenger entry and calls assigned to the car have been canceled.
Car Reaction: Car is available for new assignment.
Troubleshooting: If in error, check photo eye. If functionality not desired, turn OFF DBD Anti-nuisance.
Demand Down Peak Mode, DEMAND DOWN PEAK MODE
Description: Car is running in Demand Down Peak mode, favoring traffic in down direction as configured on group control screens.
Demand Up Peak Mode, DEMAND UP PEAK MODE
Description: Car is running in Demand Up Peak mode, favoring traffic in up direction as configured on 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.
Car Reaction: None
Troubleshooting: None
Dispatcher = Car 'n', DISPATCHER = CAR'n' (n = 1 to 15)
Description: Communication with main iCue dispatcher lost or not established. Car is communicating with Car 'n' (n = 1 to 15) which is acting as backup dispatcher.
Troubleshooting: Check the group to car communication related connections and parameters.
Door Lock Clipped Greater than 200fpm, DOOR LK CLIPPED G200
Description: Door lock signal (DLAT, DLMS, DLAB, or GS) low for over 300mS while car moving 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 locks in that area of hoistway first. 2. Usual cause: misadjusted door, pickup rollers do not have adequate running clearance from door clutch. 3. Because fault must persist for over 300mS, slight "bumping" of door lock will not set it. If door clutch/ pickup roller clearance adequate, ensure contacts clean; door lock drops without friction or binding.
Door Lock Clipped Less than 200fpm, DOOR LK CLIPPED L200
Description: Door lock signal (DLAT, DLMS, DLAB, or GS) went low while car was moving at under 200 fpm.
Car Reaction: ASAP stop.
Troubleshooting: 1. If caused by misadjusted or damaged door, because it only occurs at under 200 fpm, usually seen when car leaves floor where problem door is located.
DOOR LOCK OPENED
Description: Safety processor detected door lock open. A fault is generated if car is moving or attempts to move with 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 switch is operating properly. 2. Verify correct state of iBox DNTD input. 3. Verify DNTD activating/deactivating at correct location (normally 2" below bottom terminal landing).

Table 6.3 Control Messages

iControl Messages
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 and brake contactors immediately drop. Calls canceled. After car is stopped, it will run at Correction speed to next available floor and cycle doors. Door Open button remains active. If fault generated when car is moving, it will latch and Fault Reset button must be pushed to clear. If generated when car not moving, fault will self clear when condition clears.
Troubleshooting: 1. Physically check the integrity of the switch and wiring. Check the iBox input for the switch. 2. On Diagnostics > Terminal Switches Status tab, compare last pass position against learned position for switch. Verify Position Margin within reasonable range. Relearn NTS and ETS switches. Please refer to "Learning Normal & Emergency Terminal Limit Switches" on page 4-8.
Down Emergency Terminal Switch Shutdown, DOWN ETS SHUTDOWN
Description: Down Emergency Terminal switch opened at speed/position exceeding threshold. Fault stays latched. Press Fault Reset to clear. If generated when car stopped, fault self clears when condition ends.
Car Reaction: Emergency stop: Motor contactor and brake contactor immediately dropped.
Troubleshooting: 1. Logged in conjunction with either speed or position fault at DETS. Check Event Log and follow trouble-shooting for Down Emergency Terminal Switch Position or Safety A (or B) DETS Level 2 Speed Fault. 2. Press iBox Fault Reset to reset the fault.
Down Normal Terminal 'n' Level 1 Speed Fault, DN NTS'n' L1 SPEED FLT (n = 1 to 5)
Description: Level 1 Overspeed fault at Down Normal Terminal switch 'n' (1 to 5). When switch opened, car 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 change in Pattern parameters. Re-learn terminal switches after pattern changes. 3. Short runs can come in "hotter" than multi-floor runs. (Switches are learned making full hatch runs.) If short runs cause this, increase Overspeed 1 Margin or lower Standard profile - High Roll Jerk parameter. 4. If caused by poor pattern following due to heavy load or poor speed loop performance, adjust speed loop to follow pattern as well as possible and/or alter pattern for gentler deceleration and approach to floor (re-learn switches). Please refer to "Terminal Switch Overspeed and Position Faults" on page 4-56.
Down Normal Terminal 'n' Level 2 Speed Fault, DN NTS'n' L2 SPEED FLT (n = 1 to 5)
Description: Level 2 Overspeed fault at Down Normal Terminal switch 'n' (1 to 5). When switch opened, car traveling faster than defined by Level 2 overspeed settings (105% of sum of learned speed plus Overspeed 1 Margin percentage setting on Configuration > Terminal Switches tab). Fault may be bypassed on Diagnostics > Fault Bypass tab.
Car Reaction: Emergency stop: Motor contactor and brake contactor immediately dropped.
Troubleshooting: 1. On Diagnostics > Terminal Switches Status tab, compare Last pass and Learn speeds for switch. If appropriate, increase Overspeed 1 Margin on Configuration > Terminal Switches tab. 2. If caused by pattern parameter change, re-learn terminal switches. 3. Short runs can come in "hotter" than multi-floor runs. (Switches learned making full hatch runs.) If short runs cause this, increase Overspeed 1 Margin or lower Standard profile - High Roll Jerk parameter. 4. If caused by poor pattern following due to heavy load or poor speed loop performance, adjust speed loop to follow better and/or alter pattern parameters for gentler deceleration and approach. Re-learn switches. Please refer to "Terminal Switch Overspeed and Position Faults" on page 4-56.

Table 6.3 Control Messages

iControl Messages
Down Normal Terminal 'n' Position Fault, DN NTS'n' POSITION FLT (n = 1 to 5)
Description: When switch opened or closed, car reported position different from learned position by amount exceeding margin on Configuration > Terminal Switches tab. May mean switch opened early, late or not at all on approach. May mean switch closed early, late, or not at all on departure. Switch can go open while standing at a floor where learned position is closed, or go closed at a floor where learned position is open. May bypass fault on the Diagnostics > Fault Bypass tab.
Car Reaction: If traveling down, car executes emergency slowdown, then continues at low speed until it encounters a floor. Car stops at floor, opens doors, and performs a floor sync. If fault persists, car goes out of service. If traveling up, car continues normally to first stop, opens doors and 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, takes itself out of service.
Troubleshooting: 1. On Diagnostics > Terminal Switches Status tab, compare Last pass position to Learned position. 2. If mechanical (switch movement, magnet movement), will tend to repeat at same position every time. 3. Spot a stuck switch by running car on inspection and observing input LEDs on 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 drive, motor speed outside threshold limits defined by drive parameter.
Car Reaction: Emergency stop: Motor contactor and brake contactor immediately dropped.
Troubleshooting: 1. Should not occur with AC Drive. Fault wired physically OFF. If fault occurs, it is a hardware problem.
Drive Communication Fault, DRIVE COMM FAULT
Description: Generated if serial drive interface selected (Controller > Configuration > Drive tab) and serial port cannot be opened or there is a communication problem with drive.
Car Reaction: Emergency stop: Motor contactor and brake contactor immediately dropped.
Drive Communication Warning, DRIVE COMM WARNING
Description: Not currently used.
Drive Enable Feedback Fault, DRIVE ENABLE FDBK FLT
Description: iControl failed to send Drive Enable signal or drive failed to respond.
Car Reaction: Emergency stop: Motor and brake contactors immediately dropped. Followed by normal run. Fault will self clear and car is able to run again.
Troubleshooting: 1. May indicate problem with Gate Switch or door lock opening during initial start. Verify inputs (GS, DLAT, DLAB, DLMS) remain high. 2. Verify Safety Processors A and B are looping (iBox status LEDs). 3. Verify no faults active on Safety Processors A and B that would prevent motion. 4. Check iBox power supply. Verify drive connections.
Drive Fault, DRIVE FAULT
Description: Detected by drive, motor speed outside threshold defined by drive parameter. (AC drive only.)
Car Reaction: Emergency stop: Motor contactor and brake contactor immediately dropped.
Troubleshooting: 1. Verify encoder wiring and polarities. <u>TORQMAX F5 AC Drive</u> 1. Check terminals X2A-29 (Drive Fault) to X2A-26 (Common). Normal operation=high. Fault=low. 2. Check the Diagnostic Screen Log for fault history (Home > Diag > Prev). Refer to Section 7 - Diagnostics and Troubleshooting in the TORQMAX Manual. 3. Verify drive parameter LT03 (LF.70) Speed Start Delay - 10.0 seconds. <u>Magnetek HPV900 Series 2 AC/PM Drive</u> 1. Check terminals TB1-32 (Drive Fault) to TB1-29 (Common). Normal operation=high. Fault=low. 2. Check F1 > Active Faults and F2 > Fault History. Refer to "Troubleshooting" in Magnetek Manual.

Table 6.3 Control Messages

iControl Messages
Drive Inspection Overspeed Fault, DRIVE IOS FAULT
Description: Inspection Overspeed fault.
Car Reaction: Emergency stop.
Troubleshooting: 1. Check Inspection speed. Check safety configuration. 2. Calibrate car speed with a hand-held tachometer.
Drive On Fault, DRIVE ON FAULT (was Drive Ready On Fault)
Description: Drive failed to activate DRO signal when sent command to run (AC drive only).
Car Reaction: Emergency stop: Motor and brake contactors immediately dropped.
Troubleshooting: TORQMAX F5 AC Drive 1. Check drive faults. Refer to *Error Messages and Their Causes* in TORQMAX manual. 2. Check state of drive inputs via parameter Diag. #4(LF.82). See LF.82 input state table in drive manual. 3. Check PM contactor main contacts. Verify cable from drive to PowerBox (46 pin D-sub) properly seated. 4. Verify cable that extends to iBox (AC/DC Drive jack) seated. If cable inside PowerBox is suspect, temporarily connect directly from drive into iBox. 5. Verify Brake Pick Delay set correctly (0.3 or higher) to allow motor to build up torque. 6. Verify drive parameter LT03 (LF.70) Speed Start Delay = 1.0. 7. If DRO and Tach Error Fault, adjust TACH ADJ pot (see "Following Error Margin" on page 2-76). 8. On Controller > Diagnostics > Diagnostic Outputs > Drive screen verify commands from iBox to drive. Troubleshooting: Magnetek Drive 1. Check D1 > Logic Outputs to verify control signals: • Relay Coil 1 (TB1-27/28/29: Ready to Run) should go high. • Relay Coil 2 (TB1-30/31/32: Speed Reg R1s) should go high. 2. Check D1 > Logic Inputs to verify control signals: • Logic Input 1 (TB1-6: Drive Enable) should go high. • Logic Input 2 (TB1-7: Run) should go high. • Logic Input 3 (TB1-9: Contact Confirm) should go low. 3. Check D1 > Start Logic to verify signals. 4. Check terminals TB1-27 (Drive Ready) and TB1-30 (Drive On) to TB1-29 (Common). Value should be low during normal operation and high during a fault. 5. Verify Brake Pick Delay is set correctly to allow motor to build up torque. Temporarily increase Brake Pick Delay to 1.0 and Speed Pick Delay 1 to 1.5 to determine if fault goes away. 6. Verify cable from drive to iPowerBox (46 pin D-sub) is seated. 7. Verify cable that extends to iBox (AC/DC Drive jack) is seated. If cable inside iPowerBox suspect, temporarily connect directly from Magnetek drive into iBox. 8. Check drive F1 > Active Faults and F2 > Fault History. See "Troubleshooting" in Magnetek Manual.
Drive Ready Fault, DRIVE READY FAULT
Description: AC drive ready signal is low. (AC drive only.)
Car Reaction: Emergency stop: Motor contactor and brake contactor immediately dropped.
Troubleshooting: 1. Check TORQMAX 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.

Table 6.3 Control Messages

iControl Messages
Dual Channel QUAD Fault, DUAL CHANNEL QUAD FLT
Description: Safety system did not detect car movement even though iBox processor reported car movement, or Safety system reported car movement while processor did not.
Car Reaction: Emergency stop: Motor contactor and brake contactor immediately dropped.
Troubleshooting: 1. Press Fault Reset button. 2. Check wiring for DP1 and DP2 encoder signals from landing system to iBox. 3. Check motor encoder or tachometer (whichever is present). 4. Compare Pattern Command and Speed Feedback on iView oscilloscope to make certain they track one another. 5. Check reported speed accuracy using a hand-held tachometer.
Dynamic Braking IGBT Failure
Description:
Car Reaction:
Earthquake board power supply OFF
Description: Controller has detected a failure of the earthquake board power supply.
Car Reaction: 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 earthquake board power supply.
Earthquake Emergency Stop
Description: Earthquake operation activated by seismic or counterweight displacement switches and car has performed emergency stop as specified by earthquake settings.
Car Reaction: Car will perform an emergency stop. After a pause, car will react as directed by user settings on 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 user settings on Car Operation screen Earthquake tab. This operation is latched until EQ reset button is pressed.
Troubleshooting: NA. See also “Earthquake Operation (Seismic Switch)” and “Earthquake Operation (Counterweight)”.
Earthquake Operation Deactivated
Earthquake Operation (Counterweight)
Description: Counterweight Derailment Detector activated, indicating earthquake condition.
Car Reaction: Car will typically make an emergency stop, then move slowly to next available floor away from counterweight. Fault is latched until EQ reset button (ICE-EQ board) pressed.
Troubleshooting: 1. If in error, check counterweight derailment detector operation and associated wiring to ICE-EQ board.

Table 6.3 Control Messages

iControl Messages
Earthquake Operation (Seismic Switch)
Description: Seismic Switch activated (input has gone low), indicating earthquake condition.
Car Reaction: Car will react per user configuration. (iView/Car Operation/Earthquake) Car will either make an emergency stop and move slowly to next available floor or will stop normally at next available floor in direction of travel. The fault is latched until the EQ reset button (ICE-EQ board) is pressed.
Troubleshooting: 1. If in error check seismic switch input and associated wiring to ICE-EQ board. Seismic input 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: Controller detected earthquake reset button (on ICE-EQ board) has failed in "on" state.
Car Reaction: If moving, car will complete run. Once stopped, car is removed from service.
Troubleshooting: 1. Verify if reset button (or related circuitry) on the ICE-EQ board is faulty. 2. Replace ICE-EQ board.
Earthquake Run, EARTHQUAKE RUN
Description: Some code jurisdictions allow car to run normally (at a speed no greater than 150 fpm) under earthquake conditions. This event indicates 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
Description: The earthquake slow speed hoistway scan has been deactivated due to earthquake operation being reset.
Car Reaction: Car return to normal service operation
Troubleshooting: None
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).
Troubleshooting: None
Earthquake Slow Speed Hoistway Scan Aborted
Description: The earthquake slow speed hoistway scan has been aborted due to activation of a seismic device.

Table 6.3 Control Messages

iControl Messages
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, car immediately removes itself from hall call service, answers remaining car calls, then proceeds to recall floor and cycles doors. (Disposition of car calls, recall floor, and door operation user-programmable. iView/Car Operation/Elevator Recall.)
Emergency Alarm Acknowledged
Description: Indicates emergency alarm has been acknowledged and reset by 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. Used to sound alarm and/or light indicator.
Car Reaction: Distress Light on until acknowledged by Emergency Alarm Reset input. Distress Buzzer pulsating or continuous as long as car remains in this condition.
Troubleshooting: 1. Attend to car and verify distress signal. 2. To reset alarm, verify alarm button is restored to normal condition, activate Emergency Alarm Reset.
Emergency Alarm Activated (Car delayed with doors closed)
Description: Indicates emergency alarm activated due to car being delayed with doors closed. This is an optional emergency alarm monitor specified by user.
Car Reaction: Distress Light will be illuminated until acknowledged by Emergency Alarm Reset input. Distress Buzzer output active as long as car remains in this condition.
Troubleshooting: 1. Attend to car and verify distress signal. 2. To reset alarm, verify car condition is restored to normal and activate the Emergency Alarm Reset.
Emergency Alarm Activated (In-car stop switch)
Description: Indicates emergency alarm activated due to in-car emergency stop switch pulled.
Car Reaction: Distress Light will be illuminated until acknowledged by Emergency Alarm Reset. Distress Buzzer active as long as switch remains active.
Troubleshooting: 1. Attend to car and verify distress signal. 2. To reset, verify car emergency stop switch restored to normal position. Activate Emergency Alarm Reset.
Emergency Alarm Activated (Safety opened)
Description: Emergency alarm activated due to safety circuit open (excluding in-car emergency stop switch). Optional emergency alarm monitor specified by the user.
Car Reaction: Distress Light on until acknowledged by Emergency Alarm Reset. Distress Buzzer active as long as car remains in this condition.
Troubleshooting: 1. Attend to the car and verify the distress signal. 2. To reset, verify that car condition is restored to normal and activate the Emergency Alarm Reset input.

Table 6.3 Control Messages

iControl Messages
Emergency Alarm Deactivated without Acknowledgment
Description: Indicates emergency alarm deactivated because all signals that would activate it are now off and 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 stop or as result of fault reset. Emergency brake circuitry verified by transition between leg 1 and leg 2. One must be active to prevent emergency brake deploying.
Car Reaction: Emergency stop.
Troubleshooting: 1. Verify configured for emergency brake board (ICE-RG or ICE EB) and correct board installation.
Emergency Brake Leg 2 Short Fault, EMERG BRK LEG 2 SHORT. See above.
Emergency Brake OK open, EMERG BRAKE OK OPEN
Description: Emergency Brake OK input dropped (off) when configuration indicates brake installed, 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 Rope Gripper board is properly installed, connected, and powered. 2. If this job has a sheave brake, verify that associated circuitry is per job prints.
Emergency Brake OK open Off (See: Emergency Brake OK open)
Emergency Brake Tripped, EMERG BRAKE TRIPPED
Description: Emergency brake output (ICE RG or ICE-EB board) has gone low, setting emergency brake.
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.
Emergency Brake UIM Reset Button Stuck, EM BK UIM RESET STUCK
Description: Reset button on Rope Gripper (ICE-RG) or Emergency Brake board (ICE-EB) 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: Car is automatically servicing building in pre-defined pattern. Invoked when a failure of hall call bus or group communication detected. May also be activated using a key switch input.
Car Reaction: Car automatically moves to every floor in building in predefined pattern and cycles 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

Table 6.3 Control Messages

iControl Messages
Emergency Medical Service In-Car Activated (Switch 'n'), EMS In-car (Switch 'n') (n = 1 or 2)
Description: EMS In-Car service activated via in-car EMS key-switch. Also referred to as EMS Phase II.
Car Reaction: Car out of hall call service. Car calls enabled again, car can be dispatched with car calls only. After answering car call, doors open automatically, close with constant pressure on Door Close Button only.
Troubleshooting: 1. Terminate EMS In-Car by taking car to EMS recall floor by registering a car call then deactivating in-car EMS switch. 2. In-Car operation can also be terminated by removing in-car EMS switch from pre-programmed IO. 3. 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 EMS recall key-switches located next to EMS elevator. This is also referred to as the EMS Phase I operation.
Car Reaction: Momentary activation of EMS recall switch initiates recall to EMS Recall floor. Car removes itself from car and hall call service. At EMS recall floor, door operation per user-defined door operation under EMS recall. Car remains on EMS Phase I as long as hall switch activated. Once hall switch deactivated, car returns to normal operation after user-defined timer elapses if in-car switch not activated within that time.
Troubleshooting: 1. Verify no hall EMS recall switch activated. 2. EMS Recall operation can also be terminated by removing in-car EMS switch from pre-programmed IO. 3. Related inputs: EMSHallSwitch0: Normally low, EMSHallSwitch1: Normally low
Emergency Power Activated
Description: Commercial power has been lost and power is now supplied by an emergency power generator.
Car Reaction: Car makes emergency stop due to momentary loss of power and remains shut down until commanded to lower to 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 on emergency power.
Troubleshooting: 1. Related inputs: EPI: Active level field adjustable.
Emergency Power and no communication with group, EMERG PWR NO COMM
Description: iControl has detected an emergency power condition and it has not established communication with 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 the 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.
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: Event logged when elevator commanded to lower to emergency power recall floor.
Car Reaction: Elevator proceeds to user-defined emergency power recall floor. Door operation at recall floor per 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)

Table 6.3 Control Messages

iControl Messages
Emergency Power Recall (In Service), EP RECALL-IN SERVICE
Description: Event is logged and related car status messages displayed on 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, ATA, 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)
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: Events logged and related status messages displayed to reflect status of Emergency Stop Input.
Car Reaction: When Emergency Stop Input activated, 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.
Excessive Brake Feedback Fault, EXCESS BRAKE FDBK FLT
Description: After brake activity, controller checks to see that current is bleeding off properly. (After 1 second, voltage should be at or below 85% of voltage applied by last command.) Fault issued if brake voltage too high when checked.
Car Reaction: Emergency stop: Motor contactor and brake contactor immediately dropped.
Troubleshooting: 1. At factory, RB (brake resistor 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 2-9. 2. On 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 you continue to see this fault, you may have a defective brake module or iBox Safety board.

Table 6.3 Control Messages

iControl Messages
Excessive Faults Shutdown, EXCESSIVE FAULTS
Description: Generated if car already at a floor or reaches a floor when ***Excessive Faults Warning*** detected. Also if there are another five faults that resulted in an emergency, controlled or ASAP stop as 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 contactors immediately dropped. Doors cycle if at a floor. Latching fault. Clear by pressing iBox Fault Reset, toggling Inspection or cycling power to controller.
Troubleshooting: 1. Check Event Log to see what drive faults were generated before this fault was triggered. Refer to those drive faults for troubleshooting information.
Excessive Faults Warning, EXCESSIVE FLTS WARN
Description: Excessive number of faults detected. Generated when there are more than five faults that resulted in an emergency, controlled or ASAP stop. Resets if car makes ten normal runs without faults.
Car Reaction: Car taken out of service. All registered calls canceled. Car proceeds to next available floor with an opening and cycles doors. Once at a floor, "Excessive Faults Shutdown" fault is activated and car will remain shut down until iBox Fault Reset button pressed, Inspection toggled or power to controller cycled.
Troubleshooting: 1. Check Event Log to see what drive faults were generated before this fault was triggered. Refer to those drive faults for troubleshooting information.
Excessive Motor Field Feedback Fault, EXCESS MF FDBK FAULT
Description: Excessive current detected flowing through motor field. Threshold is set to 85% of forcing current for more than 4 seconds. If fault is recurring, excessive faults will be generated and motor field module will be disabled.
Car Reaction: Emergency Stop.
Troubleshooting: Problem may be related to faulty motor field module, faulty iBox, or invalid motor field calibration. 1. If excessive faults (fault) has been generated, module is disabled and should not be outputting any voltage. If this is not the case, there may be a problem with motor field module. 2. Calibrate motor field. During calibration, 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. Doors are cycled and car remains shutdown until fault is reset by pressing iBox Fault Reset button, toggling Inspection or cycling power to 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: Elevator has attempted to start movement from the same floor successively an excessive number of times. Fault is issued after twenty-five attempts. Counter is reset if car makes one successful run.
Car Reaction: Cancel calls and shutdown. Doors cycled and car remains shutdown for five minutes after first fault or until fault is reset by pressing iBox Fault Reset, toggling Inspection or cycling power to controller.
Troubleshooting: 1. Check for mechanical or other failure preventing car from moving away from floor the floor.
Excessive Restarts Warning
Description: Elevator has attempted to start movement from the same floor successively an excessive number of times. Fault issued after ten attempts. Counter is reset if 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.

Table 6.3 Control Messages

iControl Messages
Exercise Operation Activated, EXERCISE OPERATION
Description: Car has been idle for a user-defined time and is now performing a user-defined number of Exercise operation runs.
Car Reaction: Car lowers to bottom landing, then proceeds to top landing and back down to bottom without cycling doors (one exercise run). The user defines the number of exercise runs.
Exercise Operation Deactivated
Description: Car has completed all 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:
Fault Bypass Switch On, FAULT BYPASS SW ON
Description: iBox Fault Bypass switch is in the ON position.
Car Reaction: None.
Fault Bypass Switch Timed Out, FLT BYP SW TIMED OUT
Description: Indicates 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: Temperature of Motor Field module heat sink is excessive (DC only).
Car Reaction: Stop at the next floor. Restart not permitted.
Troubleshooting: 1. Check machine room ambient temperature (should not exceed 104 degrees F or 40 degrees C). 2. Verify air enters through bottom of power box and is only expelled via fan at top of the power box. 3. Check for insufficient air circulation through the power box. 4. Check the running temperature inside the 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 is in accordance to the 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's 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.

Table 6.3 Control Messages

iControl Messages
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. Once 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.
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 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 activated. 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 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 unless car is also on Fire Service, in which case car will proceed to appropriate fire recall floor. Once car is stopped at a floor it shall automatically open its doors and shut down. Then, if machine room or hoistway heat detectors are active, a signal is provided to disconnect main power line and activate sprinklers where available.
Floor Heat Detectors Deactivated
Description: All floor heat detector inputs are deactivated.
Car Reaction: The car is allowed to run.

Table 6.3 Control Messages

iControl Messages
Floor Location Fault, FLOOR LOCATION FAULT
Description: Floor magnet location is recorded during floor height learn. The on and off positions for both 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 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 clearance between floor sensor board and 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 elevator location in hoistway is not where system expected or door zone sensor is not being detected. 1. Fault will be generated if car was moved while controller was not powered. The system will detect movement of elevator for only ten seconds after power is removed. This will be sufficient to accommodate time required for an elevator to stop after power is removed when running at contract speed. 2. On Inspection, verify system is detecting LU, DZ, and LD signals when elevator passes a floor. The signals can be observed on the iView Floor Heights Configuration screen.
Floor Synchronization Fault
Description: While performing floor synchronization, system either did not receive edge position data from cartop or did not detect a floor position magnet where expected.
Car Reaction: The car will stop and initiate terminal synchronization.
Troubleshooting: 1. Verify car was not moved after power was shut off. 2. Move car past floors around vicinity of fault and verify proper activation of LU and LD sensors. 3. Verify system is communicating with cartop (no Cartop Communication Fault). 4. Verify absolute and cartop positions change by same amount and in same direction while moving car. 5. Verify that a magnet has not fallen off. 6. Check clearance between floor sensor board and magnets. Sometimes this clearance will be off just enough to make some magnets fail to register properly. Adjust clearance if necessary. 7. Re-learn floor heights. 8. The iLink, iLand or iBox may be faulty.
Front Door Close Fault, FRONT DOOR CLOSE FLT
Description: One or more front 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 Car Operation/Doors tab.
Car Reaction: Doors will reopen fully. All car calls are canceled and car removes itself from hall call service (hall calls assigned to car are canceled or reassigned to other cars if available). Doors may be closed using constant pressure on front door close button.
Troubleshooting: 1. Door closed status determined by front door close limit and by front door position monitor contact if applicable. Check wiring of these signals. 2. Check door close protection timer and number of closing attempts on Car Operation - Doors tab.

Table 6.3 Control Messages

iControl Messages
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 timer expires, Door Close Fault is cleared to allow doors to again attempt to close (see Front Door Close Fault). This is repeated number of times specified by Door Close Fault Recovery Attempts parameter. If doors have failed to close when number of attempts equals recovery attempts parameter setting, 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 determined by front door close limit and front door position monitor contact if applicable. Check wiring of these signals. 2. Check door close protection timer and number of closing attempts on the Car Operation - Doors tab.
Front Door Close Time-out
Description: A failure of front door 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 determined by front door close limit and front door position monitor contact if applicable. 2. Check 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) detected. Detected when doors are in their fully open position and either gate switch contact is closed or doors appear to be locked.
Car Reaction: All car calls canceled and car removes itself from hall call service. The front doors are not allowed to close and car is not allowed to run.
Troubleshooting: 1. Check front door gate switch and door lock contact at floor at which car is located. 2. Check associated wiring for these signals.
Front Door Open Button Bypassed, FRONT DOB BYPASSED
Description: Front door open button continuously activated for user-defined time and is now bypassed according to user-defined setting. (iView/Car Operation/Doors/Advanced.)
Car Reaction: The front door open button is rendered inoperative.
Troubleshooting: 1. Check 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) (Car Operation Configuration/Doors tab/Advanced dialog).
Front Door Open Fault, FRONT DOOR OPEN FAULT
Description: One or more failures of front door to open fully detected. After repeated attempts to open door (specified by user parameters), door open failure is declared. Time allowed for door to open and number of attempts made are user parameters. iView Car Operation/Doors tab, plus Advanced dialog.
Car Reaction: The door stalls at its last position. Car calls are canceled and car removes itself from hall call service (hall calls assigned to 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. Door open status determined by front door open limit status. Check wiring of this signal. 2. Check door open protection timer and number of open attempts on Operation screen Doors tab and associated Advanced dialog.

Table 6.3 Control Messages

iControl Messages
Front Door Open Time-out
Description: A failure of front door to open detected. Controller will attempt to open doors for a period of time defined by Opening protection timer parameter (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 determined by front door open limit and front door position monitor contact if applicable. 2. Check wiring of these signals. 3. Check Opening protection timer (iView Car Operation Configuration/Doors Tab/General Tab/Door Motor Protection Timers).
Front Doors Stopped, FRONT DOORS STOPPED
Description: Door Stop button or Emergency Stop switch activated preventing doors from moving.
Car Reaction: The car is not allowed to move unless the doors are fully closed.
Troubleshooting: Can be cleared by activation of Door Open button, Door Close button or if car goes into Inspection or Fire Service mode, provided that 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: Front hall door open button continuously activated for user-defined time (Door open bypass timer) and is now bypassed in accordance with user-defined setting (Car Operation Configuration/Doors tab/Advanced dialog).
Car Reaction: The front hall door open button is rendered inoperative.
Troubleshooting: 1. Check corresponding input, Front Door - Hall Door Open Button: Normally low. 2. Operation of hall door open button can also be restored by setting Door open button bypass option to off (unchecked) (Car Operation Configuration/Doors tab/Advanced dialog).
Front Photo Eye Bypassed, FRONT PHOTO EYE BYP
Description: Front photo eye continuously activated for user-defined time and is now bypassed in accordance to 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 Eye2 Bypassed, FRONT PHOTO EYE2 BYP
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 not bypassed in accordance to the user-defined settings (Configuration>Car Operation>Doors>Door Device>Photo Eye) F
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 - Normally low

Table 6.3 Control Messages

iControl Messages
Front Photo Eye Failure, FRONT PHOTO EYE FAIL
Description: Photo eye continuously activated for predetermined time, 4 seconds, while doors 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: Front PhotoEye2: Normally low
Front Photo Eye 2 Failure, FRONT PHOTO EYE2 FAIL
Description: The auxiliary front photo eye device (required for Peele Doors for PHE integrity tests) was continuously activated for predetermined time, four seconds, while 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. Related inputs: PH2 Front - Normally low
Front Photo Eye Test Fail, FRONT PHOTO EYE TEST FAIL
Description: The front photo eye device 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 an 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 PH2 Front - Normally low
Front Safe Edge Bypassed, FRONT SAFE EDGE BYP
Description: Front door safe edge continuously activated for user-defined time and is now bypassed according to user-defined setting. (iView/Car Operation/Common/Door Device Bypass Timers.)
Car Reaction: The front safe edge is rendered inoperative.
Troubleshooting: 1. Check state of the front safe edge input. 2. Related inputs: SafeEdgeFront: Normally low
Front Safe Edge Failure, FRONT SAFE EDGE FAIL
Description: Logged when front door safe edge is continuously activated for a predetermined time (4 seconds) while front doors are fully closed.
Car Reaction: The front door safe edge is rendered inoperative.
Troubleshooting: 1. Check for abnormal blockage or failure of front door mechanical reopening device. 2. Related inputs: FrontSafeEdge: Normally low
Global Parameter Update, Reset Controller, PARAM CHNG-RESET CAR
Description: Indicates all controller parameters have been updated and it is necessary to reset controller once update is completed (press the iBox COMPUTER RESET button).
Car Reaction: Car not allowed to run until parameter update has been completed and computer reset.
Governor open, GOVERNOR OPEN
Description: Gov input dropped. Causes Ascending Car Overspeed Fault and sets 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.

Table 6.3 Control Messages

iControl Messages
Governor Speed Reduction Switch Fault, GOV SPEED SWITCH FLT
Description: Generated if car is moving and Governor Speed Reduction Switch input goes low (spare input assigned via iView Motor/Drive tab). Bypassed for Car/Counterweight Safety and Electrical Governor tests.
Car Reaction: Immediate slowdown to leveling speed, stop at next floor and cycle doors. Car is not allowed to run again until 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 (iCue1).
Car Reaction: The controller starts communicating and exchanging messages with the main group.
Troubleshooting: None
Group Communication Established to iCue 2
Description: Communication has been established to the backup or alternate group (iCue2).
Car Reaction: The controller starts communicating and exchanging messages with the backup or alternate group.
Troubleshooting: None
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.
Troubleshooting: None
Group Communication Lost
Description: Communication with the main iCue dispatcher has been lost.
Car Reaction: Car establishes communication with backup dispatcher car if one has been 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.
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. 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.

Table 6.3 Control Messages

iControl Messages
Hall Call Service Disabled
Description: Car is rejecting hall calls (iBox *IN GROUP* indicator is Off and the *Hall call reject* status LED on the iView Diagnostics > Diagnostic Outputs > Car Operation tab is On) either because of current mode of operation (Inspection, Test, Independent service, Capture) or because of a fault condition.
Car Reaction: Hall calls are rejected.
Troubleshooting: 1. Verify car is not on a 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 (see Hall Call Service Disabled)
Description: Car is accepting hall calls (iBox *IN GROUP* 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: Car parked at a floor will open doors and shut down. Car in motion proceeds in current direction to next available floor where heat detector is not tripped. If all heat detectors in current direction are tripped, car reverses direction and proceeds to first floor where heat detector is not tripped. If again all heat detectors are tripped, car proceeds to main fire recall floor unless car is also on Fire Service, in which case car proceeds to fire recall floor. Once stopped at a floor, car automatically opens doors and shuts down. Then, if machine room or hoistway heat detectors are active, a signal is provided to disconnect main power line and activate the sprinklers where available.
Heat Detectors Recall Complete
Description: Indicates car has completed Heat Detectors Recall operation (at a floor and doors fully open).
Car Reaction: Shut down until all heat detector inputs deactivated (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.
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, car will make an emergency stop and is taken out of normal service. Under this mode, car can only be moved manually using access key switches.
Troubleshooting: 1. Related inputs: HoistwayAccess: Normally high

Table 6.3 Control Messages

iControl Messages
Hoistway Door Bypass, HOISTWAY DOOR BYPASS
Hoistway Door Bypass switch on iBox in Bypass position. (View-only on iView Safety screen, enabled/disabled by MCE according to safety jurisdiction.) Ability to set this bypass must be enabled at factory and is only available if allowed by safety regulations in area. Check iView Safety Configuration screen to see if feature is enabled in your installation.
Car Reaction: Car placed in Inspection mode. To move car, place it in either cartop or car panel inspection. No other modes of operation are allowed.
Hoistway Heat Detectors Activated, HOIST HEAT DETECTORS
Description: Hoistway heat detector input activated. 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 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 unless car is also on Fire Service, in which case car will proceed to appropriate fire recall floor. Once car is stopped at a floor it shall automatically open doors and shut down. Then, if machine room or hoistway heat detectors are active, a signal is provided to disconnect main power line and activate 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 message, on iBox display, indicates system is ready to perform hoistway learn operation.
IMP Firmware Updated
Description: The IMP firmware was successfully updated.
Car Reaction: None
Troubleshooting: None
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, car is immediately shut down and taken out of service for all types of demands, including fire and medical emergencies. If switch fault is detected while running, 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 - 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.

Table 6.3 Control Messages

iControl Messages
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
Description: Generated when an IMP switch fault has occurred and is then cleared. If multiple switch faults occur at same time, 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.
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: 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 Control Messages

iControl Messages
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: 1. 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: On Inspection, car exceeded Inspection Overspeed setting on iView Safety Configuration screen.
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. If reported in error, check the Inspection Overspeed setting on the Safety Configuration screen. 3. Check the iView event log for any events immediately preceding the overspeed fault. 4. 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: 1. Check DB-25 connector from iField module to iBox. Check power supply on brake iField module. 2. Verify all wiring connections on the brake (BK) contactors are properly terminated and conducting. 3. Verify brake voltage parameters. 4. If iField Module is used, verify setting for terminals FMCI and FMHC. Please refer to "IFIELD-MODULE-L Terminals on the ICE-FM Board (Brake Module)" on page 6-94. 5. Verify that the brake is properly calibrated. Please refer to "Magnetek AC Drive Introduction" on page 2-56. Please refer to "Brake Parameter Adjustments" on page 4-20. 6. 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: 1. Check motor field AC supply off isolation transformer. 2. Check connections from controller to motor. 3. Check connections to iField motor module. 4. Check for open fuses. 5. Recalibrate motor field.
Insufficient Motor Field Forcing Feedback Fault, INSFCNT MF FORCNG FLT
Description: Motor field voltage is inadequate. DC motors only.
Car Reaction:
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.

Table 6.3 Control Messages

iControl Messages
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.
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.

Table 6.3 Control Messages

iControl Messages
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.
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.

Table 6.3 Control Messages

iControl Messages
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 Configuration settings on Setup > Safety > Configuration tab match 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 safety configuration is incorrect, make appropriate changes and re-learn new 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 fault (press the iBox FAULT RESET button).
Invalid Configuration Inventory Cross Check DCCOR, INV INVTRY XCHK DCCOR
Description: Door Close Contact Rear. 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 appropriate changes and re-learn configuration using Learn operation on Setup > Safety > Configuration tab. 3. Re-learn board inventory using the Inventory Learn procedure on the Setup > Safety > Inventory tab. 4. Reset the fault (press the iBox FAULT RESET button).

Table 6.3 Control Messages

iControl Messages
Invalid Configuration Inventory Cross Check NMS R, INV INVTRY 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 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 appropriate 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 the iBox FAULT RESET button).
Invalid Configuration Inventory Cross Check RD Board, INV INVTRY XCHK RD BD
Description: Rear Door board. 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 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 board inventory using Inventory Learn procedure on Setup > Safety > Inventory tab. 4. Reset fault (press the iBox FAULT RESET button).
Invalid Configuration Inventory Cross Check RDOPT, INV INVTRY 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 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 safety configuration is incorrect, make appropriate changes and using the 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 RG Board, INV INVTRY 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 on Setup > Safety > Configuration tab match car options/wiring. Any emergency brake options require an emergency brake board. Likewise, emergency brake board requires at least one emergency brake option selected on Safety Configuration (Setup >Safety >Configuration tab). 2. If safety configuration is incorrect, make appropriate changes and re-learn 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).

Table 6.3 Control Messages

iControl Messages
Invalid Configuration Inventory Cross Check RGOPT, INV INVTRY XCHK RGOPT
Description: Rope Gripper 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 match car options/wiring. Any emergency brake options require an emergency brake board. Likewise, emergency brake board requires at least one emergency brake option selected on Safety Configuration (Setup >Safety >Configuration tab). 2. If safety configuration is incorrect, make appropriate changes and re-learn configuration using Learn operation on Setup > Safety > Configuration tab. 3. Re-learn board inventory on Setup > Safety > Inventory tab. 4. Reset the fault (press the iBox FAULT RESET button).
Invalid Configuration Inventory Cross Check TALRQ, INV INVTRY XCHK TALRQ
Description: Top Access Landing Rear Qualifier. Safety system detected configuration/inventory (board complement) difference when cross checking 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 the Safety Configuration (Setup > Safety > Configuration tab). 2. If safety configuration is incorrect, make appropriate 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 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 current mode of operation and check corresponding recall floor and verify 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

Table 6.3 Control 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. Press the Fault Reset button to clear the fault. 2. If problem persists 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 the iBox may need to be replaced. Consult MCE Technical Support for instructions.
IO Map Toggle Compare Fault, IO MAP TOGLE COMP FLT
Description: Safety input failure detected during "input toggle test" (performed at end of each run). This test verifies proper operation of safety system inputs that normally remain unchanged during normal operation.
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 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 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 timeout and has been disconnected.
Jail Master Mode
Description: Car has been placed in Jail Master Mode via Jail Master Mode Input or Jail Operation PC.
Car Reaction: The car operates as configured via the Jail > Master mode parameters.
Jail Secure Mode
Description: Car has been placed in Jail Secure Mode via Jail Secure Mode Input or Jail Operation PC.
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.
Troubleshooting: 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: 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: The car performs an emergency stop.

Table 6.3 Control Messages

iControl Messages
Troubleshooting: 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: 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: 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: 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: 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 controller (emergency brake).
Car Reaction: Car performs an emergency stop.
Troubleshooting: 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: Refer to the KTR brake controller manual for troubleshooting information.
Landing System Sensor Fault, LAND SYS SENSOR FAULT
Description: Generated when a ULM or DLM sensor is activated while car is running and is away from a floor. Can also be generated if M contactor is ON (car is 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 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.

Table 6.3 Control Messages

iControl Messages
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 the normal and emergency terminal limit switches learn operation (Learn tab on the 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 the 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. Car load in less than programmed Light Load Threshold.
Car Reaction: Anti-nuisance feature limits number of car calls registered. If exceeded, car calls canceled.
Troubleshooting: 1. Verify "Light Load Threshold". (Load Weigher Configuration screen.) 2. Verify number of car calls allowed if load less than Light Load Threshold. 3. Determine if load in car less than Light Load Threshold. Calibrate load weigher. 4. For discrete input weigher, check Light Load input per job prints.
Limit Switches Checksum Fault, LIMIT SW CHKSUM FAULT
Description: Learned ETS and NTS limit switch speeds have an 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 Default option on Terminal Switch learning screen.
Limit Switches Learn Fault, LIMIT SW LEARN FAULT
Description: Safety Processor A failed to store learned limit switch speed values to nonvolatile memory.
Car Reaction: Emergency stop: Motor contactor and brake contactor immediately dropped.
Troubleshooting: 1. Press Fault Reset button to clear fault. 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,

Table 6.3 Control Messages

iControl Messages
Load weigher zero calibration: Recall Aborted/Pending
Description: Load weigher zero calibration recall is waiting to execute or has been 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.
LOGF Enhanced Diagnostics ON
Description: The enhanced diagnostics to log some troubleshooting info to the controllers's log files (LOGF, LOGF2, LOGF3) has been enabled via the (Diagnostics>Enhanced Diagnostics)
LOGF Enhanced Diagnostics OFF
Description: The enhanced diagnostics to log some troubleshooting info to the controllers's log files (LOGF, LOGF2, LOGF3) has been disabled via the (Diagnostics>Enhanced Diagnostics)
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 trim pot. Please refer to "Following Error Margin" on page 2-76. 3. Use hand-held tach to verify car speed. If actual speed does not match commanded speed, adjust Gear Reduction Ratio parameter LN02 (LF.22). Please refer to "Following Error Margin" on page 2-76. 4. Run the car on inspection and check the speed displayed on the iBox display.
Mac Address Error, MAC ADDRESS ERROR
Description: 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 match bar code addresses on ICE-IMP board. Make corrections if necessary.
Machine Room Heat Detectors Activated, MR HEAT DETECTORS
Description: Machine room heat detector input activated. Fire warning light will flash until all heat detectors have been reset. Fire-warning buzzer will sound until car is shut down 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 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 unless car is also on Fire Service, in which case car will proceed to appropriate fire recall floor. Once car is stopped at a floor it shall automatically open its doors and shut down. Then, if machine room or hoistway heat detectors are active, a signal is provided to disconnect main power line and activate 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 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.

Table 6.3 Control Messages

iControl Messages
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, car will make an emergency stop and is taken out of normal service. Car can only be moved manually using iBox Inspection Up and Down switches.
Troubleshooting: 1. Related inputs: MachineRoomInspection: Normally high
Main Floor Smoke Sensor Recall, MAIN FLOOR SMOKE
Description: Recall to alternate fire floor due to active or latched smoke detector inputs from the main floor.
Car Reaction: Car proceeds to user-defined alternate 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: 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 and motor contactor coil.
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. Motor field starts forcing if there is demand and doors are closing. Check doors are not obstructed and/or passengers are not holding doors open past 1 minute limit.

Table 6.3 Control Messages

iControl Messages
Motor Limit Protection Timer Elapsed, MOTOR LMT TIMED OUT 2
Description: Generated if system requests movement for more than ten minutes but no movement detected.
Car Reaction: Currently for informational purposes only.
Motor Limit Timed Out, MOTOR LIMIT TIMED OUT
Description: Generated if no other fault has been generated and system has attempted to move car for three minutes with no movement detected or 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: 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 hoistway or machine room of other cars in system.
Car Reaction: Car proceeds to user-defined alternate 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 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 hoistway or machine room of other cars in system.
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 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.
Photo Eye Anti-nuisance
Description: Logged when car calls are canceled due to a user-defined number of car calls being registered without interruption of photo eye.
Car Reaction: All car calls are canceled.
Troubleshooting: 1. Check user defined options related to operation. (iView/Car Operation/Passenger/Anti Nuisance.) 2. Check photo eye and related inputs.

Table 6.3 Control Messages

iControl Messages
Position Cartop Offset Fault, POSTN CARTP OFFST FLT
Description: Each time car stops, it obtains position information from cartop position encoder. If reported position varies from 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.
Position Location Error Fault, POSTN LCTN ERROR FLT
Description: If difference between learned position of a floor (magnet) and currently indicated position of 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). When moving above 30 fpm, system monitors transitions on quadrature signals. Fault may be bypassed on Diagnostics > Fault Bypass tab.
Car Reaction: Emergency stop.
Troubleshooting: 1. Verify quadrature channels are arriving at iBox. 2. On 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 iBox.
Position Quadrature Reversed Fault, POSITN QUAD RVRSD FLT
Description: Sequence of quadrature pulse streams indicates travel in opposite direction system request.
Car Reaction: None.
Troubleshooting: 1. Verify elevator moves in requested direction. 2. On Hoistway screen, verify cartop position increments moving up/decrements moving down. 3. On Hoistway screen, verify absolute position increments moving up/decrements moving down. 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 traveled reported by position quadrature with distance traveled per motor rotation. If quadrature reports 48” traveled but motor reports less than 32”, fault is generated. May be bypassed on 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.

Table 6.3 Control Messages

iControl Messages
Position Speed Threshold Fault, POSTN SPD THRSHLD 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 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 car on inspection and check speed displayed on iBox display. 4. For SCR drives, verify programmed running motor field is close to actual motor field value 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 an overshoot. If value is too low, excessive current may flow through armature. Note that load will affect this value. Running up with a full load in car will yield worst-case scenario. For an empty elevator, running down produces worst-case scenario (value will be higher than for fully loaded car.) 5. For highly inductive motor fields, begin motor field weakening earlier; end motor field weakening earlier. If begin weakening percentage is too low, poor control will result when elevator is approaching destination floor (spotting). In this case, reduce end weaken percentage without modifying (by much) begin weakening percentage. Generally, begin is around 50%; end is around 90% for normal motor fields. 6. Reduce high roll jerk.
Position Synchronization Fault
Description: System was not able to read position correction value stored in battery backed RAM when controller powered up. 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 has lost position and needs to locate a terminal door zone sensor to establish it.
Car Reaction: Cancel all existing calls, synchronize to terminal.
Position Synchronized at Floor
Description: Synchronization completed using door zone sensor. See Position Synch Required at Floor.
Car Reaction: Return to normal service.
Position Synchronized at Terminal
Description: 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. Transfer to/from emergency power.
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 Control Messages

iControl Messages
Power Up Position Synchronization Required at Terminal
Description: Position synchronization at terminal landing required after power-up/reset. Power up synchronization occurs if elevator required to synchronize before power lost, controller reset, or 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.Check for SRAM not correctly inserted in socket. 3. Check for faulty iBox.
Pre-start Door Lock Fault
Description: Once decision to move is made, three acknowledgments (motion start, door lock, drive start) required before movement allowed. If so configured, pre-start sequencing begins while doors closing. If door lock acknowledgment not received within 15 seconds (after pre-start sequence begun, fault is generated.
Car Reaction: Pre-start sequence will stop and the sequence will repeat. If the fault persists, an excessive restarts fault will occur.
Troubleshooting: 1. Verify doors (front and/or rear) become locked within the prescribed time. 2. Verify, iView Diagnostics - Motion, system sees doors closing/locking within prescribed time. Information reflects front and rear door status. 3. Verify, Diagnostics - Car Operation - Front/Rear, system sees front/rear doors closing/locking within 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 doors as directed on Car Operation/Fire/Modify/Fire Recall screen, and wait for activation of 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 Door Close Fault, REAR DOOR CLOSE FAULT
Description: One or more rear door failures to close detected. Controller attempts to close doors as defined by parameters (door close protection timer and number of attempts) before declaring fault. iView Car Operation/Doors tab.
Car Reaction: Doors will reopen fully. Car calls canceled and car removes itself from hall call service (hall calls assigned to car are canceled or reassigned). Doors close using constant pressure on 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.

Table 6.3 Control Messages

iControl Messages
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 so doors again attempt to close (see Rear Door Close Fault). This is repeated number of times specified by Door Close Fault Recovery Attempts parameter. If doors have failed to close when number of attempts equals recovery attempts setting, Rear Door Close Fault Recovery Failure generated.
Car Reaction: Car may not run until mode change detected or doors successfully closed via constant pressure on Door Close Button.
Troubleshooting: 1. Door closed status determined by door close limit and door position monitor. Check wiring. 2. Check door close protection timer and number of closing attempts on Car Operation - Doors tab.
Rear Door Close Time-out
Description: Failure of rear door 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, 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 wiring of these signals. 3. Check Closing protection timer (iView Car Operation Configuration/Doors Tab/General Tab/Door Motor Protection Timers).
Rear Doors Stopped, REAR DOORS STOPPED
Description: Door Stop button or Emergency Stop switch activated preventing door movement.
Car Reaction: Car is not allowed to move unless doors are fully closed.
Troubleshooting: Can be cleared by activation of Door Open or Door Close button or if car enters Inspection or Fire Service mode, provided the Door Stop input is off.
Rear Door Contact Fault, REAR DOOR CONTCT FLT
Description: Faulty rear door contact (gate switch, door lock) detected. Detected when doors are in fully open position and either gate switch contact is closed or doors appear to be locked.
Car Reaction: All car calls canceled and car removes itself from hall call service. Rear doors are not allowed to close and 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: Rear door open button continuously activated for user-defined time and now bypassed according to user setting. (iView/Car Operation/Doors/Advanced.)
Car Reaction: The rear door open button is rendered inoperative.
Troubleshooting: 1. Check corresponding input: Rear Door - Open Button (Normally low). 2. Operation of door open button can be restored by setting Door open button bypass option to off (unchecked) (Car Operation Configuration/Doors Tab/Advanced dialog).

Table 6.3 Control Messages

iControl Messages
Rear Door Open Fault, REAR DOOR OPEN FAULT
Description: One or more rear door failure to open fully detected. After repeated attempts to open (as specified by user parameters), open failure declared. Time allowed for opening and number of attempts made are user parameters. iView Car Operation/Doors tab, plus Advanced dialog.
Car Reaction: Door stalls at its last position. Car calls canceled and car removes itself from hall call service (hall calls assigned to car are canceled or reassigned to other cars if available). Doors may be moved via constant pressure on door open and door close buttons.
Troubleshooting: 1. Door open status determined by rear door open limit status. 2. Check wiring of this signal. 3. Check door open protection timer and number of open attempts on Operation screen Doors tab and associated Advanced dialog.
Rear Door Open Time-out
Description: Failure of rear 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, event is generated.
Car Reaction: Door open cycle halted and door allowed to reclose. If configured, repeated attempts will be made to open door. Otherwise, car is allowed to leave landing once doors are closed.
Troubleshooting: 1. Door open status determined by rear door open limit and rear door position monitor contact if applicable. 2. Check wiring of these signals. 3. Check Opening protection timer (iView Car Operation Configuration/Doors Tab/General Tab/Door Motor Protection Timers).
Rear Doors Stopped, REAR DOORS STOPPED
Description: While rear doors opening or closing, Door Stop button or Emergency Stop switch activated causing doors to stop.
Car Reaction: The car is not allowed to move unless the doors are fully closed.
Troubleshooting: Can be cleared by Door Open button, Door Close button or changing operating mode.
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: Rear hall door open button continuously activated for user-defined time (Door open bypass timer) and now bypassed per user-defined setting (Car Operation Configuration/Doors tab/Advanced dialog).
Car Reaction: The rear hall door open button is rendered inoperative.
Troubleshooting: 1. Check corresponding input, Rear Door - Hall Door Open Button: Normally low. 2. Operation of hall door open button can be restored by setting Door open button bypass option to off (unchecked) (Car Operation Configuration/Doors tab/Advanced dialog).
Rear Photo Eye Bypassed, REAR PHOTO EYE BYP
Description: Rear photo eye continuously activated for user-defined time and now bypassed per user-defined setting. (Configuration.Car Operation> Doors>Door Devices>Photo Eye)
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
Rear Photo Eye2 Bypassed, REAR PHOTO EYE2 BYP
Description: The auxiliary 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 Devices>Photo Eye).

Table 6.3 Control Messages

iControl Messages
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: Logged when photo eye continuously activated for predetermined time (4 seconds) while rear doors are fully closed.
Car Reaction: The rear photo eye is rendered inoperative.
Troubleshooting: 1. Check for blockage or failure of rear photo eye. 2. Related inputs: RearPhotoEye: Normally low
Rear Photo Eye2 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 EYE 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: Rear door safe edge continuously activated for user-defined time and now bypassed per user-defined setting. (iView/Car Operation/Common/Door Device Bypass Timers.)
Car Reaction: The rear safe edge is rendered inoperative.
Troubleshooting: 1. Check the state of the rear safe edge input. 2. Related inputs: SafeEdgeRear: Normally low
Rear Safe Edge Failure, REAR SAFE EDGE FAIL
Description: Logged when rear door safe edge continuously activated for predetermined time (4 seconds) while rear doors fully closed.
Car Reaction: The rear door safe edge is rendered inoperative.
Troubleshooting: 1. Check for blockage or failure of rear door mechanical reopening device. 2. Related inputs: RearSafeEdge: Normally low
Receive Sys Params
Description: Controller receiving parameters from Central/Local dispatcher. (DO NOT RESET CONTROLLER).

Table 6.3 Control Messages

iControl Messages
Restricted, RESTRICTED
Description: Restricted Mode enabled. Controller runs but will not accept hall calls. Mode exited by entering Restricted Mode Key as described in document 42-IS-0144, *Restricted Mode Instruction for iControl Users*. Obtain Restricted Mode Key from MCE Credit Department at (916) 463-9582. Please provide 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: Door locks failed to make up within user-adjustable time after user adjustable number of attempts to lock doors. Detected on cars equipped with retiring cam door lock mechanism.
Car Reaction: Car is taken out of service and doors re-open fully. Doors can be closed with constant pressure on door close button.
Troubleshooting: 1. Check door locks and retiring cam circuitry. 2. Verify 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: Retiring cam output activated for user-adjustable time after doors successfully locked. Monitored in event car fails to reach destination.
Car Reaction: Emergency stop if car is traveling when fault is detected. Car is taken out of service. If car is at a landing, doors shall 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. Elevator operating in Sabbath mode initiated by software command, switched input or timer. Sabbath mode allows elevator to operate without requiring button presses for hall calls or car calls. Car behavior determined by parameters on Car Operation Configuration > Sabbath tab.
Sabbath Operation Deactivated. See Sabbath Operation Activated.
Safety A Contract Overspeed Fault, SPA COS FAULT
Description: Contract Overspeed setting exceeded (iView, Safety Configuration screen). May be bypassed on Diagnostics > Fault Bypass tab.
Car Reaction: Emergency Stop: Motor contactor and brake contactor immediately dropped.
Troubleshooting: 1. Fault will automatically clear 5 seconds after car stops. The car is then allowed to run again. 2. Check contract overspeed parameter (iView/Safety Configuration/General).
Safety A DETS Level 2 Speed Fault, SPA DETS L2 SPEED FLT
Description: Car contacted 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.

Table 6.3 Control Messages

iControl Messages
Safety A IMP Configuration Mismatch
Description: Parameters saved in Safety system do not match values in main processor. When Safety screen parameters are changed, this message appears after Send button is pressed. Complete Safety learn operation as directed on iView Safety Configuration screen to learn new safety configuration.
Car Reaction: Car will not run.
Troubleshooting: 1. Using iView, check values on Safety Configuration screen. Verify correct. 2. Download correct values to Safety system by executing learn process from the Safety screen.
Safety A Inspection Leveling Overspeed Fault, SPA LOS FAULT
Description: Car exceeded 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. Fault will automatically clear 5 seconds after 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: Car has exceeded 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: 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 both hoistway doors and car gate doors open as car moved away from floor without a command from 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: Car exceeded Contract Overspeed setting. May be bypassed on Diagnostics > Fault Bypass.
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 Control 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: Event logged and related car status messages displayed on 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 canceled.
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: 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 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.

Table 6.3 Control 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 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 Safety Bypass time needed, reinstall Safety Bypass Jumper and 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 car is on Machine Room Inspection before learning safety configuration. 2. Check installed safety configuration matches selections on 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 Control Messages

iControl Messages
Safety Configuration Mismatch, SFTY CONFIG MISMATCH
Description: 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 tab.
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 safety configuration. If changes are made, relearn 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: Safety boards attached to iBox do not match safety board inventory kept in the safety system.
Car Reaction: The car will not run.
Troubleshooting: 1. Relearn inventory of boards using the Learn operation on the Setup > Safety > Inventory tab. 2. Reset fault (press the iBox FAULT RESET button).
Safety Inventory Creation Fault, SFTY INVTRY CREATION FLT
Description: During Safety board inventory learn, system could not create board list in non-volatile storage.
Car Reaction: Car will not run.
Troubleshooting: 1. Relearn inventory of boards using 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.

Table 6.3 Control 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 power at: SAFC, SAFH, GOV, ESM, and ESC (if car stop switch bypass is off). SAFC and SAFH can be bypassed by installing Safety Bypass Jumper on IRB board if car must be moved off final limits. 3. If a rope gripper installed and rope gripper option selected, check RGOK is equal to 1. 4. If cartop exit present and cartop exit option selected, check that CTEX input is equal to 1. 5. If Unintended Motion tripped, clear Unintended Motion fault. 6. Clear faults left on iBox display. 7. When problem is fixed, fault will automatically clear after 5 seconds.
Safety String Closed (See: Safety String Open)
SCR AC Phase Fault, SCR AC PHASE FAULT
Description: Indicates the 6 feed wires to M-contactor at bottom of System 12 Drive are incorrectly connected. When incorrectly connected, 30-degree phase angle between X and Y inputs is lost. DC controls only.
Car Reaction: Emergency Stop.
Troubleshooting: 1. Check for 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 DC voltage between armature terminals A1 and A2 in excess of 0.7VDC before RE relay enabled. DC controls only.
Car Reaction: Failure prevents a normal run.
Troubleshooting: 1. Verify test point TP1 on SCR-LGA board (see Section 8) is 0.0mv when no direction is commanded. Adjust R2 if needed. 2. Check cable between iBox AC/DC Drive jack and SCR drive. 3. Check SCR-LGA board (see Section 8).
SCR Contactor Fuse Fault, SCR CNTACTR FUSE FLT
Description: Indicates semiconductor fuse blown or one or more of 6 contacts within two contactors 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. Oscilloscope to 2msec/div, 500mv/div, AC coupling. Verify 12 drive pulses equal amplitudes and periods. 6. Check M1 and M2 contacts. 7. Check semiconductor fuses. (See Section 8.)
SCR Drive Ready Fault, SCR DRIVE READY FAULT
Description: Ready signal from System 12 SCR Drive is inactive. Signal is inactive when System 12 Drive detects 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 Event Calendar, Hoistway display or iBox display for active SCR drive faults and follow the recommended troubleshooting for those faults.

Table 6.3 Control Messages

iControl Messages
SCR Dynamic Brake Fault, SCR DYN BRAKE FAULT
Description: Indicates either more than 18-volts across dynamic braking resistor or dynamic brake input from SCR drive is active. DC controls only.
Car Reaction: Emergency Stop.
Troubleshooting: 1. If fault occurs with no other SCR Drive faults in Event Log, likely that a different failure such as AC Phase Failure occurred but occurred too quickly to be captured. 2. If other SCR drive faults present, possible defective dynamic brake SCR or SCR-LG9A) board.
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 Drive Forced fault if encountered 4 times within 7 run attempts. DC controls only.
Car Reaction: Car will not run.
Troubleshooting: 1. Run car on inspection while monitoring armature current versus command current. Verify both are approximately equal. 2. Check interpole feedback, filter capacitors (SCR page of job prints), any component in loop feedback from SCR drive out to motor and back to drive. 3. Verify drive header current and voltage. 4. Check serial cable between iBox and drive. 5. Check SCR-LGA board (section 8).
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 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 (section 8).
SCR High Temp Fault, SCR HIGH TEMP FAULT
Description: Indicates ambient temperature in System 12 drive exceeded 170 degrees F or bad or failing SCR. iControl attempts to bring car to nearest floor before shutdown. Clears if temp drops below threshold.
Car Reaction: Stop at nearest floor. Car out of service until fault cleared.
Troubleshooting: 1. Check for excessive ambient temperature. 2. Check for insufficient air flow, especially if fault occurs when car running and clears when car is stopped. Verify fan is operating properly. Check 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 integrity of heat sensor normally closed contacts. 5. Check drive rated armature current to determine if it is operating close to limit threshold. Please refer to "Current Limit Adjustments" in Section 2.

Table 6.3 Control 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 if 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: Indicates insufficient armature feedback current. Generated if requested current at least 20% of rated armature current yet detected feedback remains below 10% of rated armature current. Automatically resets if detected four or fewer times in seven consecutive runs. DC controls only.
Car Reaction: Emergency Stop.
Troubleshooting: 1. Check Armature Voltage Limit/Armature Current Limit settings on iView/Drive/Safety.If fault occurs with car running at speed, adjust Motor Field so armature voltage is within rated motor armature voltage. 2. Verify current sensor connection on SCR-LGA board (section 8). Check SCR-LGA board. 3. Check serial cable from drive to iBox. 4. Monitor Up and Down direction inputs on SCR-LGA (bottom of R14 down, bottom of R22 up). If momentary drop in direction signal before run complete, use jumpers to determine if a section of safety string is failing. WARNING: Car must be on Independent Service before performing test. 5. If failure persists, make sure 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.
Car Reaction: Emergency Stop. DC controls only.
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: iBox detects line voltage to System 12 Drive between 80% and 95% of rated armature voltage. Line voltage tested every time elevator stops. Detected percentage based on Rated Armature Voltage setting on 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 Rated Armature Voltage value is correct. RMS value (AC phase measurement on a voltmeter) at TP4 on System 12 SCR-LGA board reflects line voltage divided by one hundred (The RMS values of line-to-line voltages at wye and delta connections of drive or secondary isolation transformer). 2. Verify voltage into primary of Drive Isolation Transformer is not sagging. 3. Check drive header rating against voltage on isolation transformer secondary.
SCR Low Line Caution Deactivated. See SCR Low Line Caution Activated.
Description: iBox detected line voltage to System 12 Drive above 90% of rated armature voltage (see SCR Low Line Caution (Activated)). DC controls only.
SCR Low Line Fault, SCR LOW LINE FAULT
Description: System 12 AC line voltage dropped below 95% of SCR-LGA header value. DC controls only.
Car Reaction: Car will not move.
Troubleshooting: 1. Verify Rated Armature Voltage value. RMS value (AC phase measurement on voltmeter) at TP4 on System 12 SCR-LGA board reflects line voltage divided by one hundred (RMS values of line-to-line voltages at wye and delta connections of drive or secondary isolation transformer). 2. Verify voltage into primary of Drive Isolation Transformer is not sagging. 3. Check drive header rating against voltage on isolation transformer secondary.

Table 6.3 Control Messages

iControl Messages
SCR Low Line Test Fault
Description: Test for line voltage to System 12 drive failed. 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: Phase lock loop circuit PLL LED ON in SCR-LGA and System 12 Drive unable to lock onto incoming line frequency. PLL LED 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 ON in SCR-LGA and System 12 Drive unable to lock onto incoming line frequency. PLL LED normally on for a few seconds during power up. DC controls only.
Car Reaction: Car will not move.
Troubleshooting: 1. Verify PLL indicator is active on SCR-LGA board. 2. Verify iBox not resetting SCR drive. If so, PLL indicator active for short interval. For recurring fault, iBox resets SCR drive every 15 seconds. If so, there may be underlying fault iBox is trying to clear. 3. Contact MCE technical support.
SCR Power Supply Fault, SCR POWER SUPPLY FLT
Description: Indicates that power supplied to System 12 SCR Drive is insufficient. DC controls only.
Car Reaction: Car will not run.
Troubleshooting: 1. Check all supply voltages on the SCR-PS board (section 8). Check the F2D fuse. 2. Verify voltages inside drive are within 1%. If voltages correct, check drive cable from iBox to drive. Check the SCR-LGA board (section 8).
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 its 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 Secondary Fire Recall switch input.
Serial COP Bus 'n' Comm Fault, SCOP BUS 'n' COMM FAULT (n = 1 - 4)
Description: Lost communication: ICE-CTP (cartop) and ICE-COP (serial COP) boards over 1.5 seconds.
Car Reaction: none
Troubleshooting: 1. Check cable between ICE-CTP and ICE-COP boards. 2. Check for high electrical noise interference. 3. Check for proper shielding of cables (board to board and board to controller).
Serial COP Bus 'n' Inventory Fault, SCOP BUS 'n' INVENTORY FLT (n = 1 - 4)
Description: Lost communication between ICE-COP (serial COP) board and ICE-COP-x boards. Could indicate ICE-COP-x 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).

Table 6.3 Control Messages

iControl Messages
Sheave Brake Drop Fault, SHEAVE BRAKE DROP FLT
Description: Sheave brake disabled via Sheave Brake Enable output, Sheave Brake Monitor input high. There is a five second delay before fault is generated.
Car Reaction: Emergency stop: Motor brake contactors immediately dropped. All calls canceled. Doors cycle.
Troubleshooting: 1. Verify Sheave Brake Monitor input and Sheave Brake Enable output programmed (Configuration > I/O Boards > Configuration tab). 2. Check voltage at Sheave Brake Monitor input and internal representation via *View* button on Configuration > I/O Boards > Configuration tab. 3. Check voltage at Sheave Brake Enable output and internal representation via *View* button on Configuration > I/O Boards > Configuration tab. 4. Check 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/brake contactors immediately dropped. All calls canceled. Doors cycle.
Troubleshooting: 1. Verify Sheave Brake Monitor input and Sheave Brake Enable output programmed (Configuration > I/O Boards > Configuration tab). 2. Check voltage at Sheave Brake Monitor input and internal representation via *View* button on Configuration > I/O Boards > Configuration tab. 3. Check voltage at Sheave Brake Enable output and internal representation via *View* button on Configuration > I/O Boards > Configuration tab. 4. Check sheave brake mechanism and circuitry.
Shuttle Service Activated, SHUTTLE SERVICE ON
Description: Indicates Shuttle service activated via key-switch/input, software command or timer.
Shuttle Service Deactivated, SHUTTLE SERVICE OFF (see Shuttle Service Activated)
Silent Mode Activated
Description: Indicates 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: Indicates failure of one of 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.
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, doors operate per software recall command parameters.
Troubleshooting: Check the status of the recall command and related parameters.
SOBO Did Not Boot Correctly (Custom Event)
Description: The Svendborg SOBO iQ brake controller has not powered up properly
Car Reaction: Car performs emergency stop.
Troubleshooting: 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: 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.

Table 6.3 Control Messages

iControl Messages
Car Reaction: Car performs emergency stop.
Troubleshooting: 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 destination call.
Troubleshooting: 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 emergency stop.
Troubleshooting: Refer to the Svendborg SOBO iQ brake controller manual for troubleshooting information.
SPA Firmware Updated
Description: The Safety A firmware was successfully updated.
SPB Firmware Updated
Description: The Safety B firmware was successfully updated.
SPC Firmware Updated
Description: The Safety C firmware was successfully updated.
SPA Spare Event 'n' (n = 1 to 8)
Description: SPA Spare Events 1 through 8 are used for testing.
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: Monitoring enabled by *Monitor cartop and car panel inspection inputs* option (Setup > Safety > Configuration). On passenger operation, generated if cartop inspection inputs (CTEN, ICTU, ICTD) remain high for more than 250msec. On inspection, generated if any combination of cartop inspection inputs remain high more than five seconds, except 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: Monitoring enabled by *Monitor cartop and car panel inspection inputs* option (Setup > Safety > Configuration). On passenger operation, generated if car panel inspection inputs (ICEN, ICPU, ICPD) remain high more than 250msec. On inspection, generated if any combination of car panel inspection inputs remain high for more than five seconds, except 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: Generated when stuck inspection input detected during passenger operation (see Stuck Cartop / Car Panel Inspection Input message). Not generated if car on inspection. To avoid entrapment, fault is not generated until car has reached a floor.
Car Reaction: All hall calls reassigned or canceled. Car will complete run. When at a floor, doors cycled to let passengers out and car calls canceled. Car is shut down and remains out-of-service until 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).

Table 6.3 Control Messages

iControl Messages
Car Reaction: All calls are canceled. The car stops at the next available floor and opens 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.
Troubleshooting: None
System Comm Disabled / SYSTEM COMM DISABLED
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 Call 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).
Troubleshooting: None.
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,...).
Troubleshooting: None.
Swing Operation Activated, Swing Operation, SWING OPERATION
Description: Indicates car is in swing car operation, independent of Group Controller. Car should be servicing hall call riser dedicated to car. Car will use settings from Simplex Hall Call and Parking settings from car Simplex supervisor screens.
Swing Operation Deactivated. See Swing Operation Activated.
SYSTEM SYNC
Description: The iBox is establishing communication with the cartop and acquiring position data.
Tach Error Fault, TACH ERROR FAULT
Description: Difference between intended speed and speed feedback signal exceeded Following Error.
Car Reaction: Emergency stop: Motor and brake contactors immediately dropped. Followed by normal run.
Troubleshooting: 1. Please refer to “Tach Error Tripping Threshold Adjustment” on page 4-42.
Tach Failure, TACH FAILURE
Description: Difference between synthetic tach signal and external speed feedback signal exceeded tolerance. DC controls only.
Car Reaction: Emergency stop: Motor contactor and brake contactor immediately dropped. Cancel all calls.
Troubleshooting: 1. Check velocity encoder and re-calibrate tach failure and synthetic tach. Please refer to “Tach Failure Calibration” on page 2-62 and see “synthetic speed Calibration” on page 4-18.
TERMINAL LEARN ON
Description: This message indicates system prepared to learn speed and position values for normal (UNT1-5/DNT1-5) and emergency (UETS/DETS) terminal switches.

Table 6.3 Control Messages

iControl Messages
Terminal Synchronization Fault, TERMINAL SYNC FAULT
Description: System did not receive edge position data from cartop or 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 correct 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 system is communicating with cartop (no Cartop Communication Fault). 5. Verify absolute and cartop positions change by same amount and same direction while moving car. 6. Verify terminal magnet has not fallen off. 7. Check clearance between floor sensor board and magnets. Sometimes clearance will be off enough to make some magnets fail to register. Adjust clearance if necessary. 8. Re-learn the floor heights. The iLink, iLand or iBox may be faulty.
Test Mode, Test
Description: Elevator in the Test mode. 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 alternate fire floor due to active or latched smoke detector input(s) from cars hoistway or machine room.
Car Reaction: Car proceeds to user-defined alternate fire recall floor. At recall floor, door operation per user-defined door operation under fire recall operation. The fire warning indicator light will flash.
Troubleshooting: 1. If in error, inspect 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 main fire floor for active/latched smoke detector input from hoistway or machine room.
Car Reaction: Car proceeds to user-defined main fire recall floor. Once at recall floor, door operation per 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: Up normal terminal direction switch open
Car Reaction: Immediate stop if moving. Further up direction movement prevented.
Troubleshooting: 1. Verify switch operating properly. 2. Verify correct state of iBox UNTD input. 3. Verify UNTD switch activating/deactivating at appropriate location (normally 2” below bottom terminal landing - see prints).

Table 6.3 Control Messages

iControl Messages
Up Emergency Terminal Switch Position Fault, UP ETS POSITION FAULT
Description: Reported position upon encountering Terminal Switch differed from learned position by more than set margin. Fault may be bypassed on Diagnostics > Fault Bypass tab.
Car Reaction: Emergency Stop: Motor and brake contactors immediately dropped. Hall and car calls can-celed. After car is stopped, it will run at Correction speed to next available floor and cycle doors. Door Open button will remain operational. If generated when car moving, fault latched and Fault Reset button must be pushed to clear it. If generated when car not moving, fault will self clear when condition no longer exists.
Troubleshooting: 1. Physically check integrity of switch and wiring. 2. Check iBox input for switch. 3. On Diagnostics > Terminal Switches Status tab, compare Last pass position to Learned position for switch. Verify Position Margin is reasonable (Configuration > Terminal Switches tab). If appropriate, move switch closer to terminal landing. 4. Relearn NTS and ETS switches. Please refer to "Learning Normal & Emergency Terminal Limit Switches" on page 4-8.
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 it. If generated car stopped, fault will self clear when condition no longer exists.
Car Reaction: Emergency stop: Motor contactor and brake contactor immediately dropped.
Troubleshooting: 1. Logged in conjunction with speed or position fault at UETS. Check Event Log. Follow troubleshooting for Up Emergency Terminal Switch Position Fault or Safety A/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 fault detected at Up Normal Terminal switch 'n' (1 to 5). When switch opened, car traveling faster than defined 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 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 change to Pattern parameters. 3. One or two floor runs may come in "hotter" than multi-floor runs.(switches learned making full hatch runs). If short runs cause problem, increase Overspeed 1 Margin (Configuration > Terminal Switches tab) or lower Standard profile - High Roll Jerk parameter (Configuration > Pattern > Modes tab. 4. May be caused by car following pattern poorly 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 gentler deceleration and approach (then re-learn switches).Please refer to "Terminal Switch Overspeed and Position Faults" on page 4-56.

Table 6.3 Control Messages

iControl Messages
Up Normal Terminal Switch 'n' Level 2 Speed Fault, UP NTS'n' L2 SPEED FLT (n = 1 to 5)
Description: Level 2 Overspeed fault detected at Up Normal Terminal switch 'n' (1 to 5). Car traveling faster than defined Level 2 overspeed settings (105% of sum of learned speed plus Overspeed 1 Margin percentage on Configuration >Terminal Switches tab). Fault may be bypassed on Diagnostics >Fault Bypass tab.
Car Reaction: Emergency stop: Motor contactor and brake contactor immediately dropped.
Troubleshooting: 1. Check Diagnostics > Terminal Switches Status tab to see how fast car was traveling on Last pass by switch. Check against Learned speed for switch. If appropriate, increase Overspeed 1 Margin on Configuration > Terminal Switches tab. 2. May be caused by change in Pattern parameters. Re-learn terminal switches after changes to Pattern. 3. One or two floor runs may come in "hotter" than multi-floor runs. (Switches learned making full hatch runs.) If short runs cause this, increase Overspeed 1 Margin or lower Standard profile - High Roll Jerk. 4. Can be caused by car following pattern poorly due to heavy load or poor speed loop performance. Adjust speed loop to follow pattern as well as possible and/or alter pattern parameters to produce gentler deceleration and approach (re-learn switches). Please refer to "Terminal Switch Overspeed and Position Faults" on page 4-56.
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 tab. May mean switch opened early, late or not at all on approach to terminal. May also mean switch closed early, late, or not at all on departure from terminal. Finally, switch can go open while standing at a floor where learned position is closed, or go closed at a floor where learned position is open. Fault may be bypassed on the Diagnostics > Fault Bypass tab.
Car Reaction: Traveling up, car executes emergency slowdown, continues at low speed until it encounters a floor. Car stops at floor, opens doors, and performs floor sync operation. If fault persists, car goes out of service. Traveling down, car continues to first stop, opens doors and performs floor sync operation. If fault persists, car goes out of service. If stopped at a floor, car opens doors, does floor sync, and, if fault persists, goes out of service.
Troubleshooting: 1. Diagnostics >Terminal Switches Status tab, compare Last pass position to Learned position for switch. 2. If fault is mechanical (switch movement, magnet movement), fault will tend to repeat at same position. 3. A stuck switch is easy to spot by running 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), User Defined Event Fault, USER DEF EVENT FAULT
Description: Indicates that User Event 'x' (1 - 10) has been activated via User Input 'n' (1 - 10)
Car Reaction: Determined by user programming (Configuration > User Inputs tab)
Troubleshooting: Determined by user programming (Configuration > 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

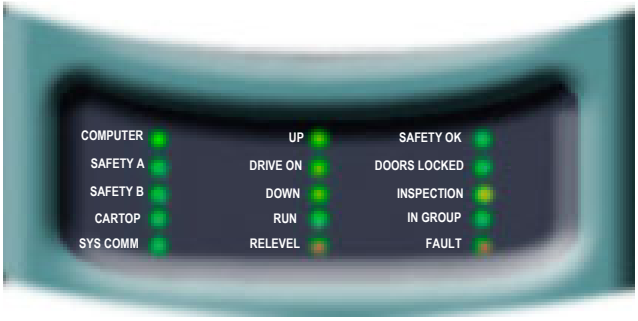
In this section:

- iBox boot-up sequence
- Upgrading iBox firmware
- iBox removal and replacement

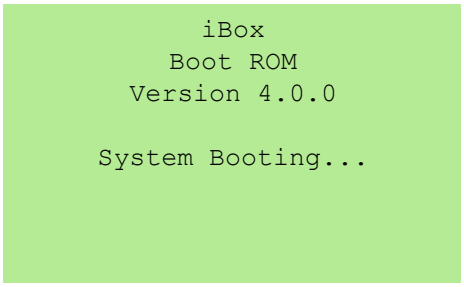
iBox boot-up sequence

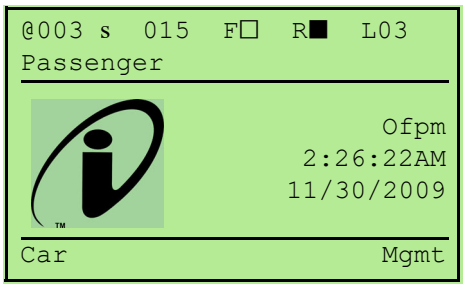
The iBox provides visual feedback as boot-up progresses. The sequence is as follows:

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, contact MCE Technical Support.

Updating iBox Firmware

iBox program files are stored in flash memory and 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 configuration file for the original iBox can be uploaded from a computer to the replacement iBox so that many operational settings remain 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

You can easily save the configuration information 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 this file can then be “uploaded” 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:
2. Connect to the iBox through its #3 PC Ethernet connector.
3. 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.

4. Save the file to the desired location.

iBox Removal

1. Shut off power at the main disconnect. Open the iControl cabinet.
2. Loosen the iBox cover retaining screws and remove the cover.
3. 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.
4. Slightly loosen the retaining screws for the rail-mounted circuit boards and slide them away from the iBox (disconnecting the pluggable central bus).
5. Loosen the four captive, retaining screws that secure the iBox to the circuit board rails.
6. Remove the iBox.

iBox Installation

1. Verify that power is off at the main disconnect. Open the iControl cabinet.
2. Remove the cover (bezel) from the new iBox.
3. Secure the new iBox in position between the rail-mounted circuit boards.
4. Slide the rail-mounted circuit boards above and below the iBox back into position so that the central bus is plugged back in.
5. Tighten the retaining screws for the iBox and all of the circuit boards.
6. Reinstall the iBox cover.
7. Reconnect all cabling to the body of the iBox.

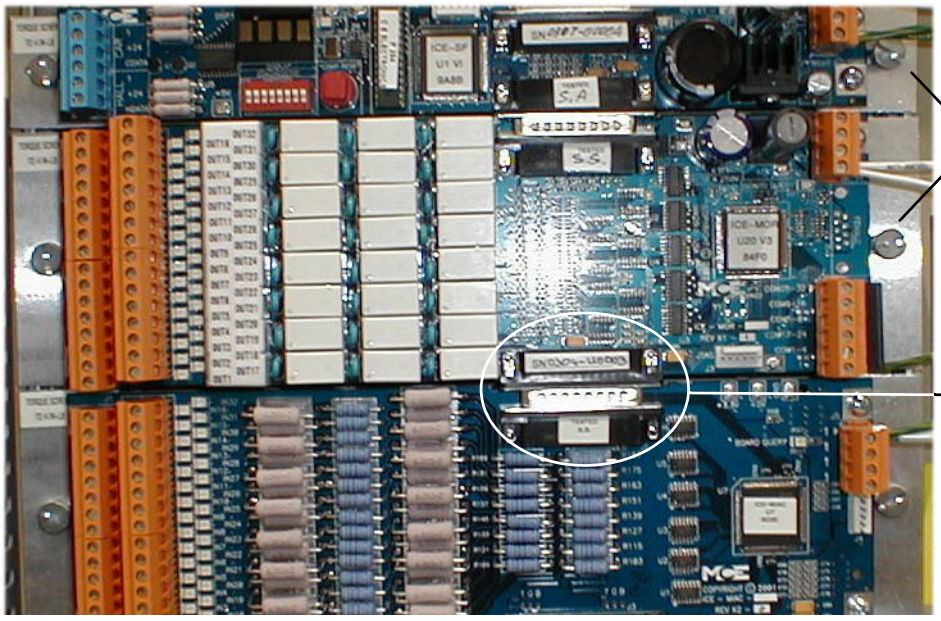
iBox Configuration > Load

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.

Replacing Circuit Boards

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. 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 6-84
ICE-**CTP-2**	Car Top Processor Board	iLink Car Top Interconnect	page 6-87
ICE-**EB**	Emergency Brake Board	iControl AC and DC	page 6-91
ICE-**FM**	Field Module-L Logic Board	iControl AC, DC	page 6-92
ICE-**FML**	Field Module Logic Board	iControl AD, DC	page 6-92
ICE-**IEQ**	Earthquake Board	iControl AC, DC	page 6-94
ICE-**IMP**	Main Processor Board	iControl AC, DC	page 6-97
ICE-**IRB**	Relay Board	iControl AC, DC	page 6-99
ICE-**IRD**	Rear Door Board	iControl AC, DC	page 6-102
ICE-**LCB**	Low Current Brake Board	iControl AC, DC	page 6-103
ICE-**MIAC** ICE-**MIAC-24V**	Multiple Input (120V) AC Board Multiple Input (24V) AC or DC Board	iControl AC, DC, iCentral Group, iLink	page 6-104
ICE-**MOR**	Multiple Output Relay Board	iControl AC, DC, iCentral Group, iLink	page 6-106
ICE-**RG-(2 or 3)**	Rope Gripper Board	iControl AC, DC	page 6-108
ICE-**SAF**	Safety Board	iControl AC, DC	page 6-110
ICE-**SF**	Serial Fixture Board	iControl AC, DC	page 6-115
SC-**HCDA-ISO**	Serial Hall Call Driver Isolation Board	iControl AC, DC Simplex / Swing Car	page 6-116
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 5-23
SC-**HCNT**	Serial Hall Call Node Board	Hall Call Fixture Enclosures	page 6-116
SC-**ION**	Serial Control I/O Node Board	iCentral Group	page 6-117

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).

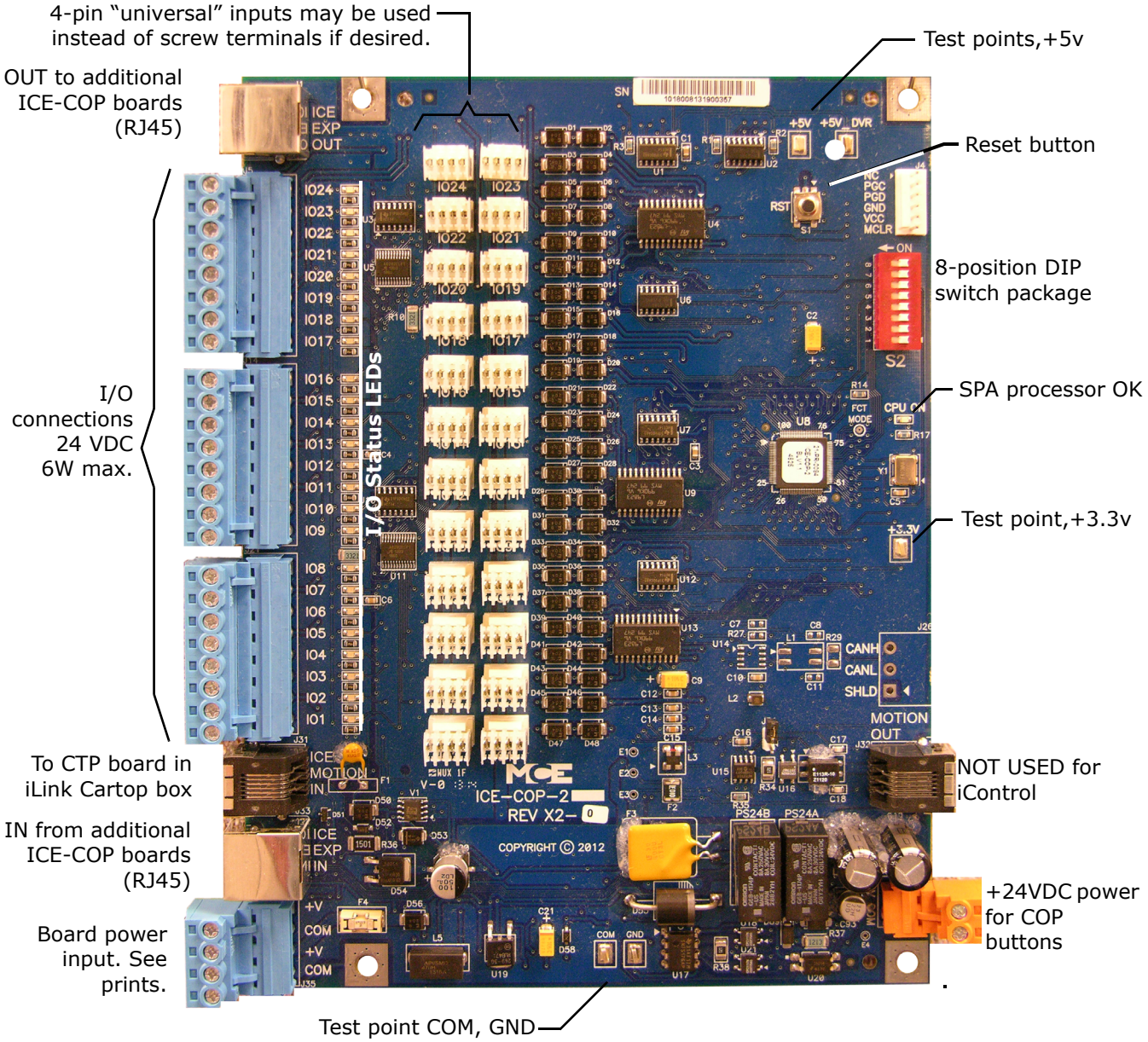
The number is expressed in binary format with IO1 the least significant and IO8 the most significant value.

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									

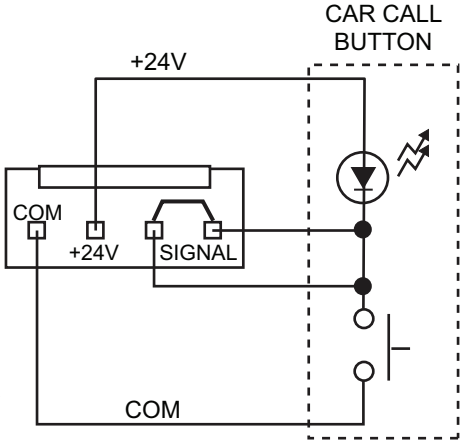
If you do a software version query, BE SURE to set the DIP switch rockers (1, 2, 3,4, 6, 7 back to OFF afterwards. OFF is their default.

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

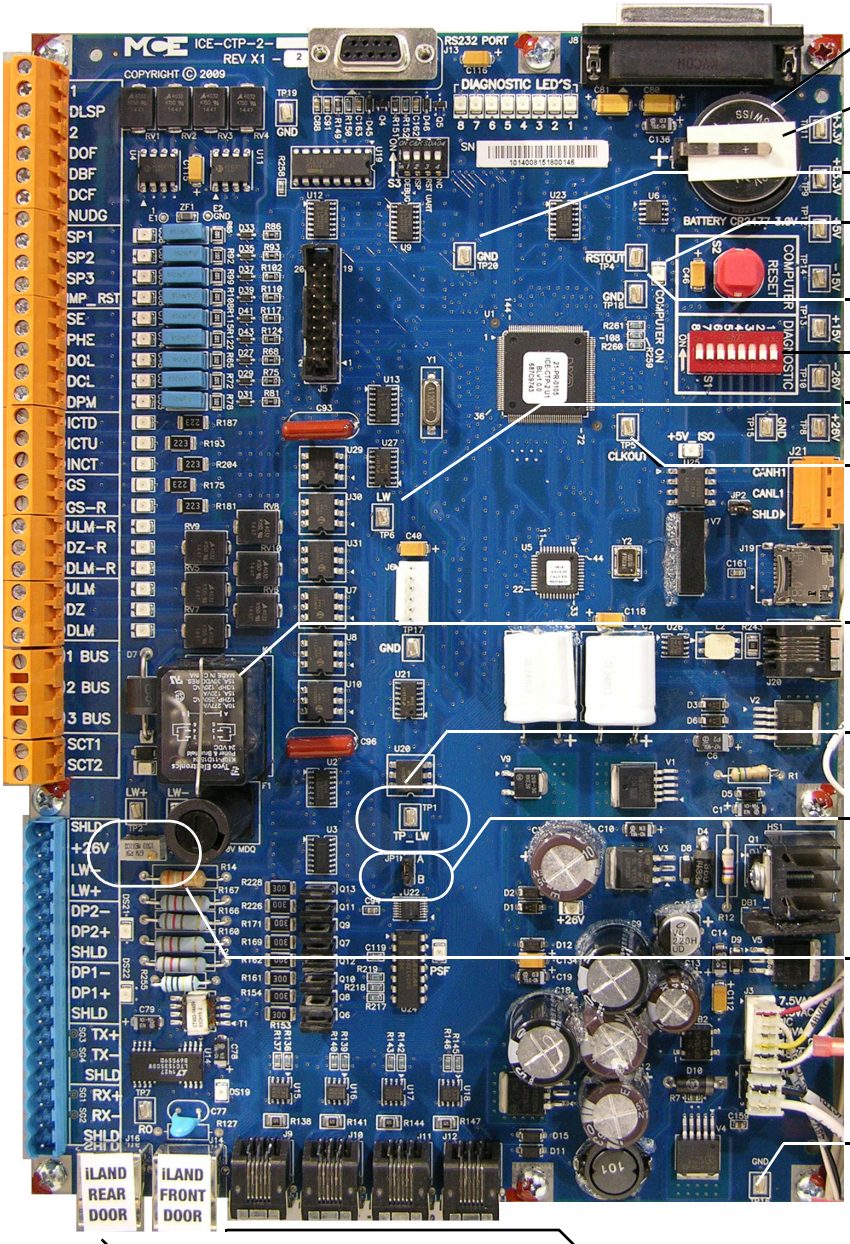


Table 6.1 ICE-CTP-2 Board Connections

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).



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 6-89).

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

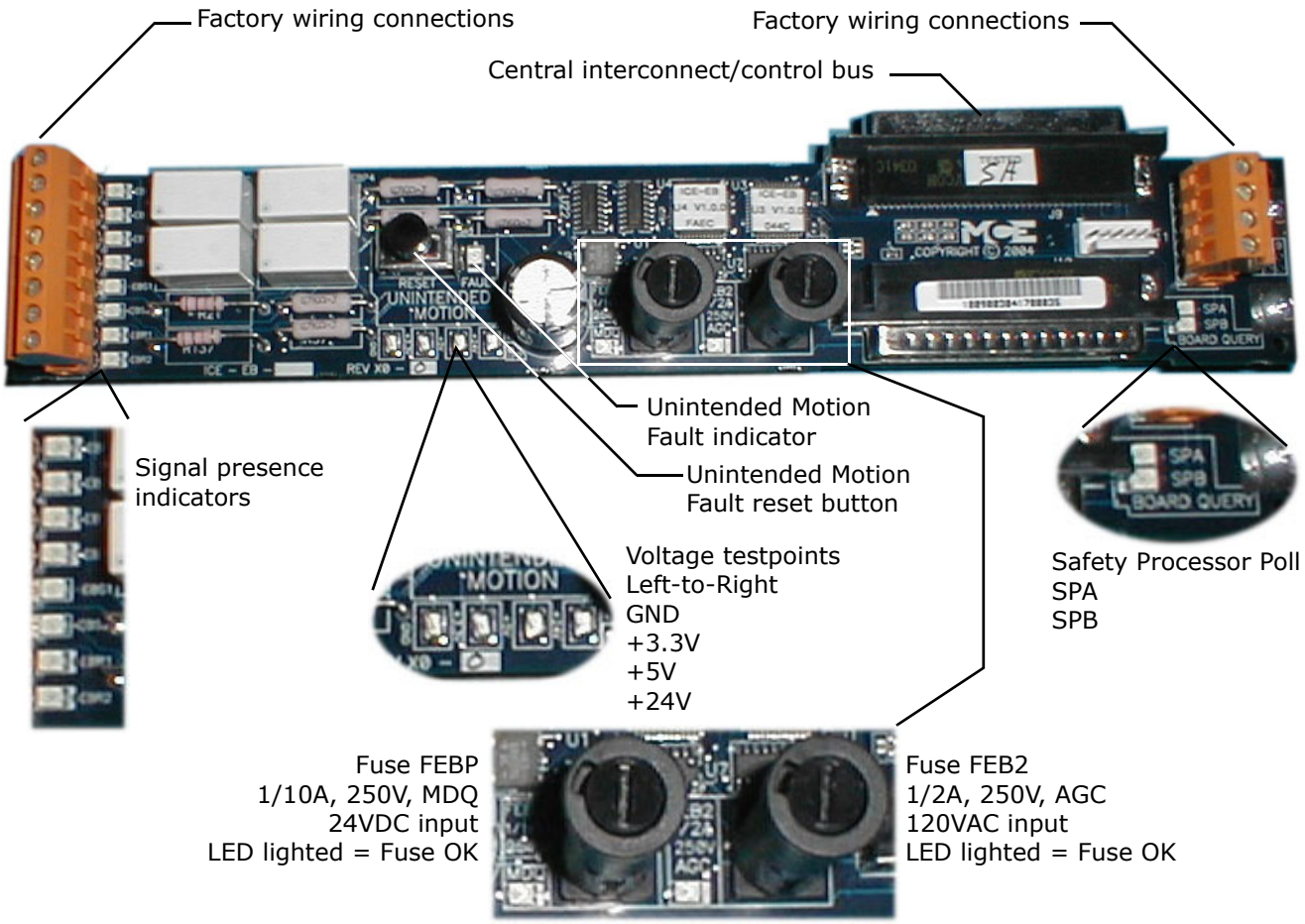
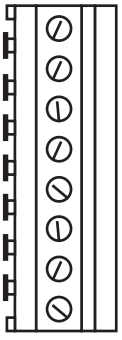
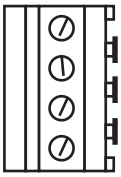


Table 6.5 ICE-EB Board Inputs and Outputs

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.

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 ON BOARD Replace with 5x20 mm 6.3 A 500 V SL0-BL0 LittleFuse 047706.3 or equivalent.

Figure 6.5 ICE-FM Field Module-L Logic Board

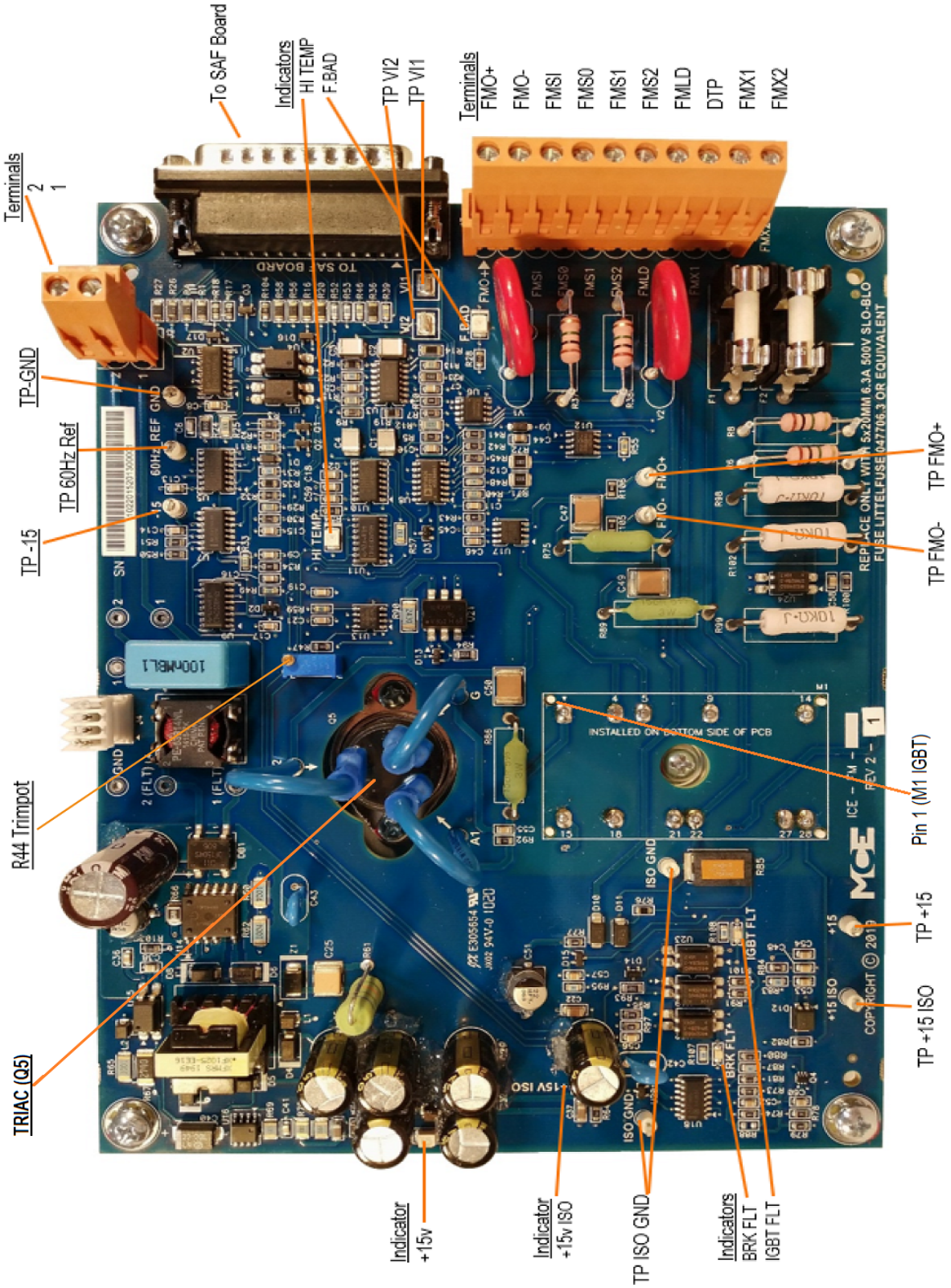


Table 6.6 IFIELD-MODULE-L Indicators on the ICE-FM Board

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 looses +15V.
HI TEMP	LED turns ON to indicate high temperature on the heatsink. 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.

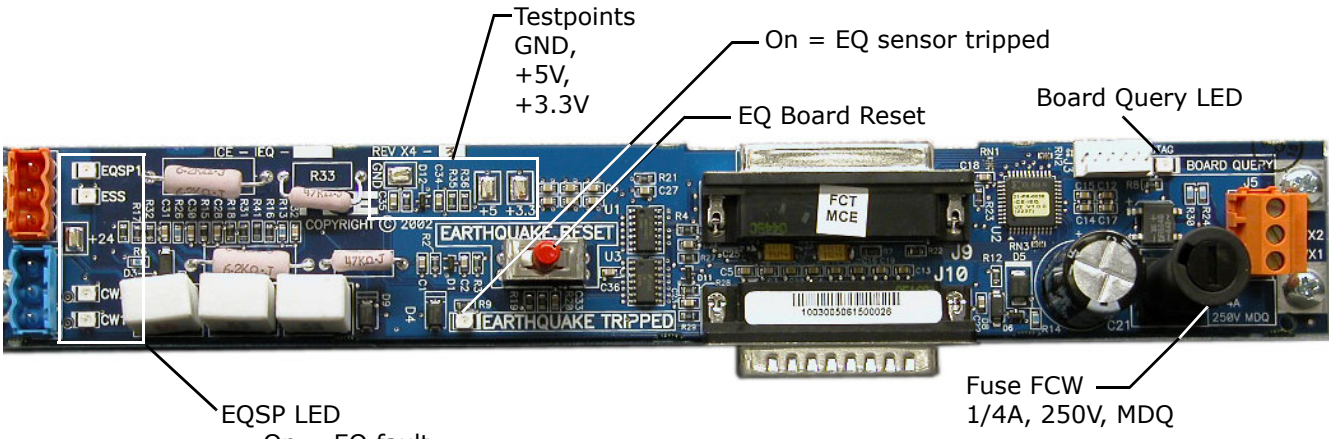
Table 6.7 IFIELD-MODULE-L Terminals on the ICE-FM Board (Brake Module)

Terminal	Description
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).
DIP	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.

Figure 6.6 ICE-IEQ Earthquake Board



EQSP LED
On = EQ fault
Off = No EQ fault
ESS LED
On = Normal
Off = Seismic device tripped
+24VDC Testpoint
CW2 LED, On = CW String OK
CW1 LED, On = CW String OK

Table 6.8 Earthquake Board Connections

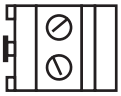
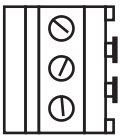
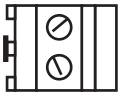
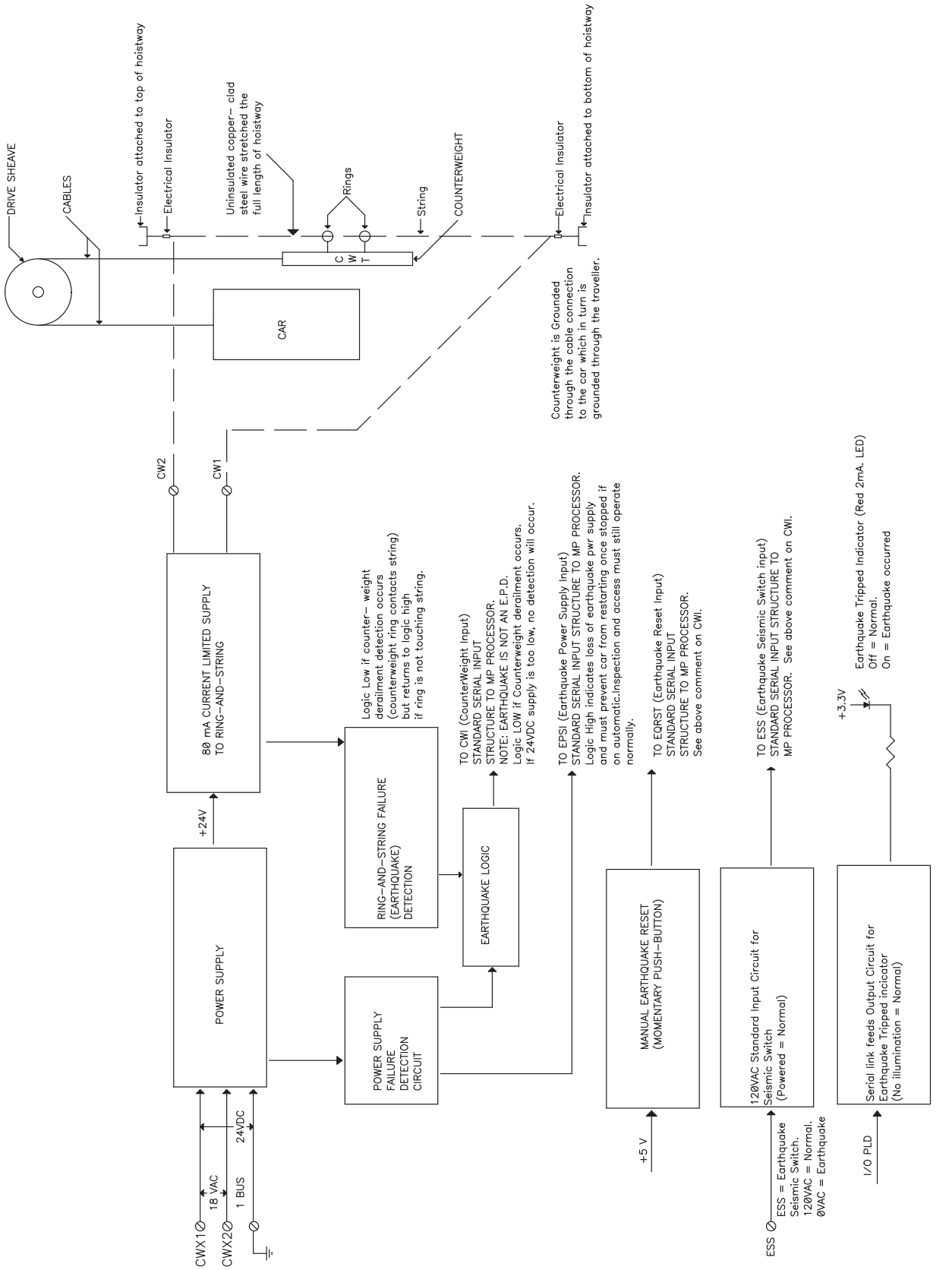
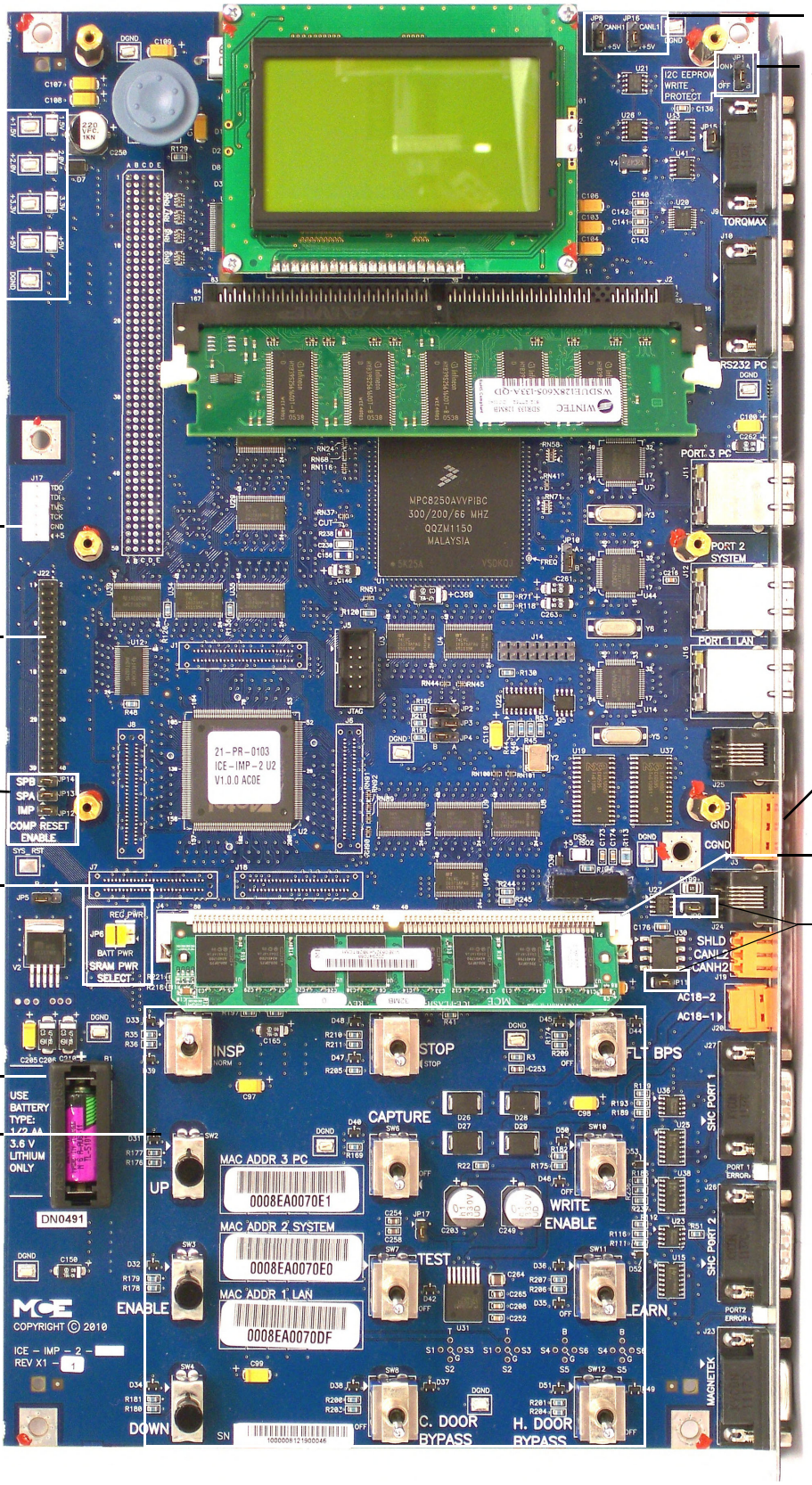
Connector	Signal		Connector	Signal
	EQSP 1:Spare. 0V=Normal. 120VAC=Tripped			1: Common
	ESS: 120VAC= Normal, 0V= Tripped (120VAC from #2 bus, through sensor to ESS)			CWX2: 18VAC CWX1: 18VAC
				
	CW2: 24VDC= Normal, 0V= String shorted			
	CW1: 24VDC= Normal, 0V= String shorted			

Figure 6.7 Earthquake Board, Supporting Information



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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^2C 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)

ICE-IRB 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 Relay Board

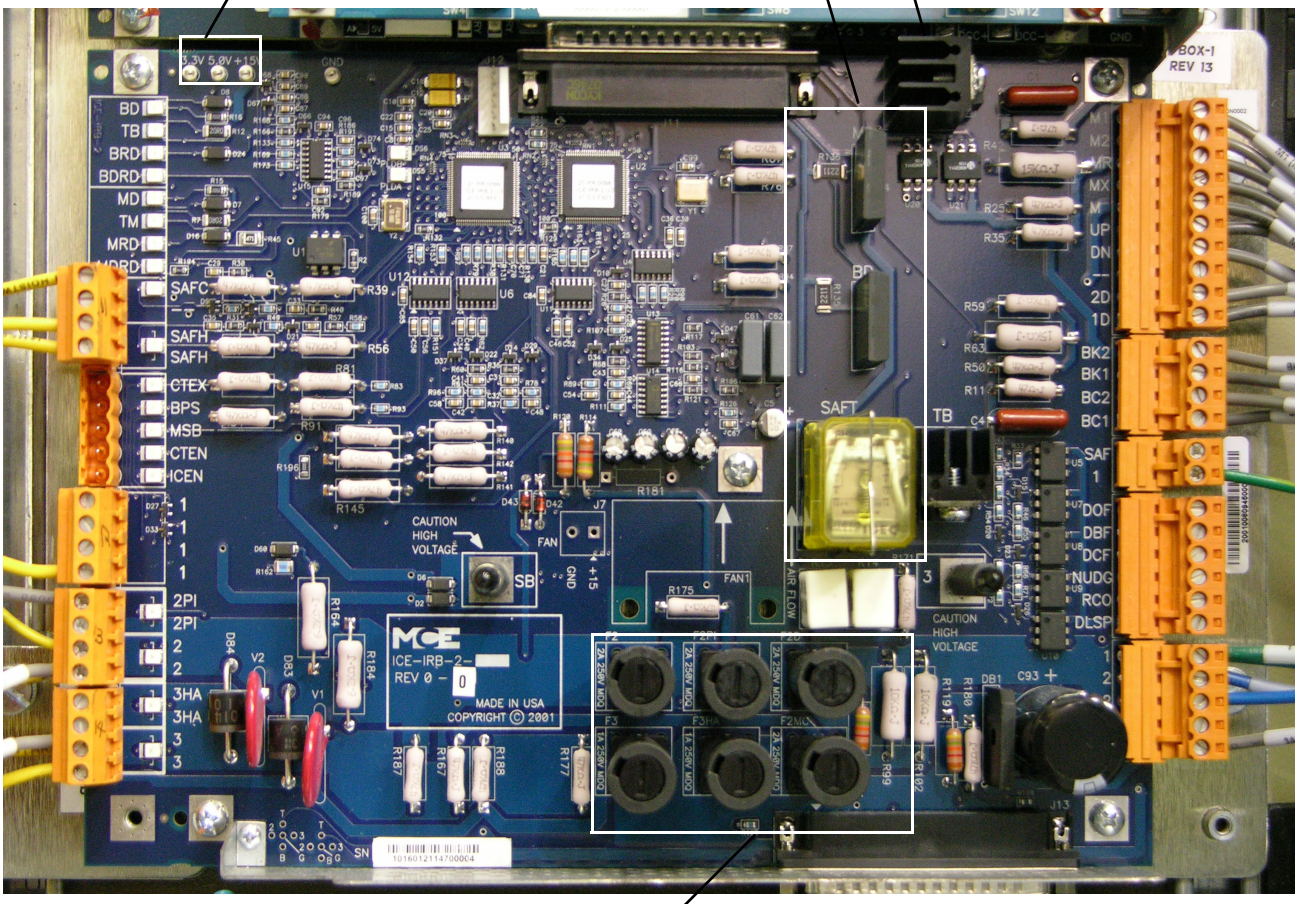


Table 6.10 ICE-IRB Relay Board

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).

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



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

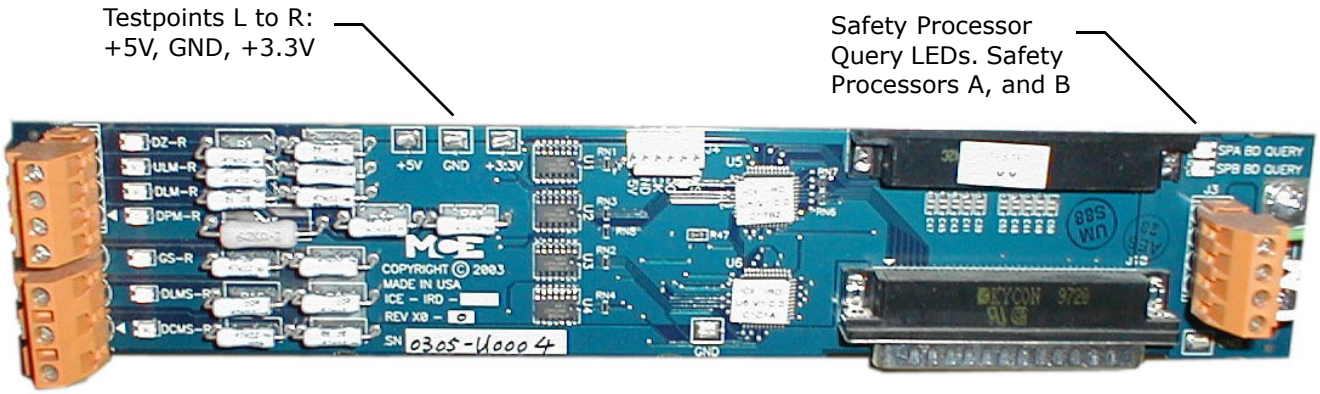
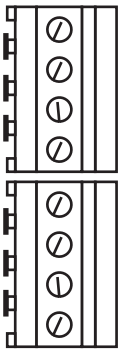
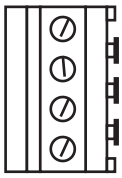


Table 6.11 Rear Door Board Connections

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.			

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

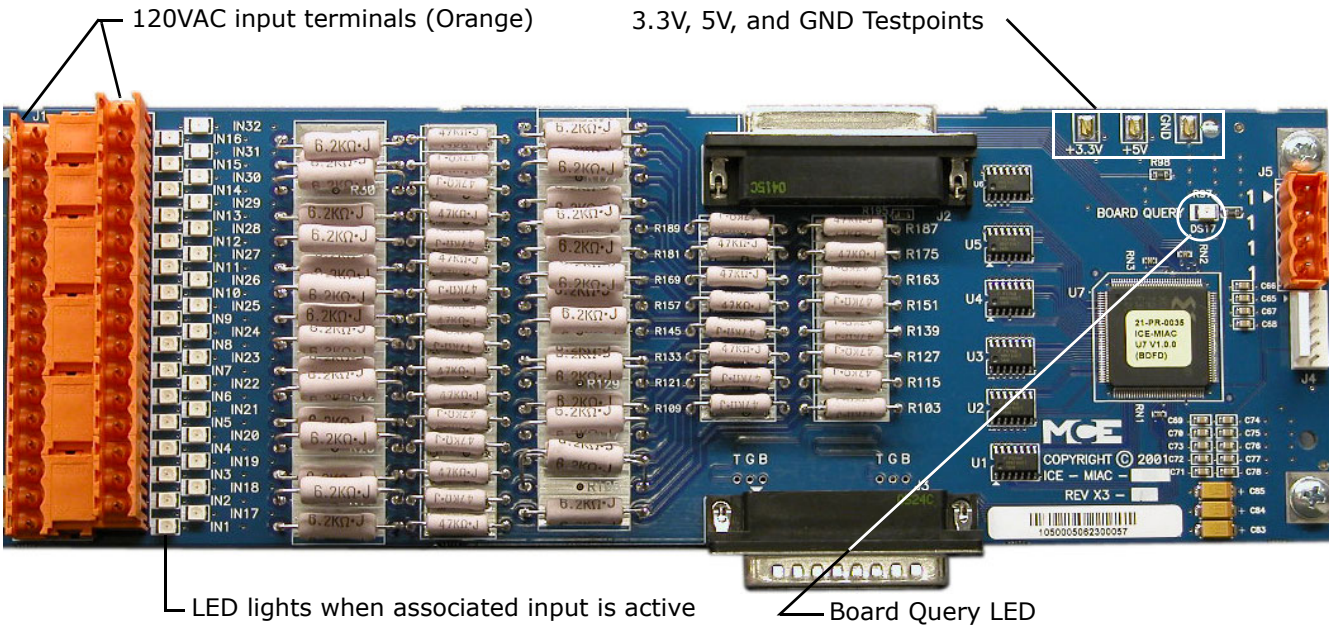
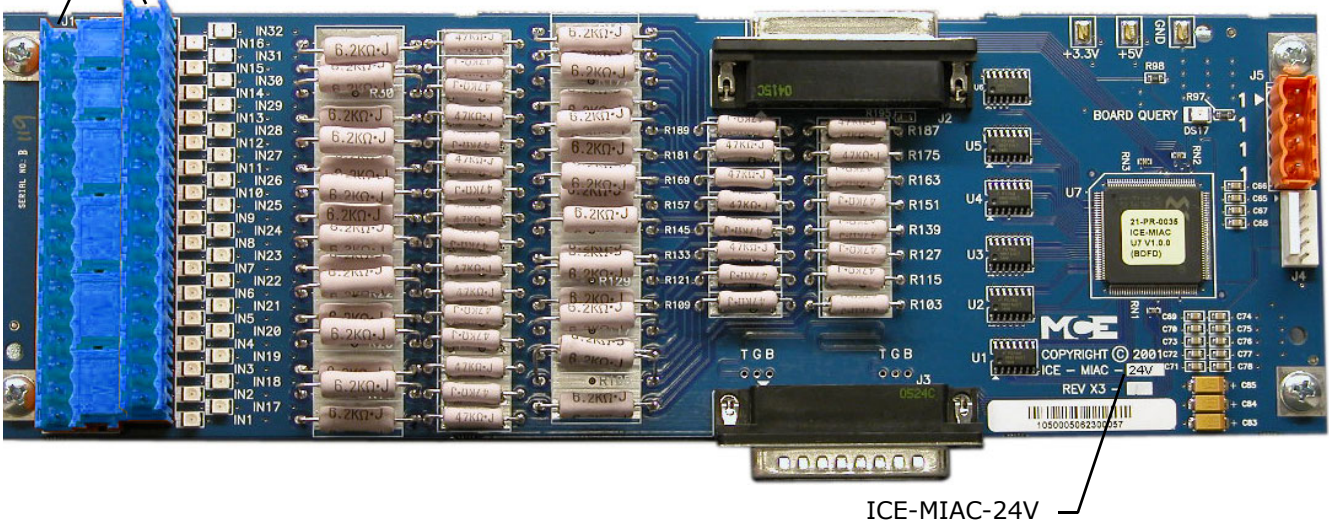


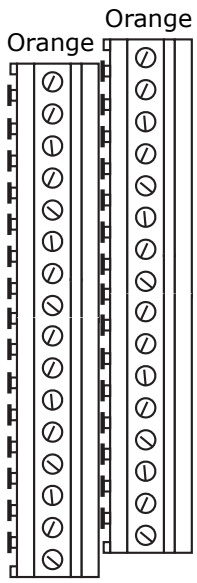
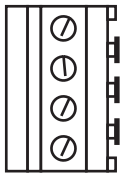
Figure 6.11 ICE-MIAC-24V Multiple Input AC/DC Board

Caution!
Blue terminals indicate low voltage (24V AC or DC) input.
Connecting 120VAC to these inputs will damage the board.



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Table 6.13 ICE-MIAC Board Connections

Connector	Signal	Connector	Signal
	Orange Terminals Inputs 1 - 32 120VAC = input active		1: Common

Typical Input Circuit

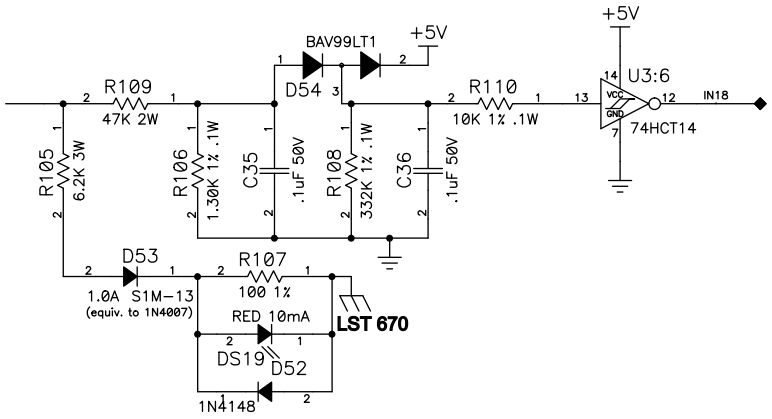
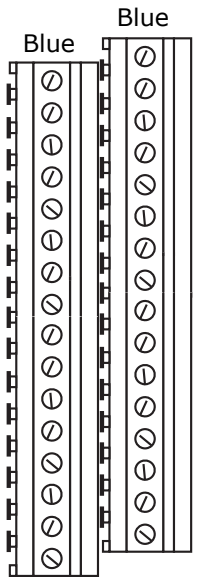
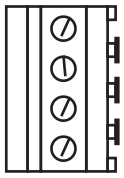
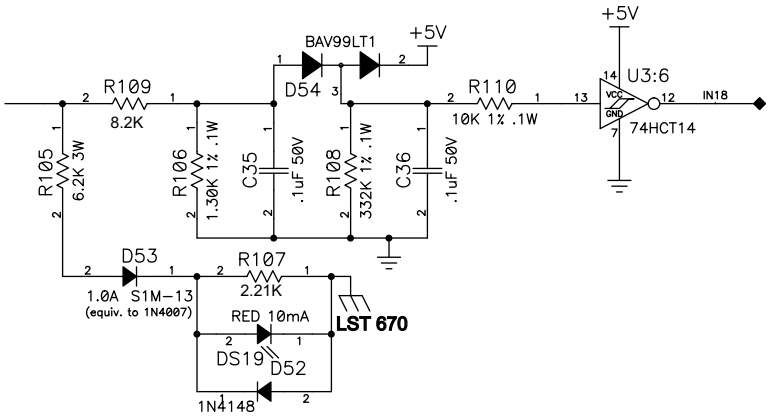


Table 6.14 ICE-MIAC-24V Board Connections

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



6

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

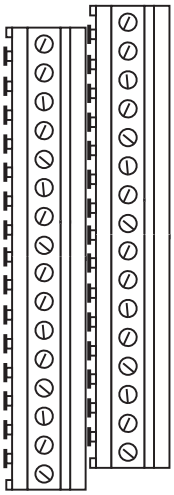
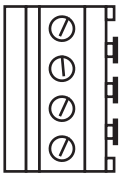
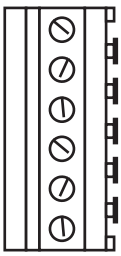
Connect outputs as shown in your job prints. Outputs may be configured (in specific groups) to provide either a path to ground or current to drive indicator lamps/LEDs.

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

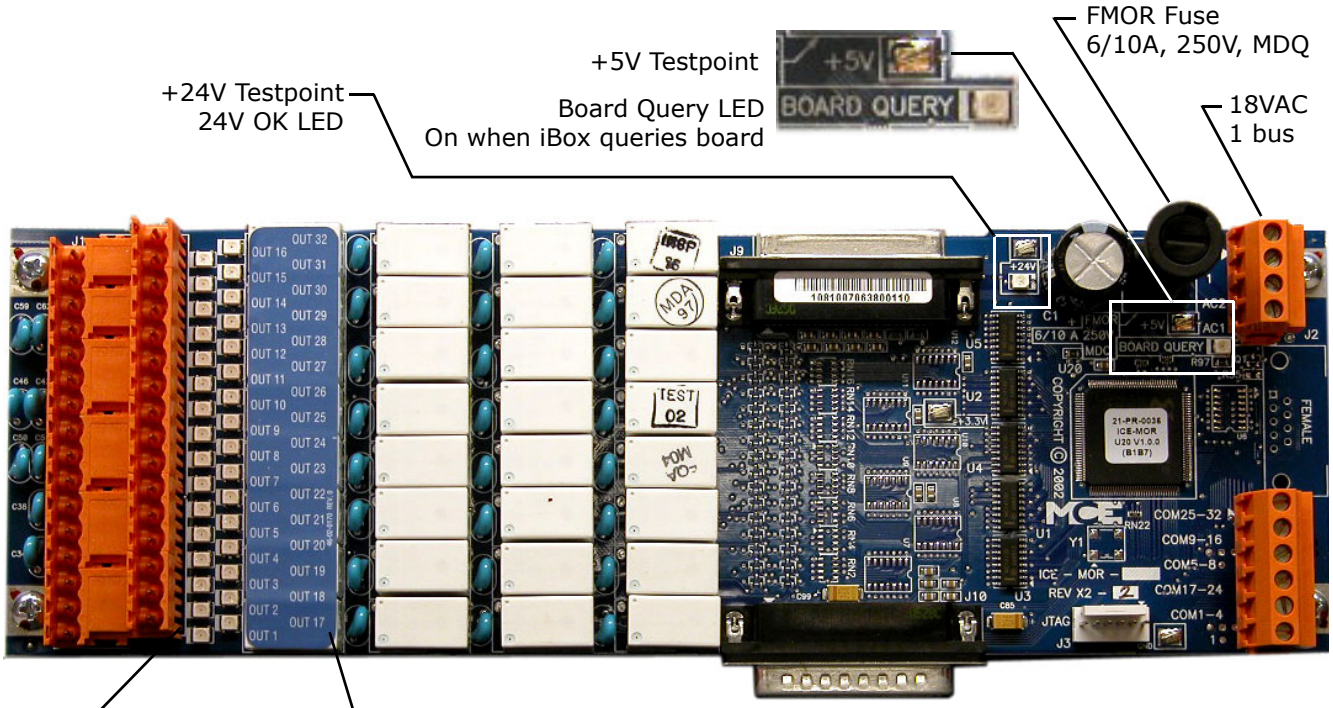
The commons for the groups are determined by the connections made to board connector J5. The appropriate connections are determined during the job survey. Each system is configured before shipment. You need only connect outputs as shown on the job prints.

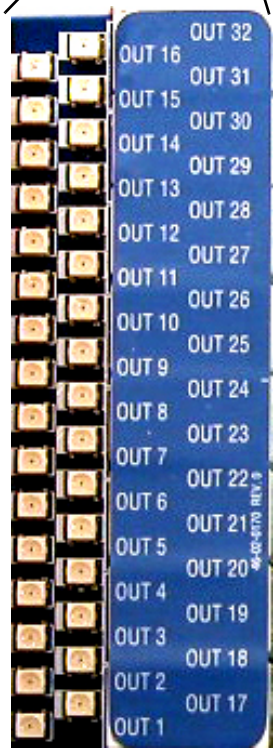
Table 6.15 ICE-MOR Board Connections

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 Common 25 - 32 1: Common

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Figure 6.12 ICE-MOR Board

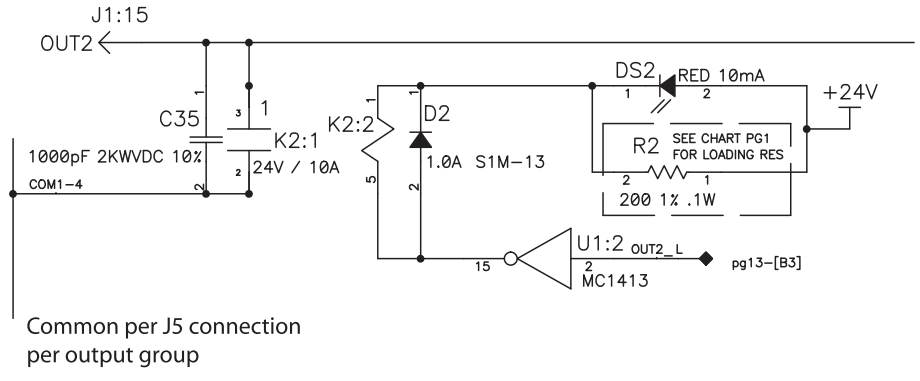




LED lights when corresponding output relay is active.

Active = Open
Active = Closed
Determined by iView settings according to user requirements.

Typical output circuit



Common per J5 connection per output group

ICE-RG-2 and ICE-RG-3 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-3 Rope Gripper Board

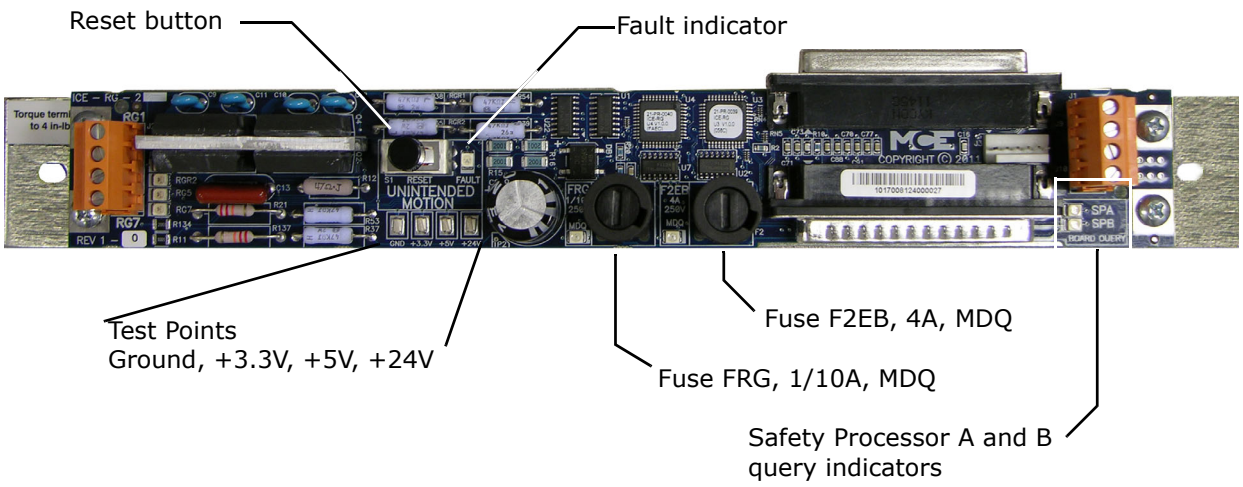


Figure 6.14 ICE-RG-3 Rope Gripper Board



Table 6.16 Rope Gripper Board Connections

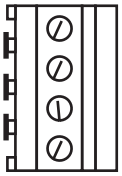
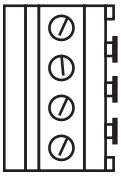
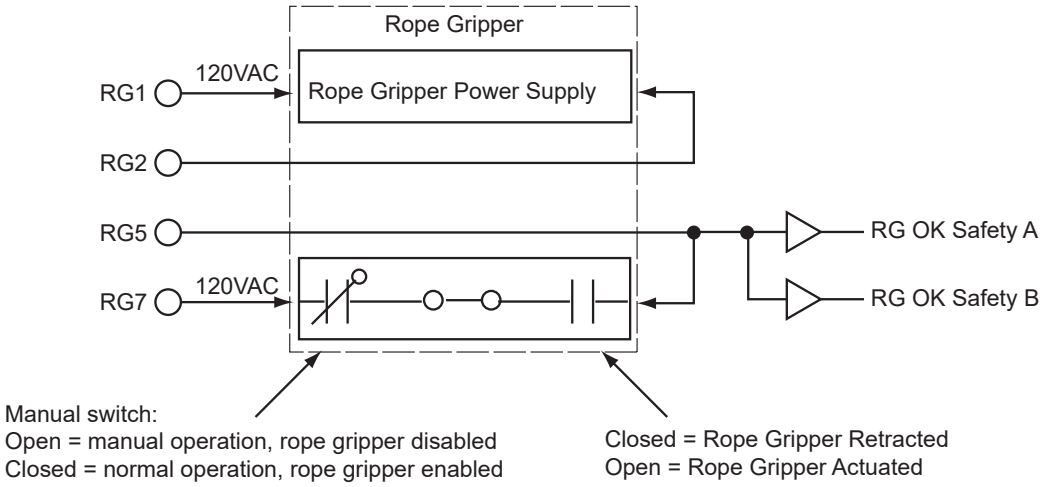
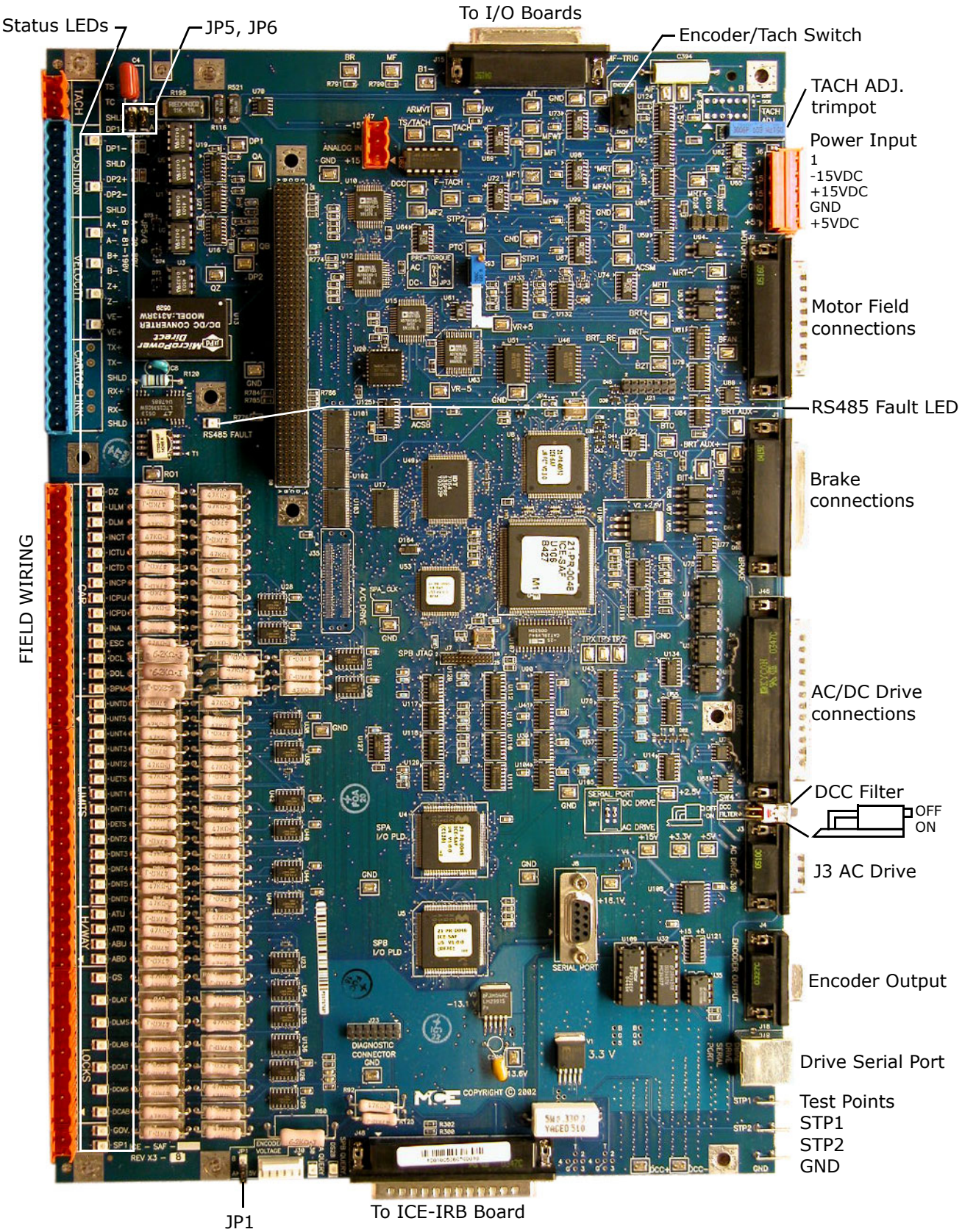
Connector	Signal		Connector	Signal
	RG1:120VAC to RG power supply			1: Common
	RG2: RG power supply return			24x2: 18VAC in
	RG5:120VAC=rope gripper OK 0V=rope gripper tripped			24: 18 VAC in
	RG7: 120VAC signal to rope gripper			2: 120VAC in

Figure 6.15 Simplified Rope Gripper Operation



ICE-SAF Safety Board



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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 pretorque 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).
	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 "Velocity Encoder Installation and Wiring " on page 2-10.
	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 3-3.
	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.

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 ADB) 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. It 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.

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

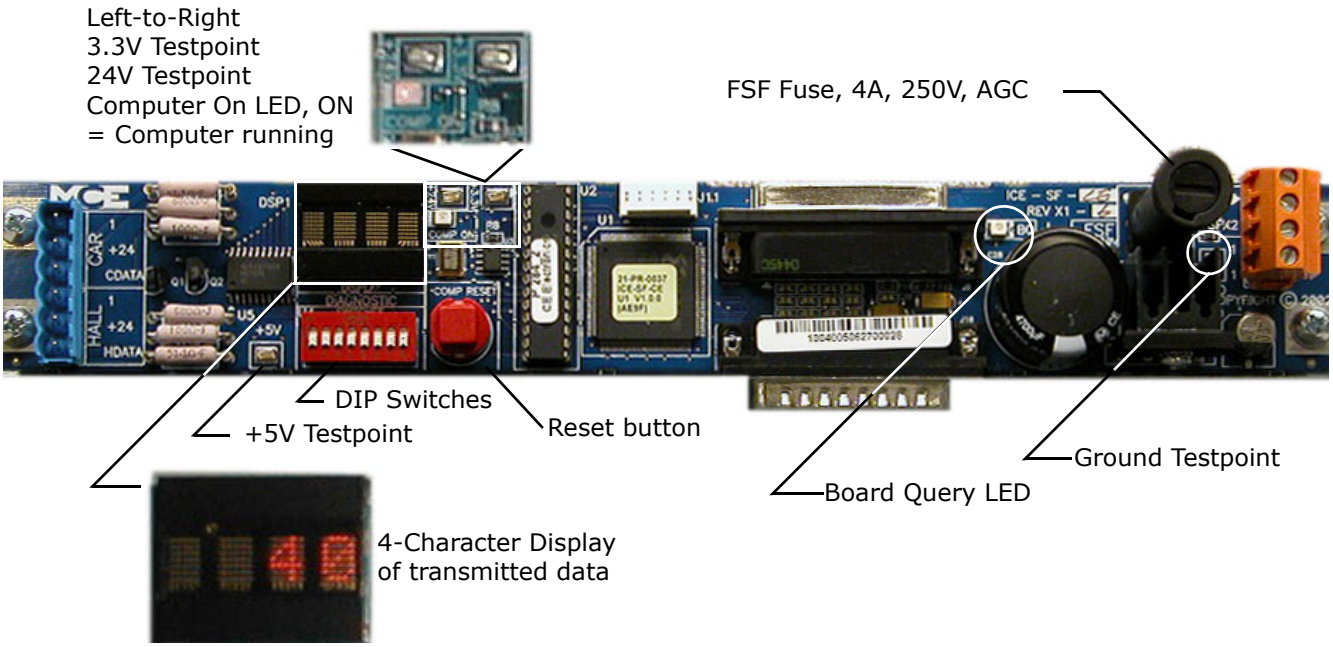
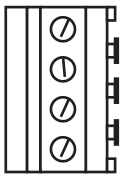


Table 6.20 Serial Fixture Board Connections

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 Driver Isolation Board

The SC-HCDA-ISO Serial Hall Call Driver 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 ICE-IMP boards incorporates the isolation circuitry, eliminating the need for the SC-HCDA-ISO. Please refer to “Serial Hall Call” on page 5-17 for additional information.

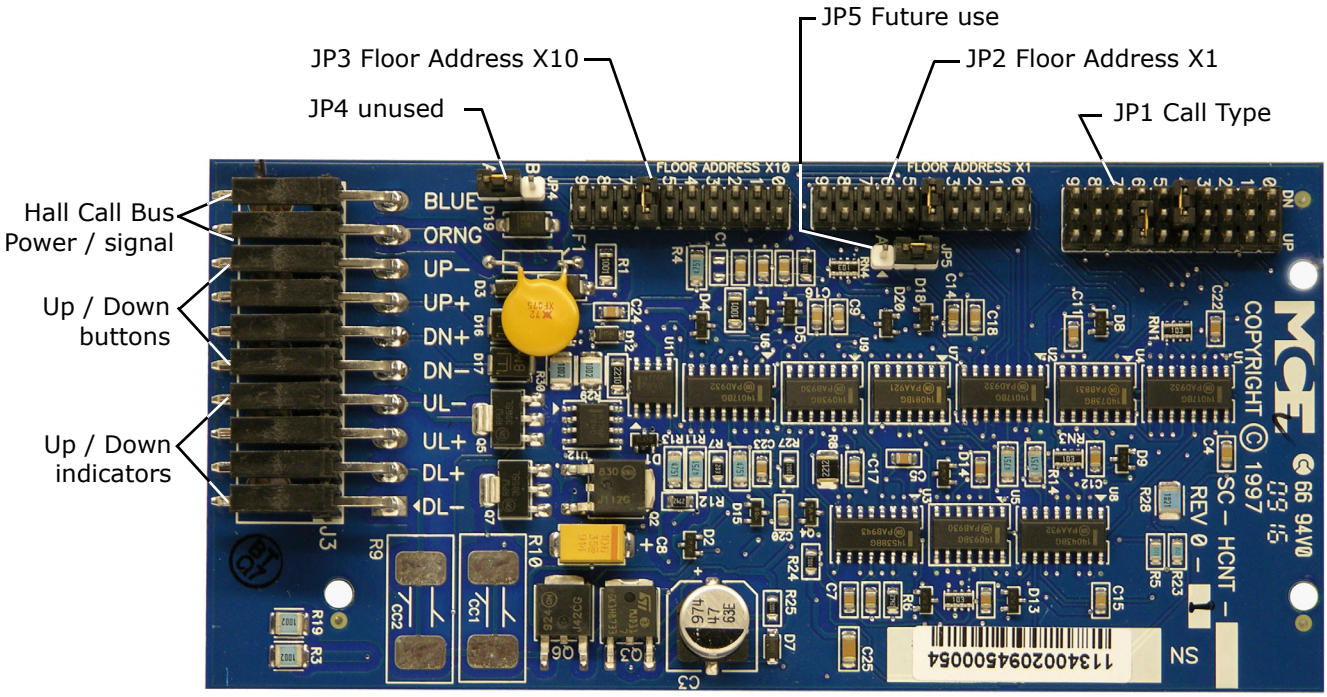
Figure 6.17 SC-HCDA-ISO Serial Hall Call Driver Isolation Board



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 enclosure. Please refer to “Hall Call Installation” on page 5-19. The board provides two outputs to power hall call lamps or LEDs, two inputs for hall call buttons, and jumpers to set 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 controller. The SC-ION board provides an interface between discrete signal level or relay-oriented field equipment and the serial communications bus used by iCentral for serial hall calls. 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 necessary. 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

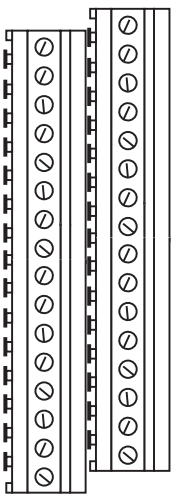
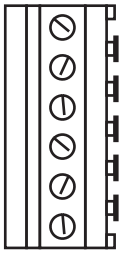
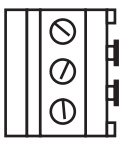
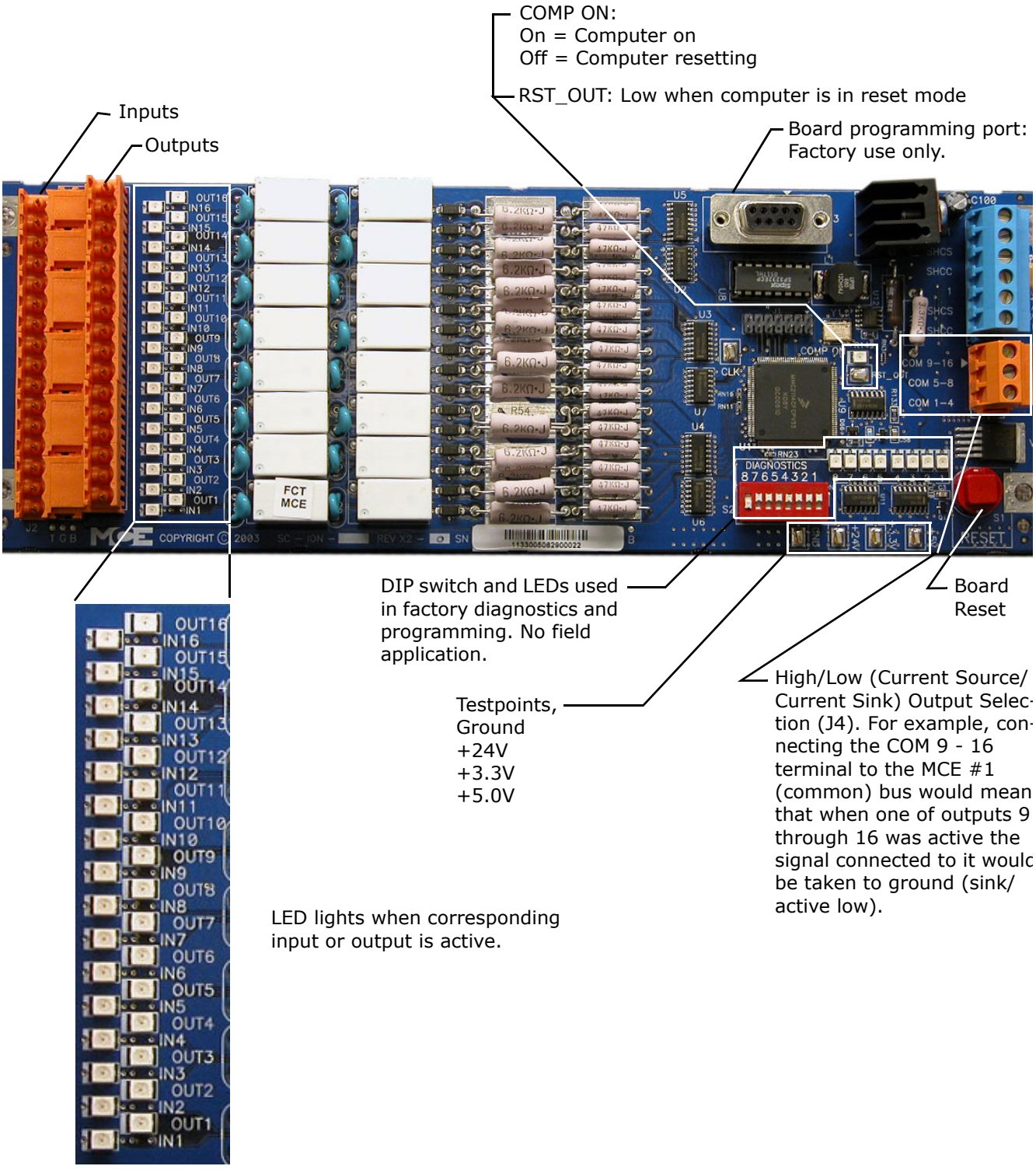
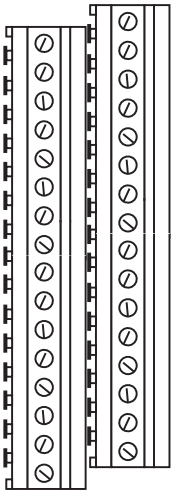
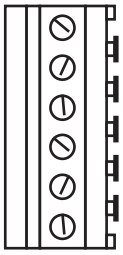
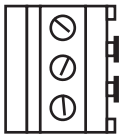
Connector	Signal		Connector	Signal
	In 1-16:117VAC when active			1: Common
	Out 1-16: Determined by common connection			SHCS: Serial signal, +/-15V bit stream
				SHCC: Serial signal, common
				1: Common
				SHCS: Serial signal, +/- 15V bit stream
				SHCC: Serial signal, common
				- COM 9-16: Connect 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.

Figure 6.19 SC-ION Serial Control I/O Board



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Table 6.22 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.



iBox Front Panel Controls

About the iBox Front Panel

System status indicator LEDs and function control switches are accessible 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).

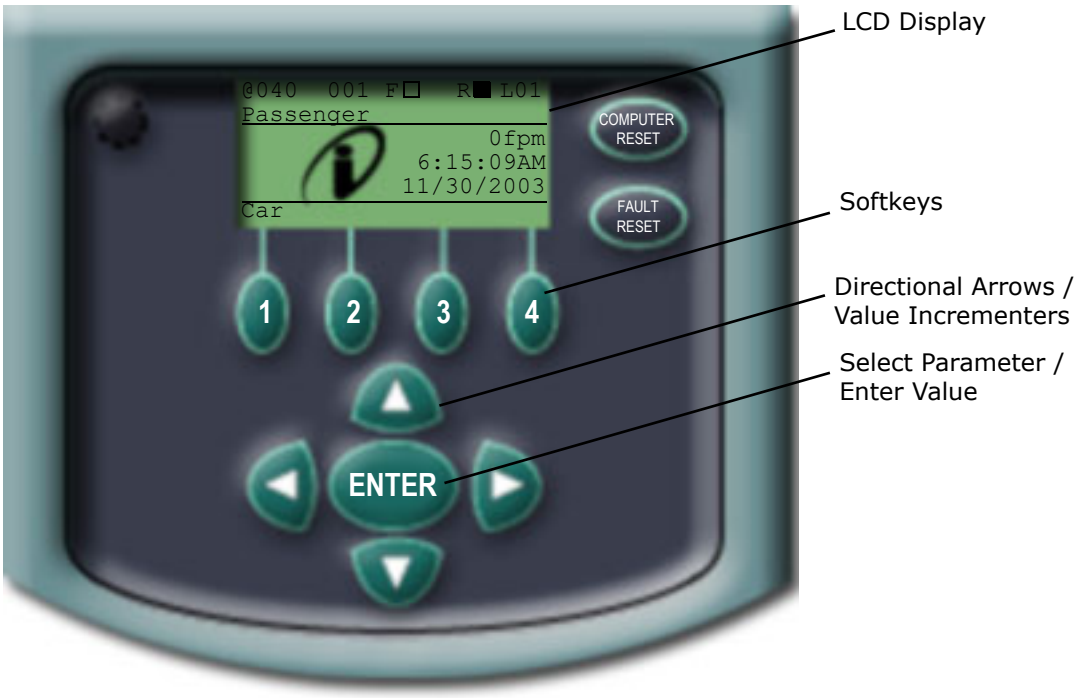
LCD Display and Keypad

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



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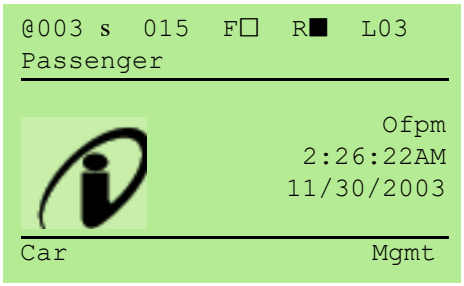
Keypad Controls

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 "snap-shot" for the car associated with the controller. In our example:



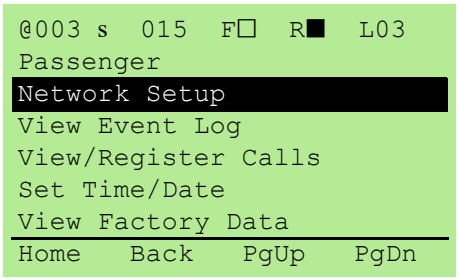
- @ (door zone) —
  - @: in door zone
  - —: below door zone
  - +: above door zone
- 003 — current floor
- s or t (direction arrows)
- 015 — next floor
- F (front doors) —
  - ☐ Open
  - ■ Closed
  - ▥ Opening/Closing
  - ⊠ Invalid door position
- R (rear doors) —
  - ☐ Open
  - ■ Closed
  - ▥ Opening/Closing
  - ⊠ 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.

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

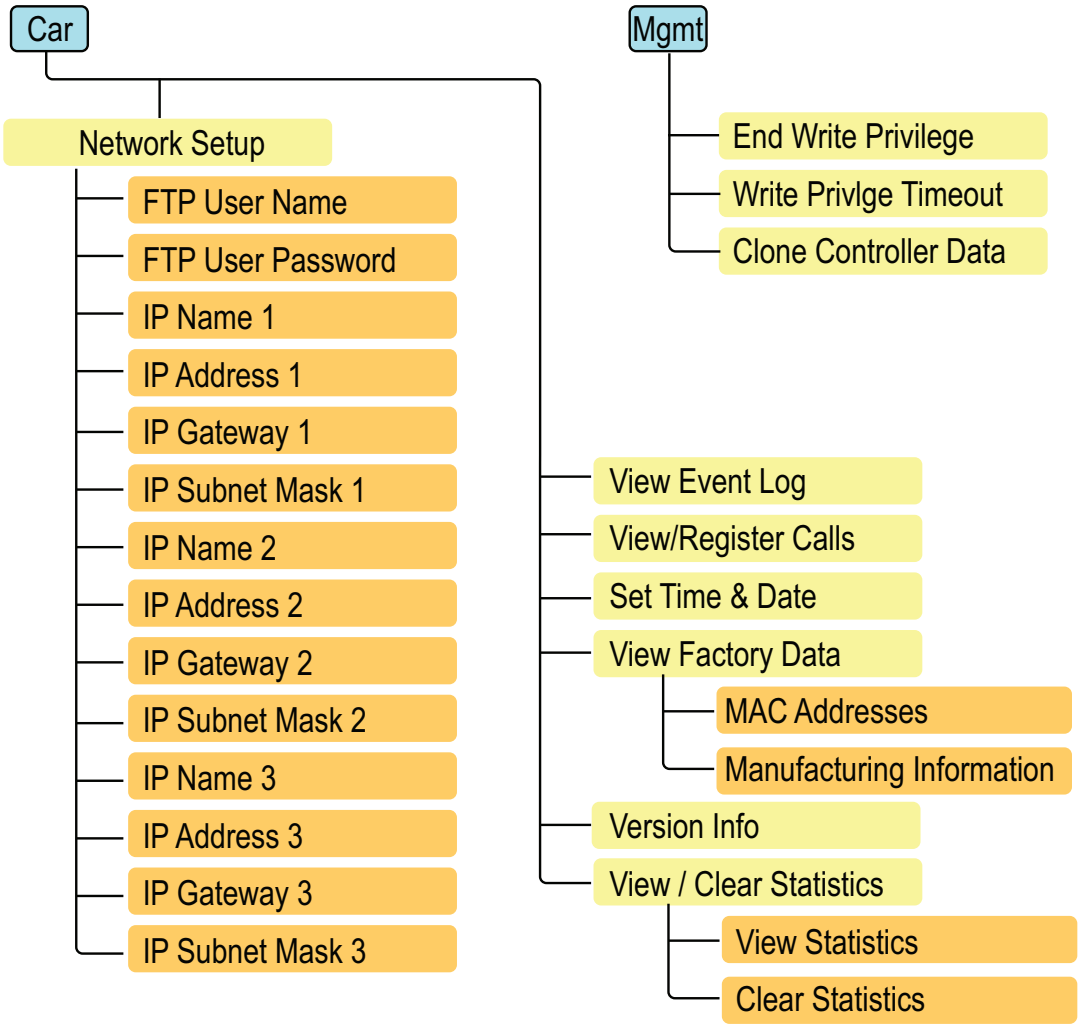


Table 7.1 Car Menu Parameters

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 for immediate access. Network setup parameters allow the IP information to be set for each of the three ports. Additionally, an FTP User Name and Password must be set here without which the File Transfer Protocol server may not be accessed.
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 *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 data, including event name.***
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 Privilege 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.

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.

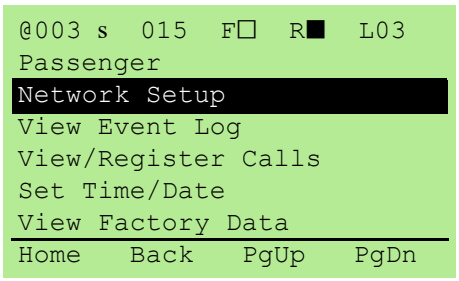
You should not need to change the factory-set IP information. If you are having problems connecting to an iBox Ethernet port, refer to the following topic to verify and, if necessary, set IP addresses.



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.

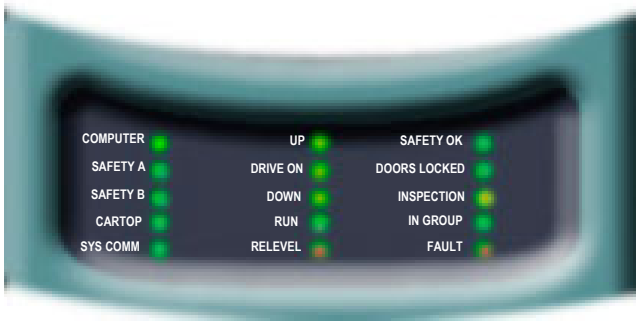
System Status Display

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.
- Cartop: 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.

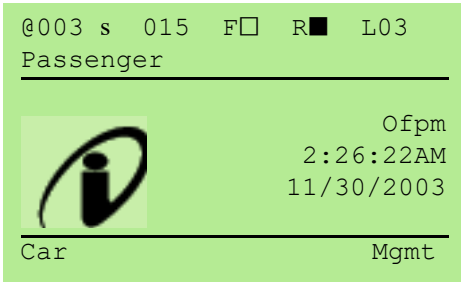


Note

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.

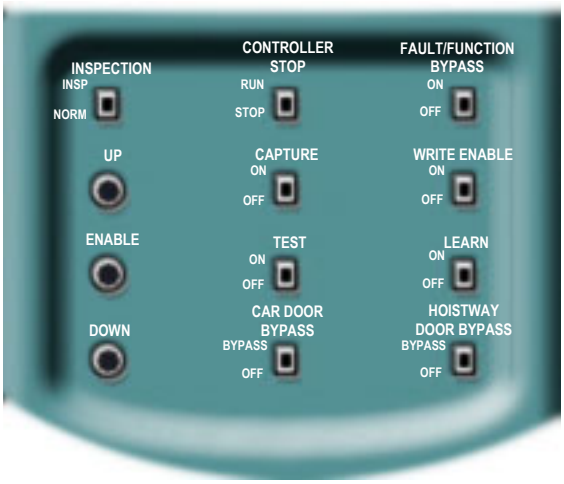


System Control Switches

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.

- 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.



Using iView

About iView

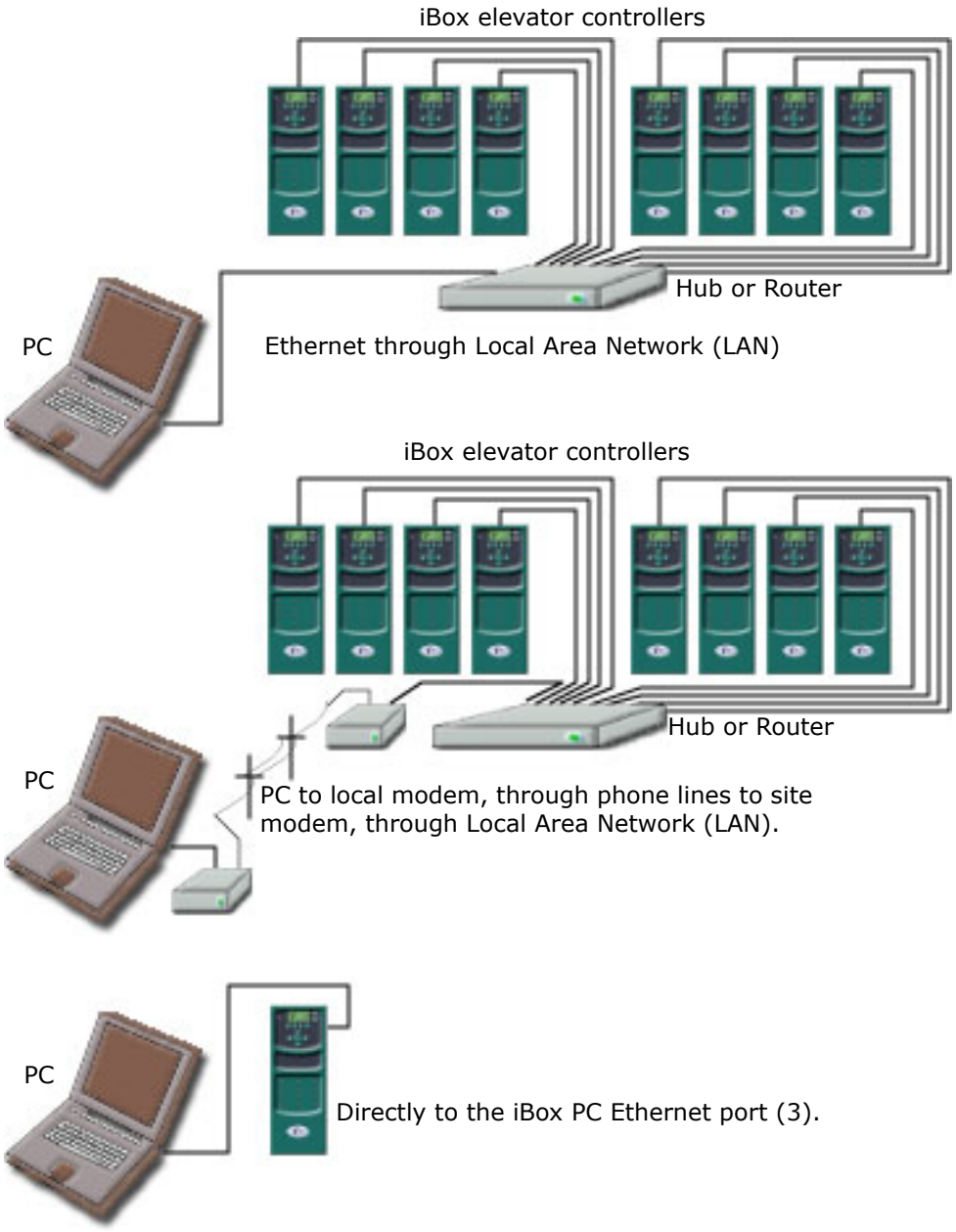
This section provides working instructions for the iView application. iView on-line Help provides detailed information about settings and is available anytime you are working in the iView application. This section contains:

- 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)

How iView Works

iView communicates with a controller through an Ethernet connection and loads operating parameters stored on the controller into iView screens. The user can view any controller parameter and can edit/adjust any user-configurable parameter, then send changed parameters to the controller.

A single PC can be used to administer multiple elevators or even multiple groups of elevators. Elevator adjusters who service multiple sites will find it convenient to connect directly to a controller, then easily upload proven settings. The diagram below illustrates just a few of the ways Ethernet connectivity allows iView to communicate with elevator controllers.



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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 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 IP address (depends on the type of connection to be used). Please refer to "Setting the iView PC IP Address" on page 8-4.
3. Creating *Connections* in iView. For a direct connection see "Creating a Direct Connection in iView" on page 8-8. For LAN connections see "Creating a New LAN Connection" on page 8-12.

Installing iView

Minimum requirements for a free-standing (not in iCentral) iView PC are:

- Sufficient free hard drive space for installation
- Minimum 2GB RAM
- Windows 10 operating system
- USB drive
- 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 in the computer USB drive.
2. Launch the USB.
3. Double-click the Read Me First (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.



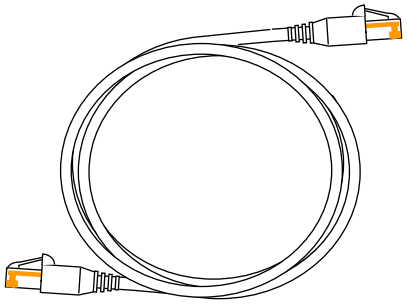
1. The instructions in this manual are for Windows 10.

Setting the iView PC IP Address

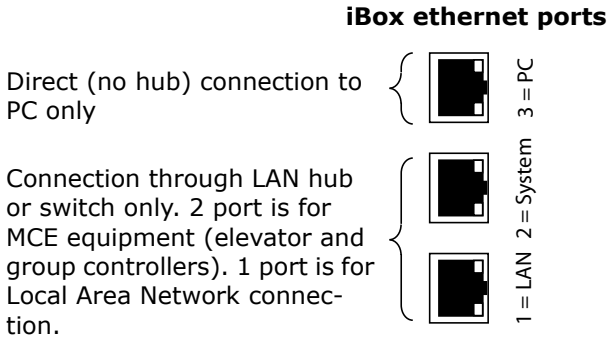
There are two ways to connect the iView PC to an iController iBox:

- 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



Typical Ethernet CAT-5 shielded cable. RJ45 connectors at each end.



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 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 9-12 for more detail. Also please see "System, LAN, & 3=PC TCP/IP Addresses" on page 8-5.

Note

If you are working with IP addresses on the **iCentral PC** that runs both iCue and iView on a single platform: Please refer to "iControl Ethernet Overview" on page 5-4.

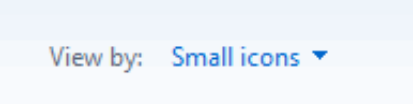
Table 8.1 System, LAN, & 3=PC TCP/IP Addresses

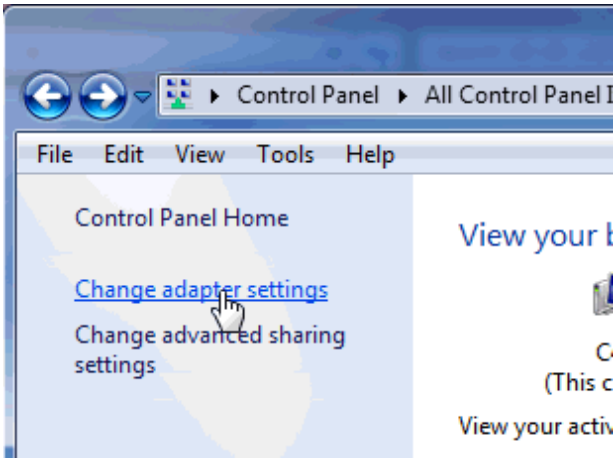
Hub	Group	Group IP, Primary & Backup	Car ID	Car IP	System/Serial Hall Call Bus 1 - 4	iView PC
System	all	192.168.**192**.201-202	1-20	192.168.**192**.001-020	192.168.192.**211-214**	
LAN	A	192.168.**191**.201-202	1-20	192.168.**191**.001-020		192.168.191.101-200*
LAN	B	192.168.**191**.203-204	1-20	192.168.**191**.021-040		
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.

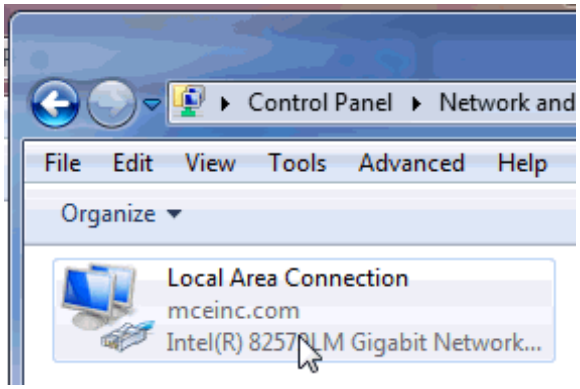
To set the iView PC IP Address:

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).

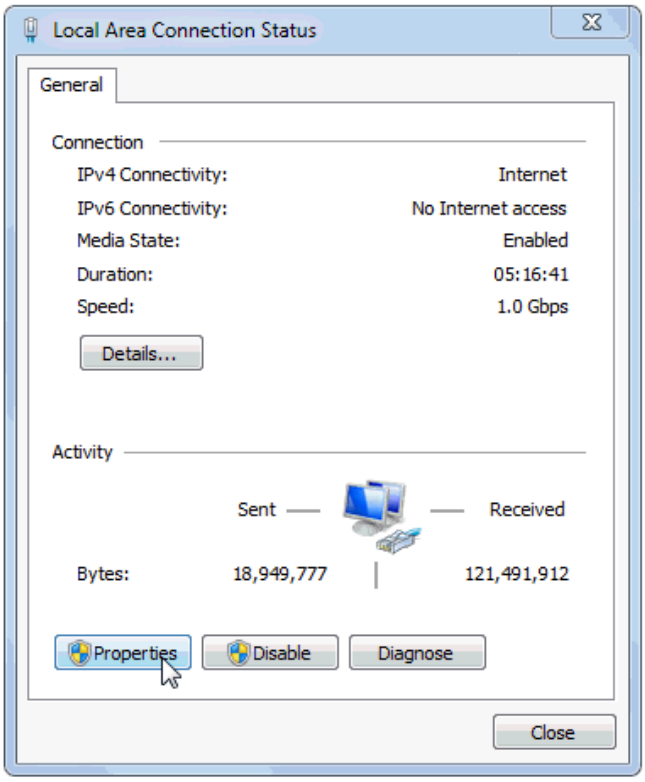




3. Double click *Network and Sharing Center* to open the Network and Internet Connections dialog. Click *Change Adapter Settings*.
4. Double-click the *Local Area Connection icon* to open the Local Area Connection Status dialog.

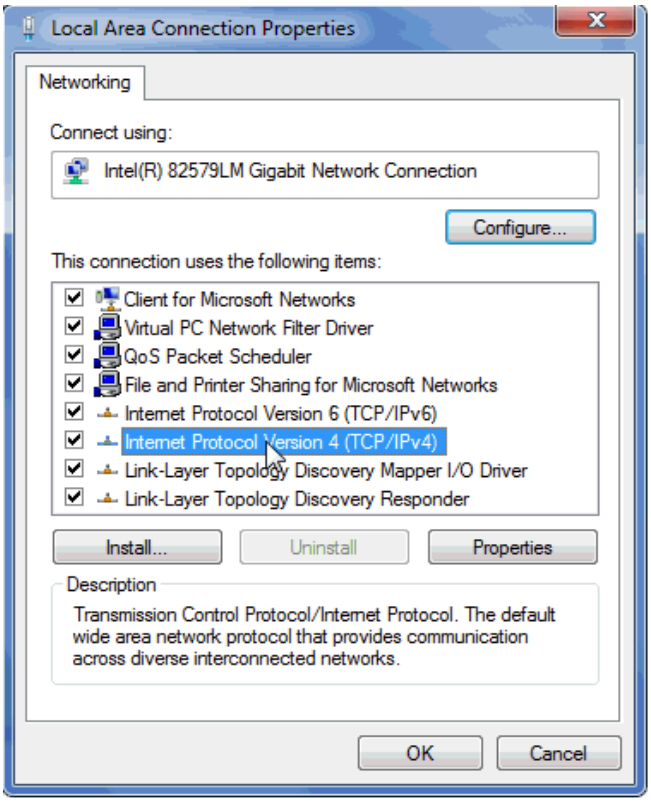


5. Click *Properties* to open the Local Area Connection Properties dialog.

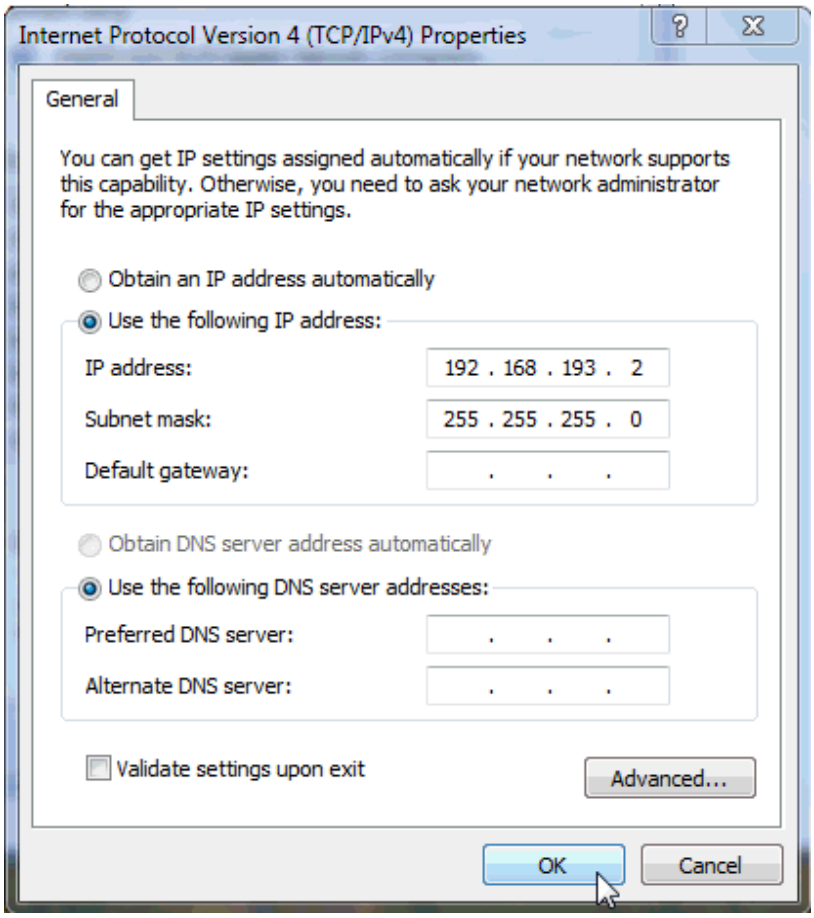


6. In the Local Area Connection Properties dialog, select *Internet Protocol Version 4 (TCP/IPv4)*.

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



8. 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
9. For a LAN connection, the IP addresses available are 192.168.191.101 - 200. The first iView PC is typically set to 192.168.191.101. Each PC connected to the network most have a unique address.
10. Set the Subnet Mask to 255.255.255.0.
11. Set the Gateway to 192.168.191.254 for a LAN (#1 port) connection. Otherwise, leave it blank.
12. Click OK and follow any instructions to save the changes you made.



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

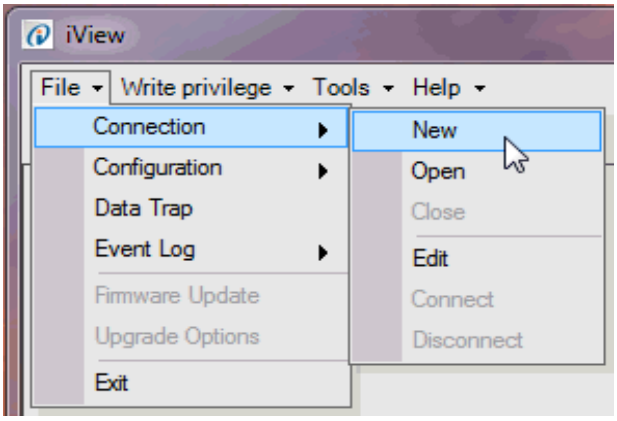
It is important that a free-standing (iView ONLY PC not running iCue dispatching) PC have only one IP address assigned. Click the *Advanced* button and verify that the PC is configured for only a single IP Address (192.168.193.2 for a direct connection and an unused address like 192.168.191.101 - 200 for a LAN connection).

Creating a Direct Connection in iView

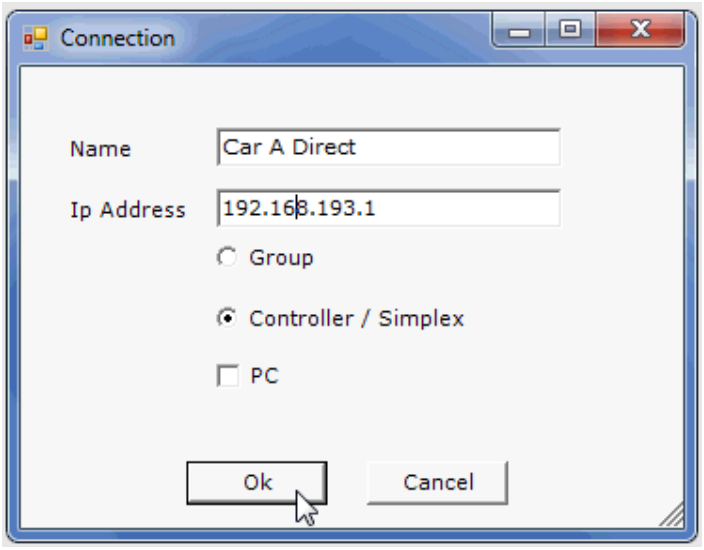
Once you have set your computer TCP/IP as described previously, you need to create a connection in iView.

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.

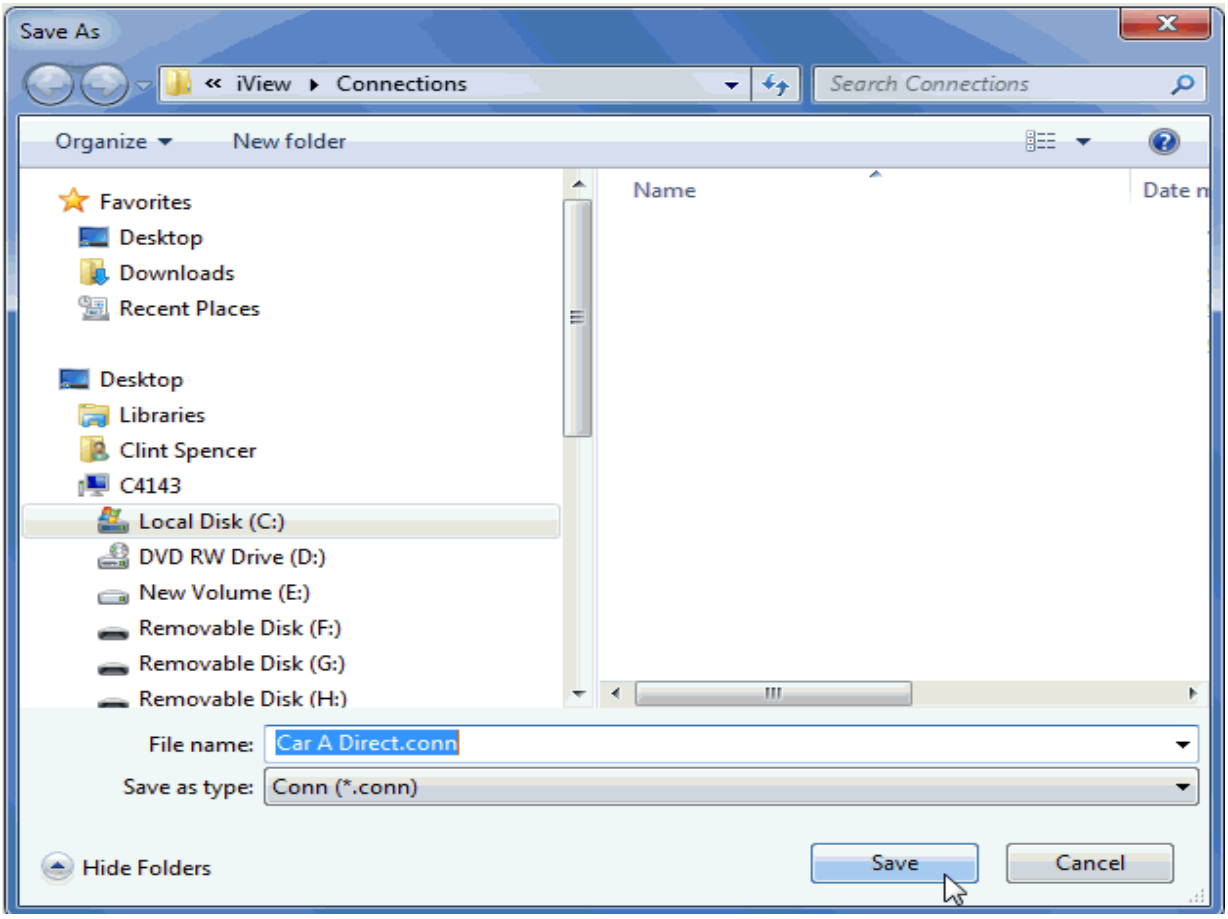




4. Type in a name for the connection.
5. Enter the direct connection IP Address for the iBox (192.168.193.1).
6. Select *Controller/Simplex*.
7. Click *OK*. The Save As dialog opens.

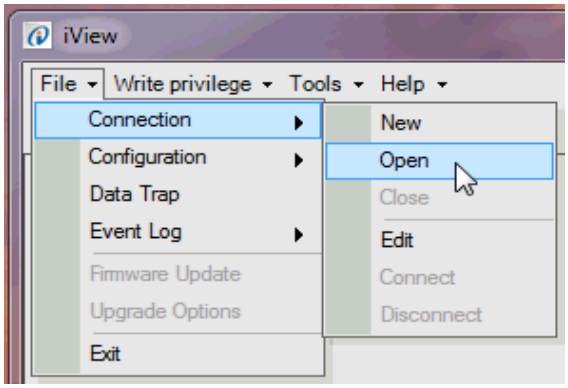


8. Enter a *File name* for this connection in the Save As dialog. When creating direct connections, it is a good practice to name them clearly so they are easy to distinguish (i.e., “CarA Direct”).
9. The suggested (default) location for connections is the *Connections* folder (My Documents > Motion 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.

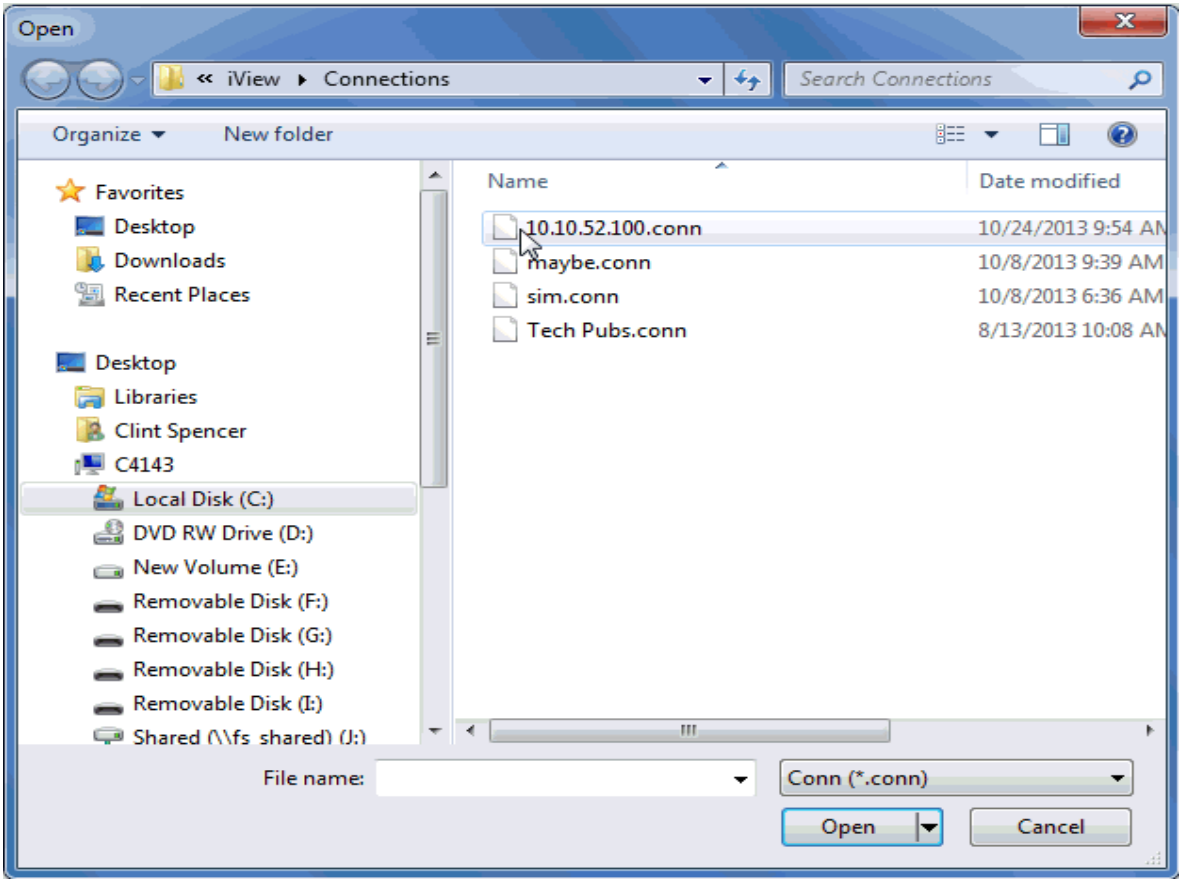


Connecting to the iBox Once the connection is created and saved, you are ready to connect.

1. Click the *Open Connection* button 
2. or click *File* on the menu bar, select *Connection* and click *Open*. The Open dialog appears.

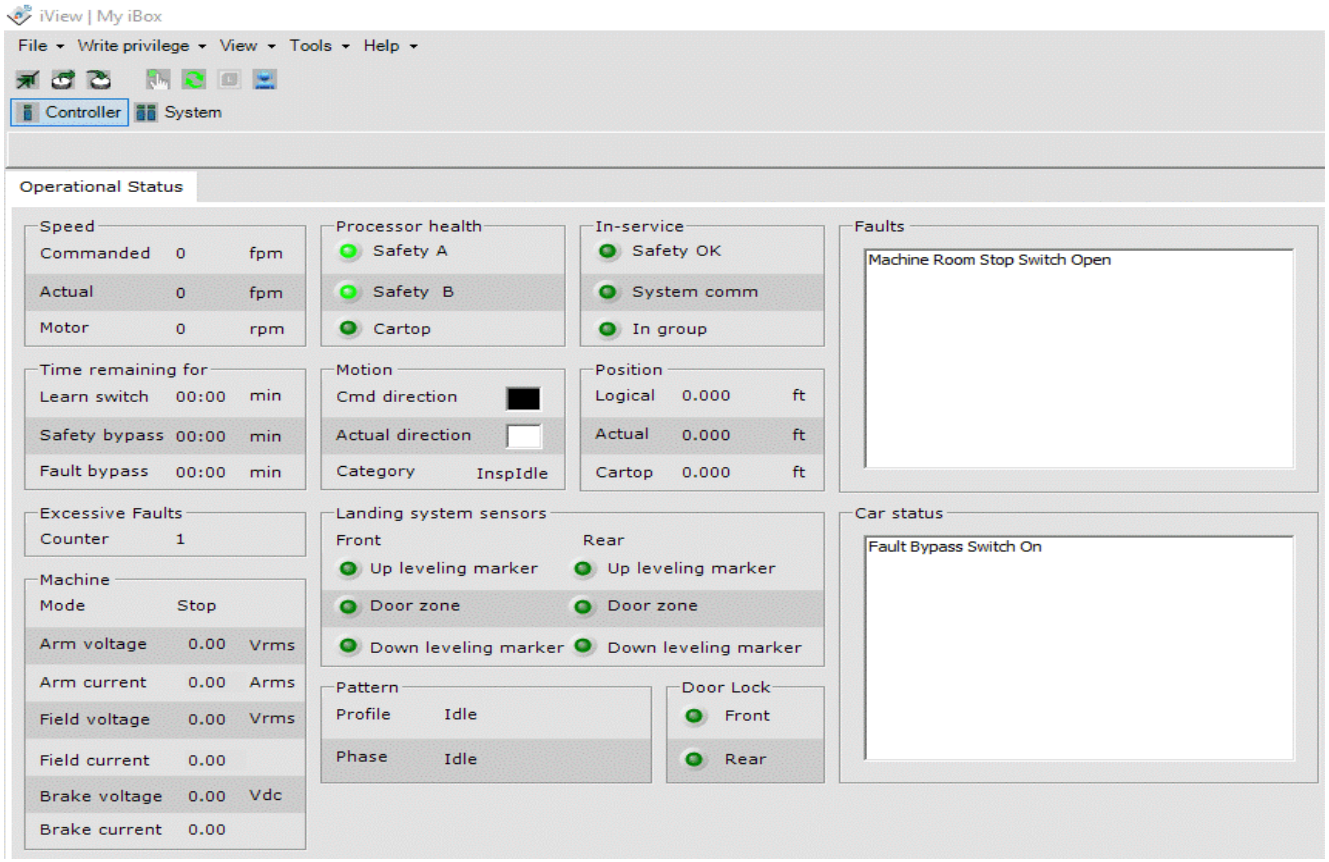


3. To connect to a controller, double click the desired connection or select the connection and click Open.



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

LAN Connections

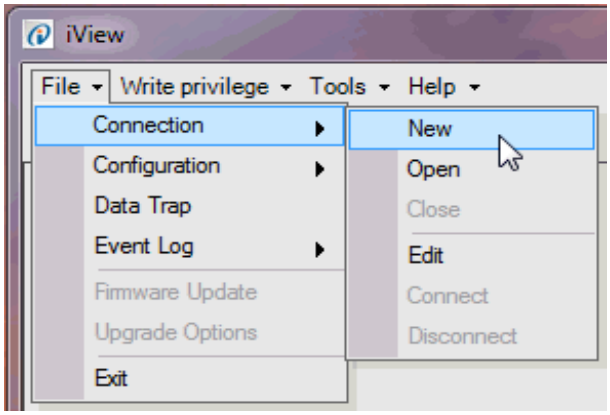
In most installations, there will be at least one iView PC continuously connected to the Local Area Network on which the iBox controllers reside. LAN TCP/IP addresses and associated settings for any hubs, routers, or other equipment involved are resolved when network equipment is installed. In these instances, the iView PC is already connected through the network to the controllers.

Creating a New LAN Connection

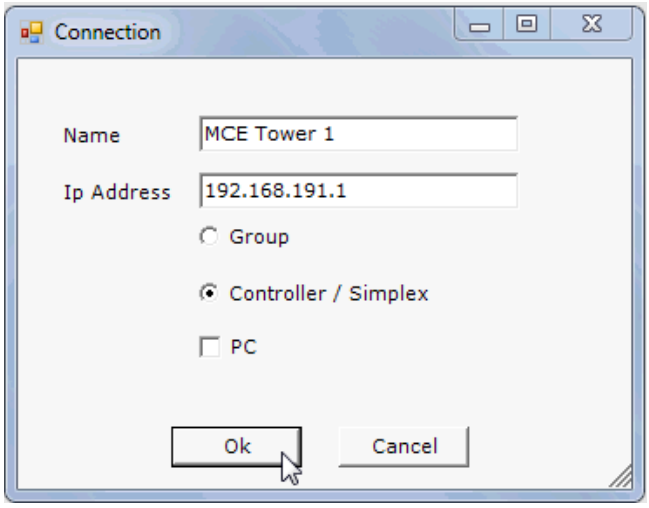
A controller connection must be created before it appears in the iView Connections folder. This is typically completed at the factory, before the system is shipped (if your PC was purchased through MCE). Creating a new LAN connection is similar to creating a new Direct connection. To create a LAN connection:

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.

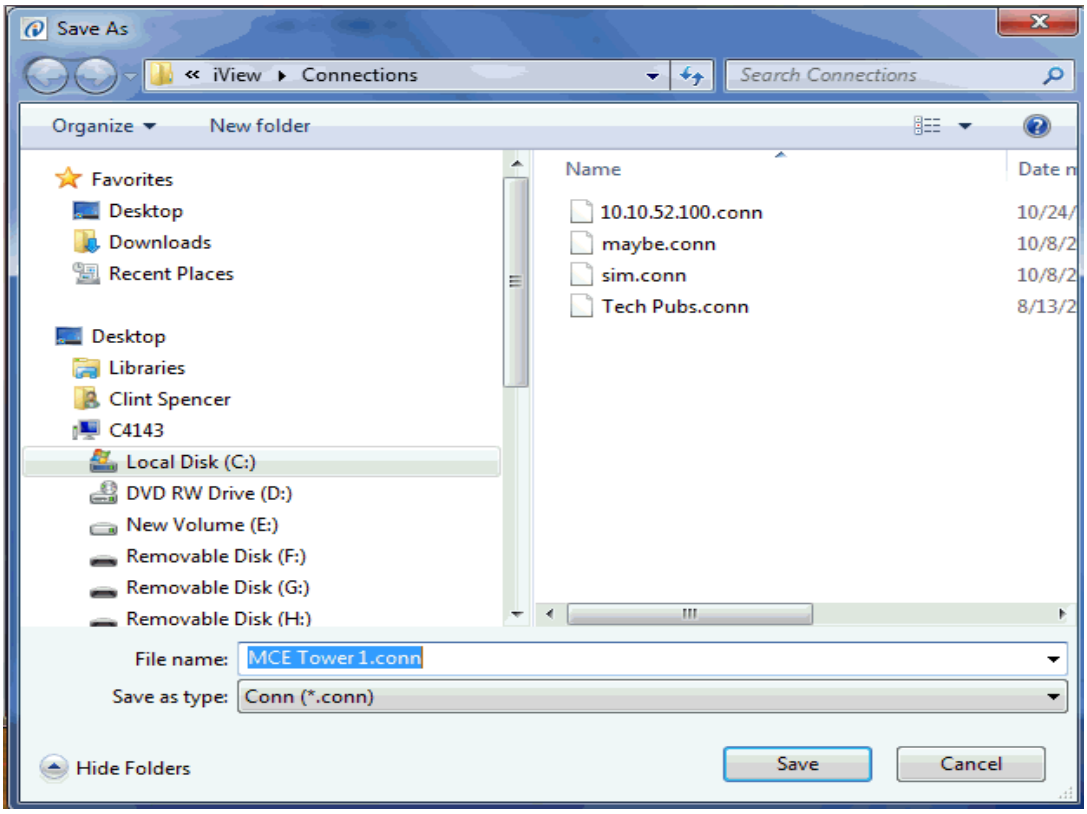




4. Type in a name for the connection.
5. Enter the Ip Address, the controllers #1 (LAN) Ethernet port address. The site network administrator should have this information for you. Please refer to “System, LAN, & 3=PC TCP/IP Addresses” on page 8-5 for the factory default settings.
6. Select *Controller/Simplex*.
7. Click *OK*. The Save As dialog opens.



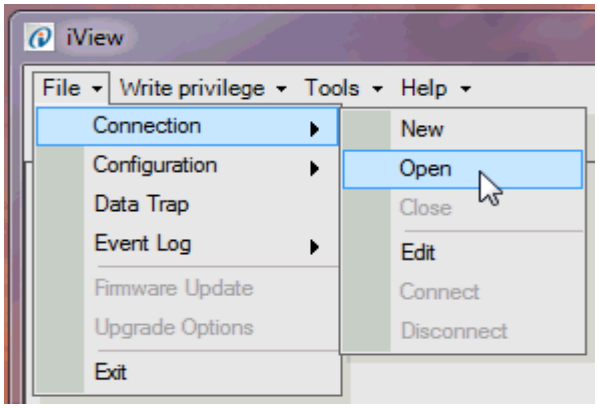
8. Enter a *File name* for this connection in the Save As dialog (the Connection automatically suggested).
9. The suggested (default) location for connections is the *Connections* folder (My Documents > Motion Control Engineering > iView > Connections). You may choose another location using standard 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.



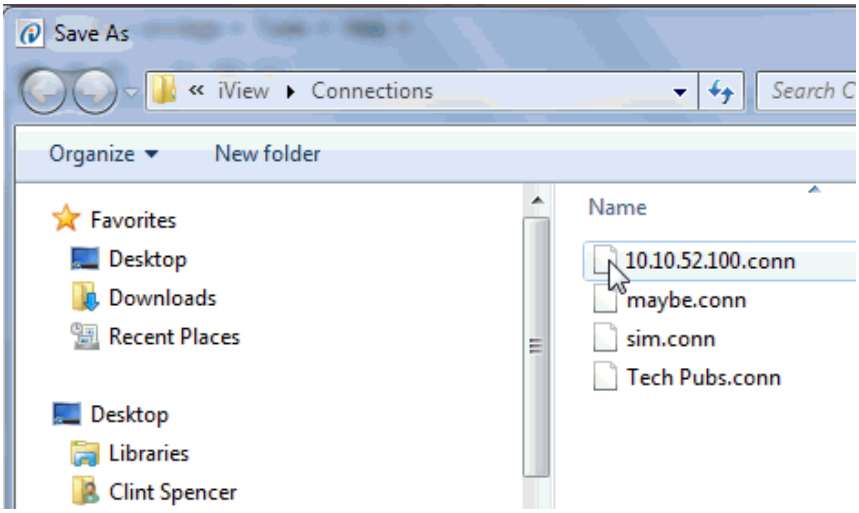
Connecting to the iBox

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).

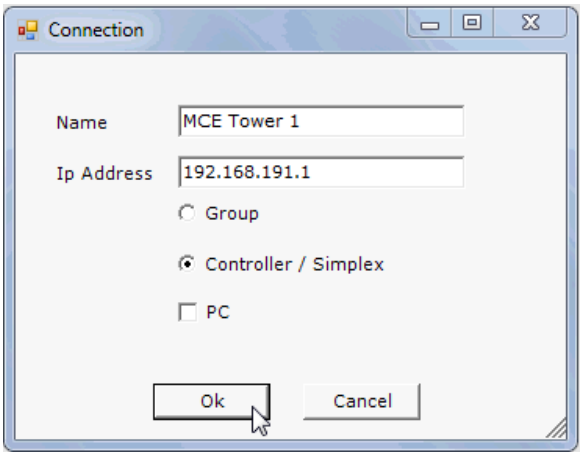
Note

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**.

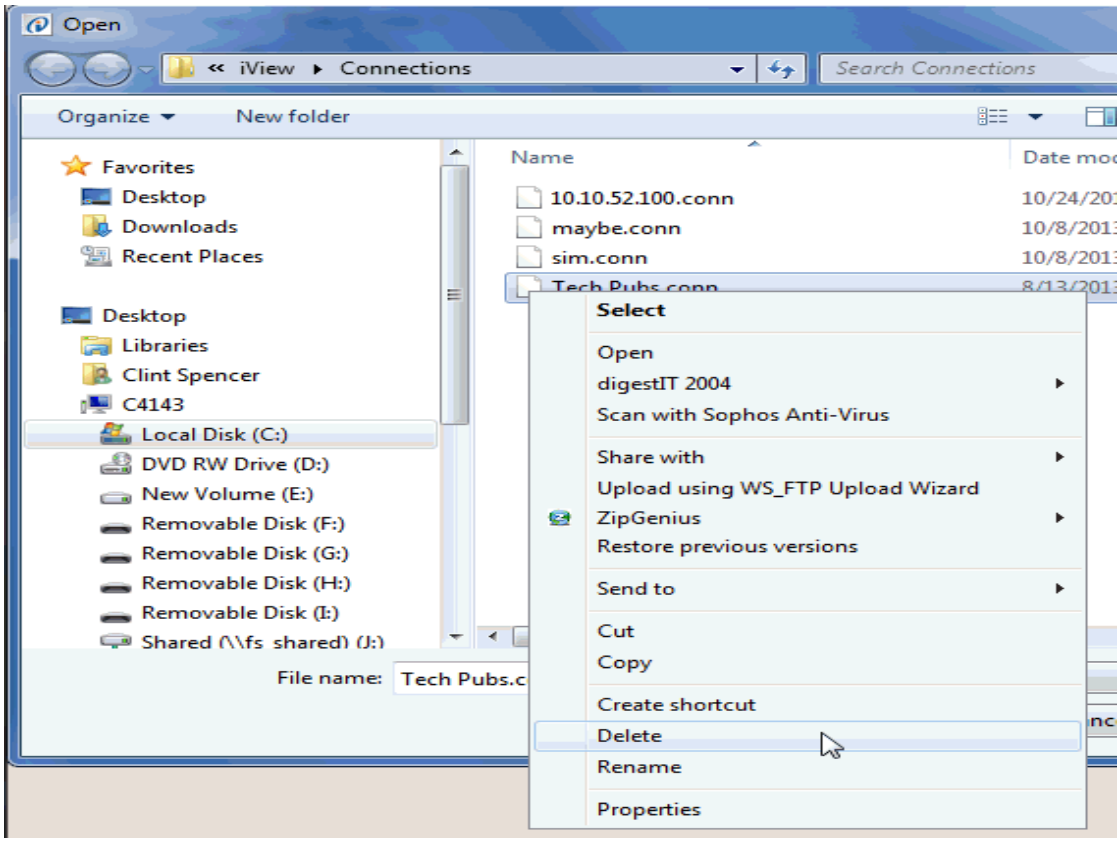


8

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.

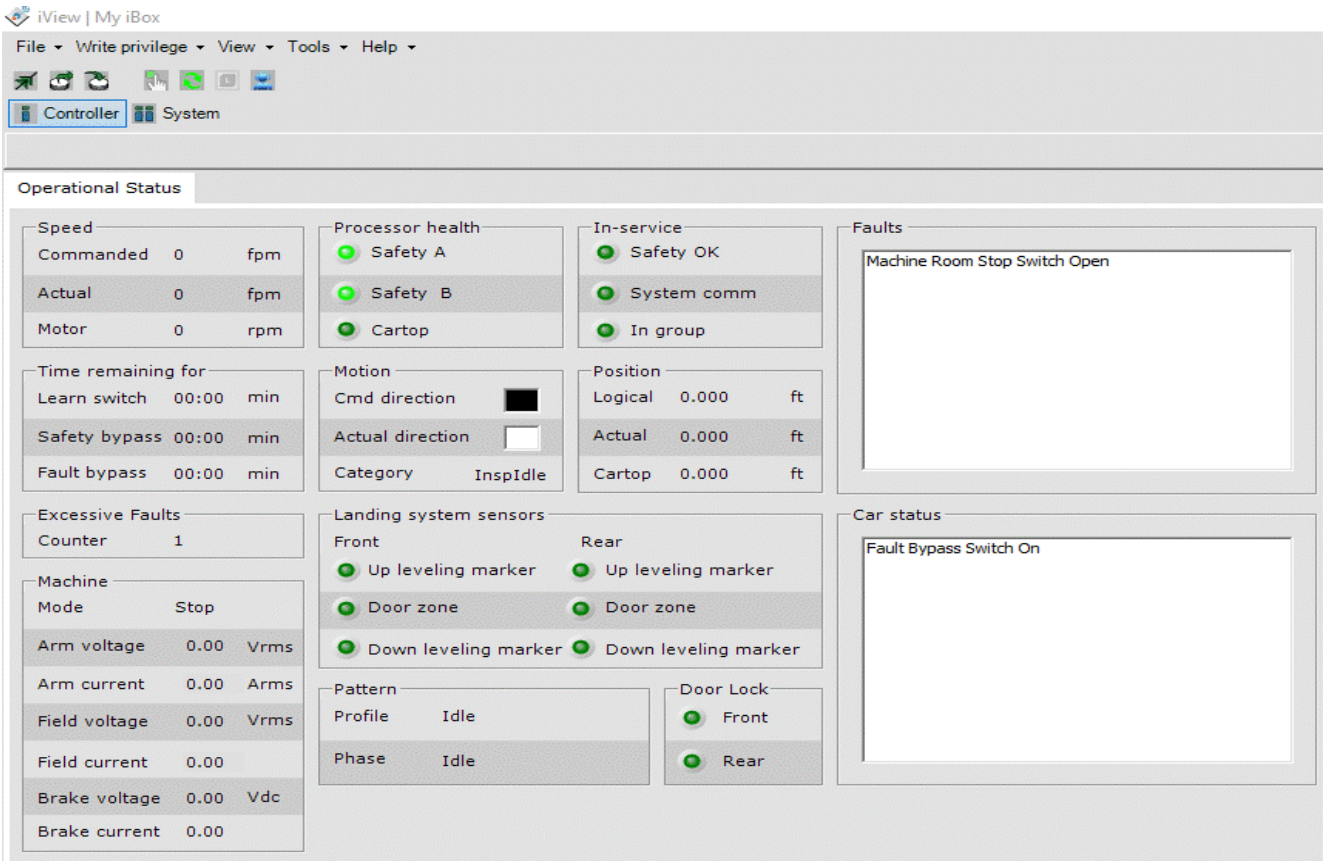
Working Online

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.

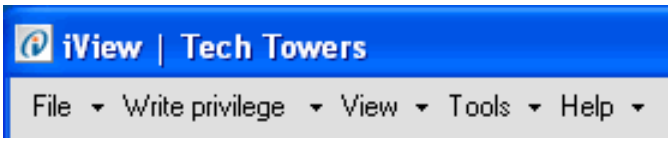


Table 8.2 iView Menu Bar Options

Menu	Option	Description
File	Connection	Create a new direct connection (page 8-8) 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).
Help	iView Help	View the on-line help for the iView application (page 8-24).
	About iView	iView and controller firmware version numbers.

iView Button Bar

Table 9.2 lists the locations where the functions of the buttons are explained.

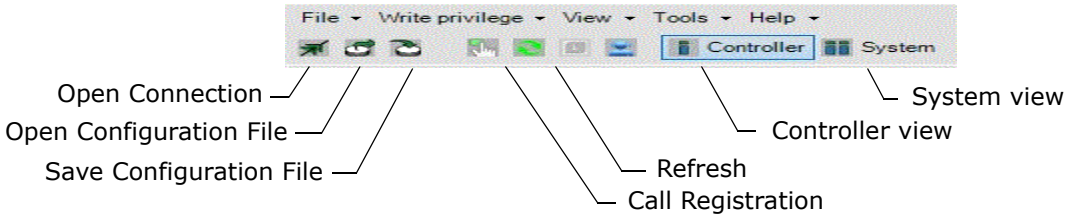
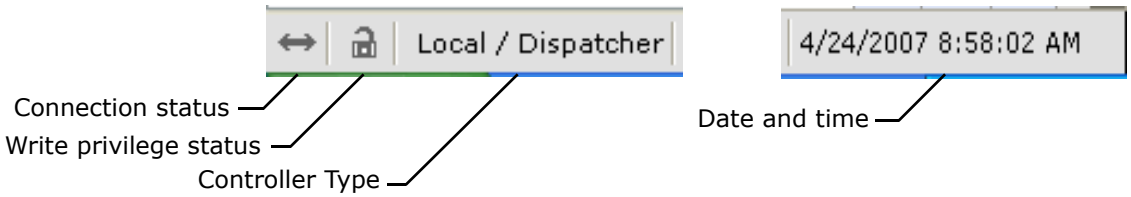


Table 8.3 Buttons and Dialogs

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
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.

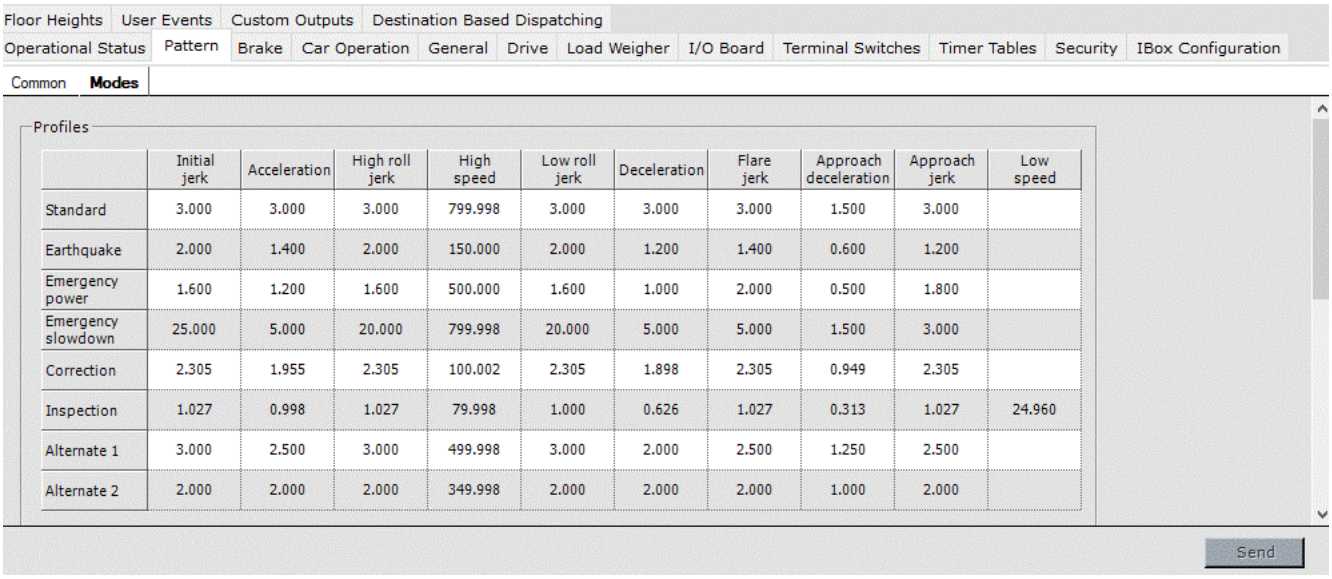
Controller Type Indicates the type of controller to which iView is connected. For a description of each type. The controller types include:

- 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:

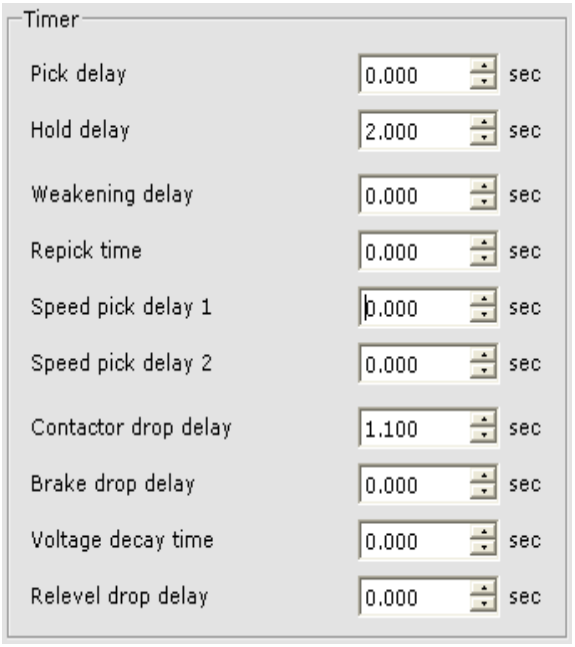
1. Click the desired tab on the View > Configuration menu.
2. To display all of the configuration tabs (this takes a few seconds), click View > Layouts > Configuration. You can then click the desired tab (Configuration layout shown with Pattern/Modes tab selected).



	Initial jerk	Acceleration	High roll jerk	High speed	Low roll jerk	Deceleration	Flare jerk	Approach deceleration	Approach jerk	Low speed
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	24.960
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	

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.

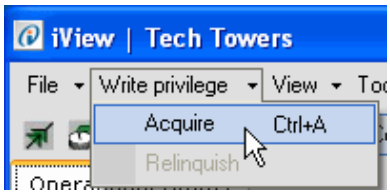
To adjust a particular setting, Pick delay for example, you may either drag the cursor over the existing value and type in a new value or you may use the associated control (up/down arrows) to increase or decrease the setting.



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 [1]Write 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.)

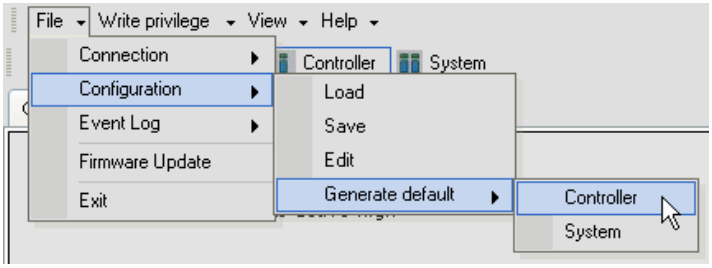


Saving Default Parameters to a Configuration File

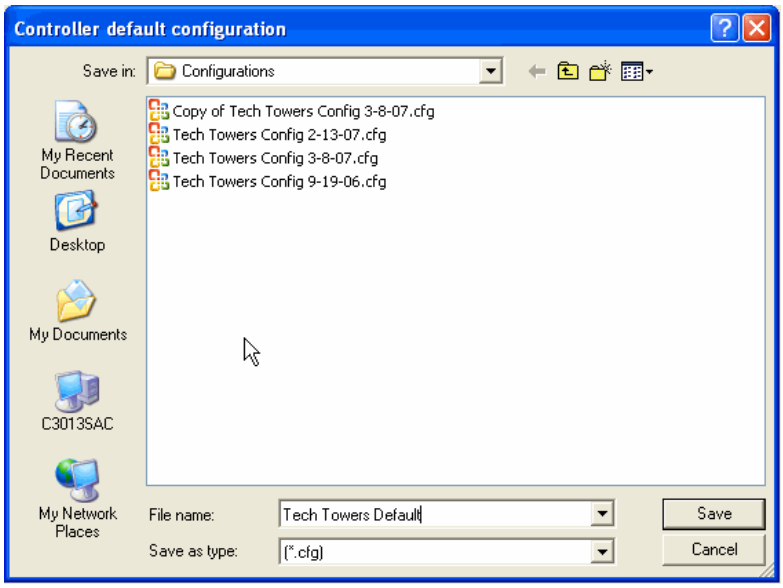
The Controller and/or System default parameter settings can be saved to a configuration (.cfg) file. The default parameter values can then be loaded onto the controller should you determine that you want to start making adjustments beginning with the default values.

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 is on the same PC as iCue 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:

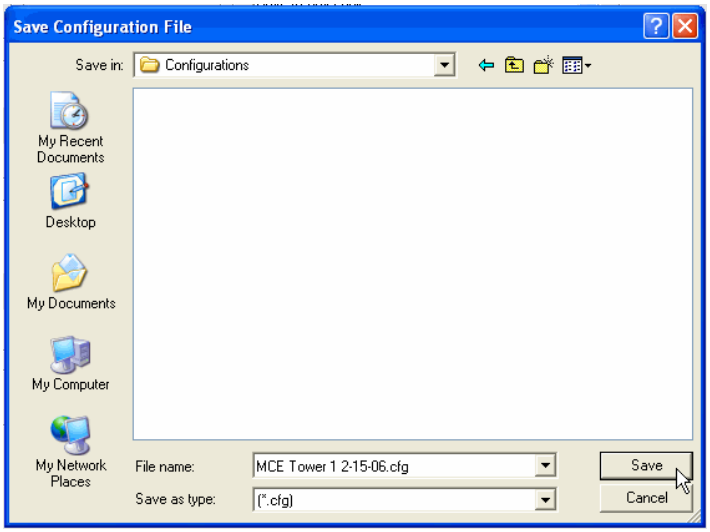
- Working Offline: Using iView, you can open a file and work with its settings without necessarily having access to the controller itself.
- File Uploading: When connected to a controller, you can choose to get some or all of the settings in a configuration file and send them to the controller.
- Adjuster 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 anyplace 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.

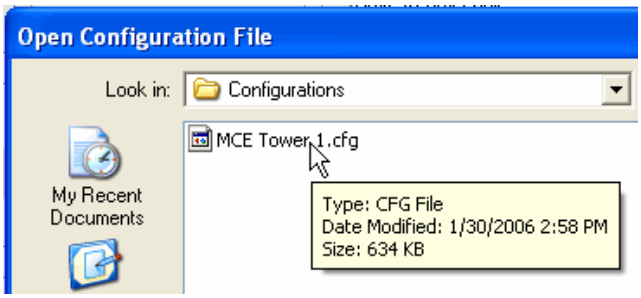


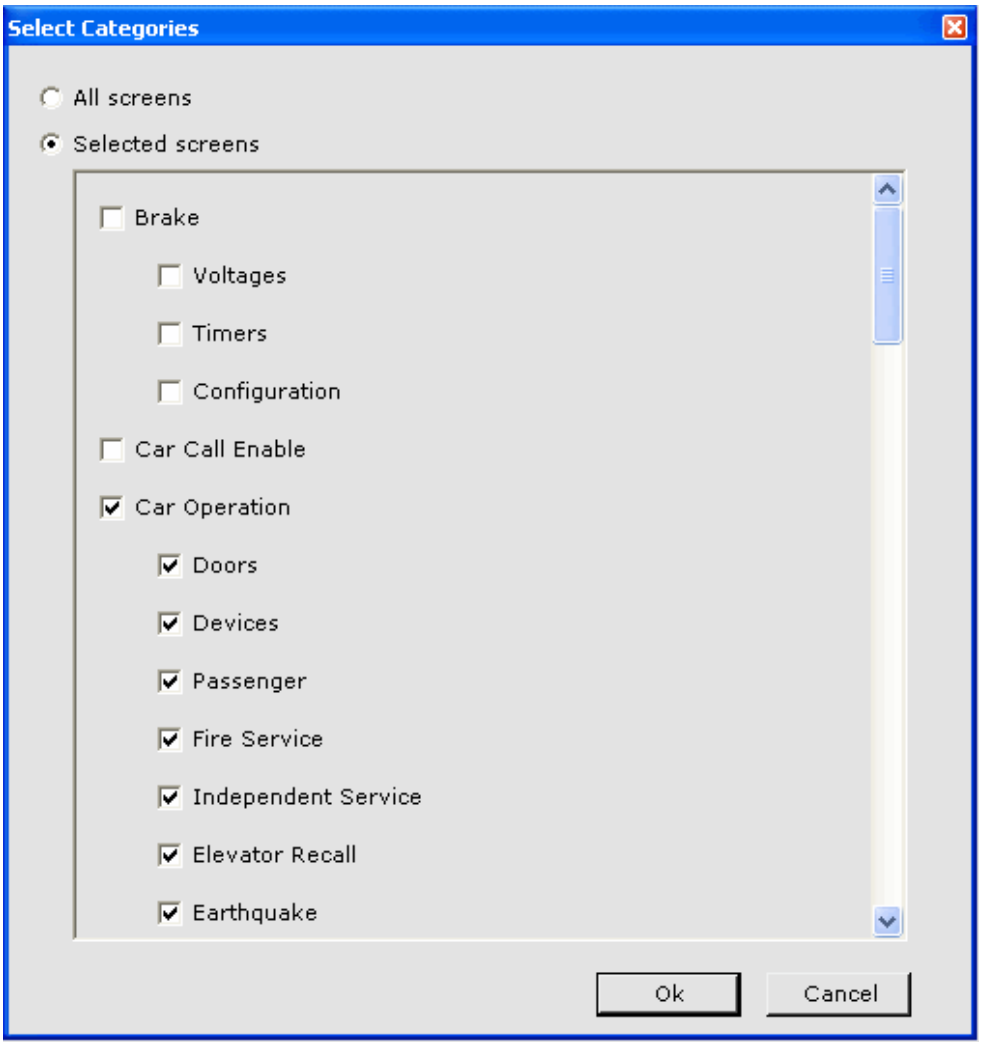
   - The default folder suggested in the dialog is the Configurations folder (My Documents > Motion Control Engineering > iView > Configurations).
3. Click *Save* to save the file.
4. Once you have saved the file, it will appear in the Open Configuration File dialog the next time you select either Load or Edit from the File > Configuration menu.

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  .



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.

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.

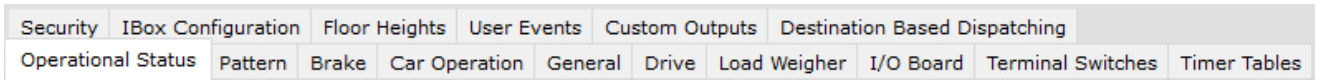
iView Windows and Tabs

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.

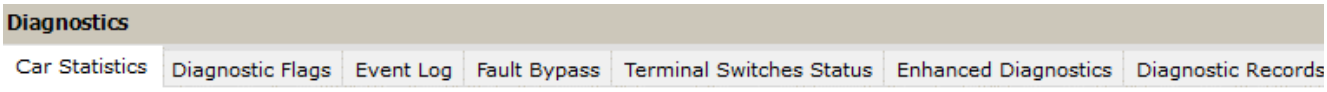
1. While in Controller view, select the desired tab from the View > Configuration menu.
2. Display all of the Configuration tabs by selecting *Configuration* from the View > Layouts menu. Then click the desired configuration tab.



Controller - Diagnostic Tabs

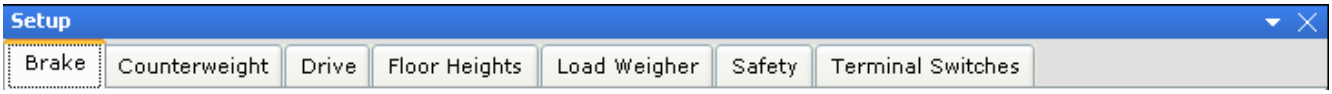
The Controller - Diagnostic tabs contain information about the status and condition of the controller. The Diagnostic tabs can be accessed in one of two ways.

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.



Controller - Setup Tabs

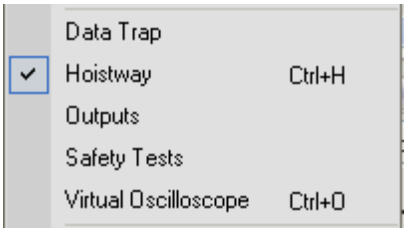
The Controller - Setup tabs are used to perform the iControl automatic and semi-automatic setup procedures. The Setup tabs can be accessed by selecting *Setup* from the View menu. Then click the desired calibration tab.



Additional Windows

Additional windows can be accessed from the View menu. They include:

- Data Trap
- Hoistway
- Outputs
- Safety Tests
- Virtual Oscilloscope



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 8.4 lists the items on the *View* menu and tables 8.5 through 8.7 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, Floor Heights, Floor Offsets, Load Weigher, Safety 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	Preprogrammed 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 and 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.
Destination Based Dispatching	General	Enable DBD, set door operation, anti-nuisance and floor settings parameter.
	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.
	Filters	Drive notch and system filter 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.

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 releveling speeds, pattern scaling, dead zone distance, door preopening 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
Operational Status		Displays the car status including: motion, speed, position, pattern, motor and brake, processor, in-service, leveling, door locks, faults and car status.
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 view 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

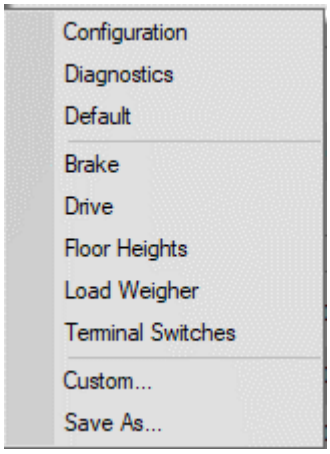
Tab	Content
Brake	Calibrate the brake voltage settings (see page 2-56).
Counterweight	Learn the position where counterweight is adjacent to the car (see page 3-11).
Drive	Learn the values for the Drive Offsets (see page 2-61).
Floor Heights	Learn the absolute floor positions (distance to each floor from 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 4-26).
Load Weigher	Learn the car empty and full load weights (see page 4-33).
Safety	Verify that the configurations of the main and safety processors match. Perform the Inventory learn procedure.
Terminal Switches	Learn the speeds and positions of the normal and emergency terminal switches (see page 4-8.

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.
Refresh	Updates the information displayed on iView windows and tabs. This control is accessed by clicking the Refresh button on the button bar.

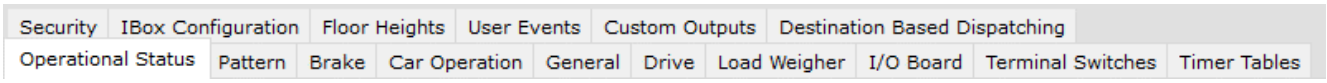
Controller - Layouts

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.

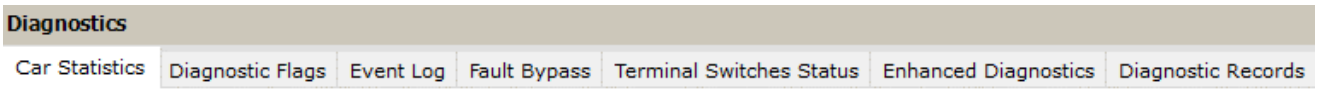


Some useful layouts have been preprogrammed and are supplied with iView. They include:

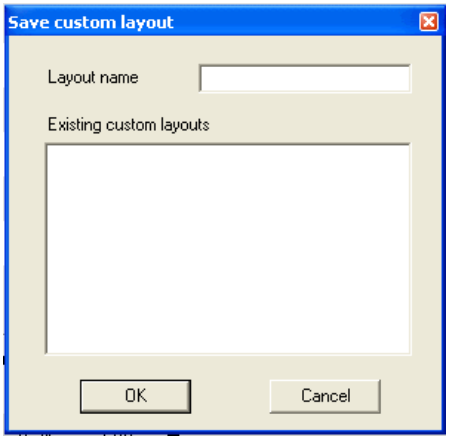
- Configuration: This layout displays all of the configuration tabs for easy selection.



- Diagnostics: Displays all of the diagnostic tabs for easy selection.



- 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 2-61).
- 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.



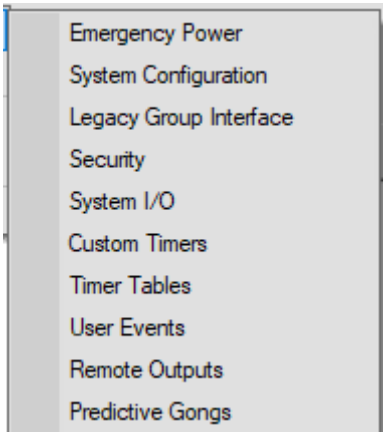
System View Windows and Tabs

Note that, if iView and iCue are on the same PC in a central dispatcher. Write Privilege is automatically granted for that PC/dispatcher.

System - Configuration Tabs

System parameter settings are displayed and may be changed on the System - Configuration tabs. The Configuration tabs can be accessed in one of two ways.

1. While in System view, select the desired tab from the View > Configuration menu.



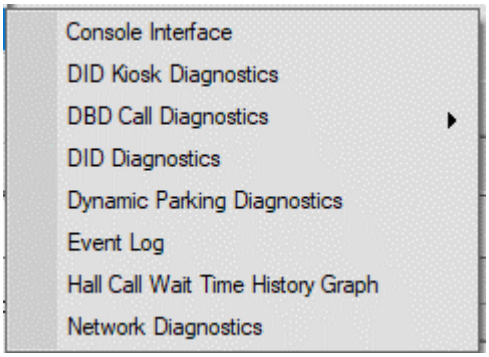
2. Display all of the Configuration tabs by selecting *Configuration* from the View > Layouts menu. Then click the desired configuration tab.



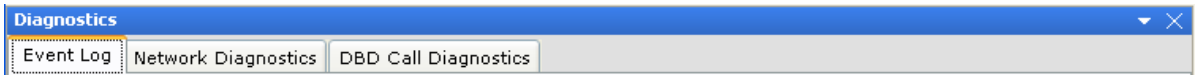
System - Diagnostic Tabs

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.



Additional Windows

Additional windows can be accessed from the View menu. They include:

- Hoistway
- System Performance
- Layouts

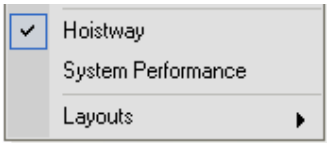


Table 8.9 System - View Menu

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.
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

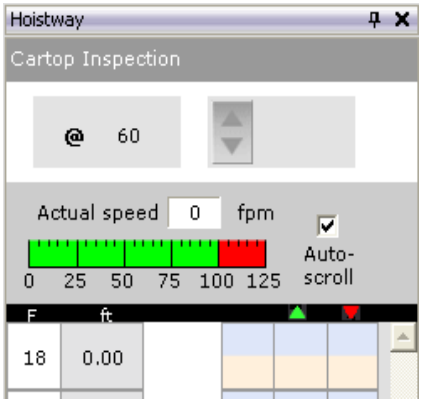
Tab	Content
Console Interface	Enter a command and click send to display information.
DID Kiosk Diagnostics	Pressing start will start polling for all kiosks. The kiosk diagnostics will be presented.
Dynamic Parking Diagnostics	Enter the day and the bank, a percentage of Hall calls per floor will display.
DID Diagnostics	Displays diagnostics per Reader ID.
Hall Call Wait Time History Graph	Displays a graph showing average hall call wait time for last 24 hours.
Event Log	Display of recorded system events.
Network Diagnostics	Controller and Remote Client network information.
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.

Pinning and Unpinning Windows

iView windows have a little push-pin icon in the upper right corner, e.g. the Hoistway window shown on the right.



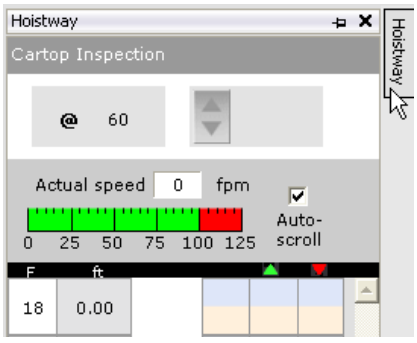
- When the pin is pointing down, the window is “pinned” in its designated position.



- If you click the pin icon, it points left and a button labeled Hoistway appears.
- The window remains in view if it 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 of 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 title bar or as long as the cursor remains on the button/window.

To permanently display the window again:

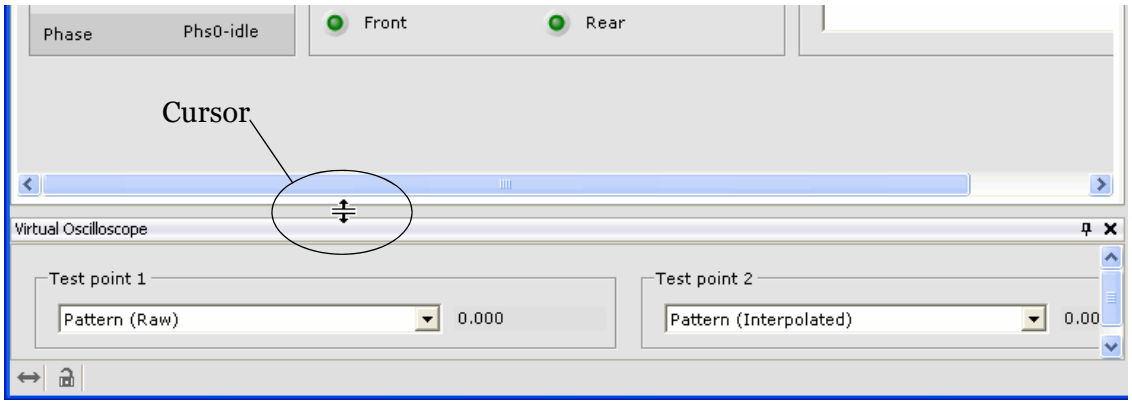
1. Bring the window into view by placing the cursor over the button.
2. Click the pin so that it is pointing down again.

Resizing Windows

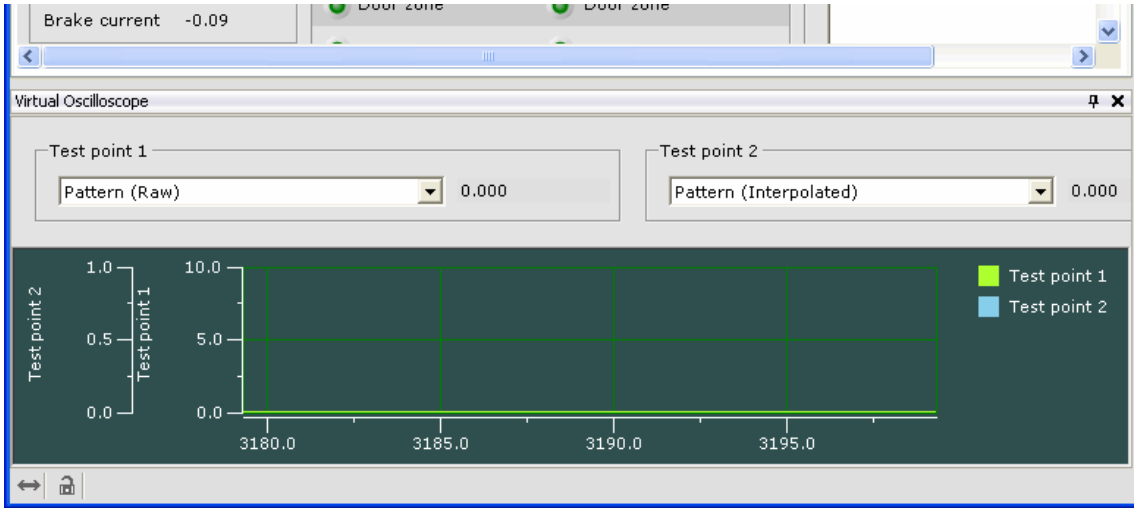
iView windows can be resize so that you see just the data you need to perform a test or task.

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,  you can click and drag (hold the left mouse button down while moving the mouse) the window boundary and resize the window.

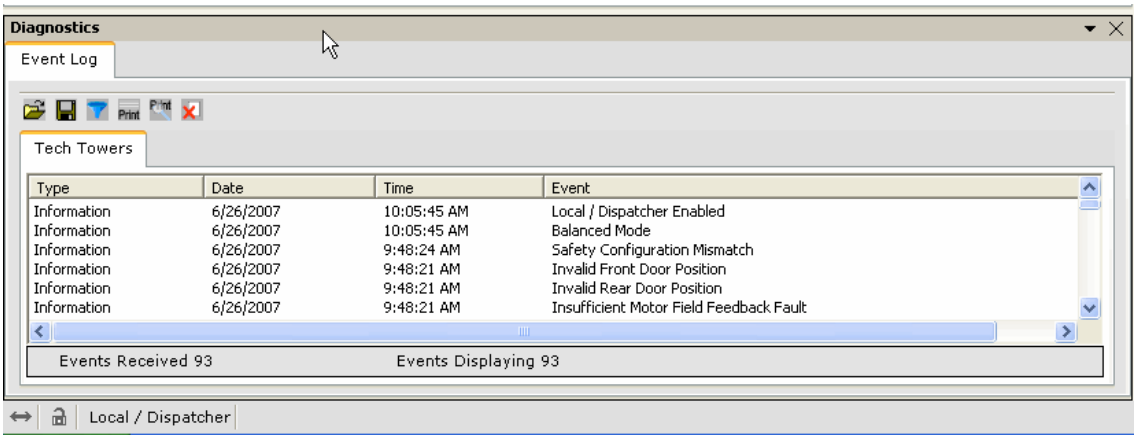


Docking and Undocking Windows

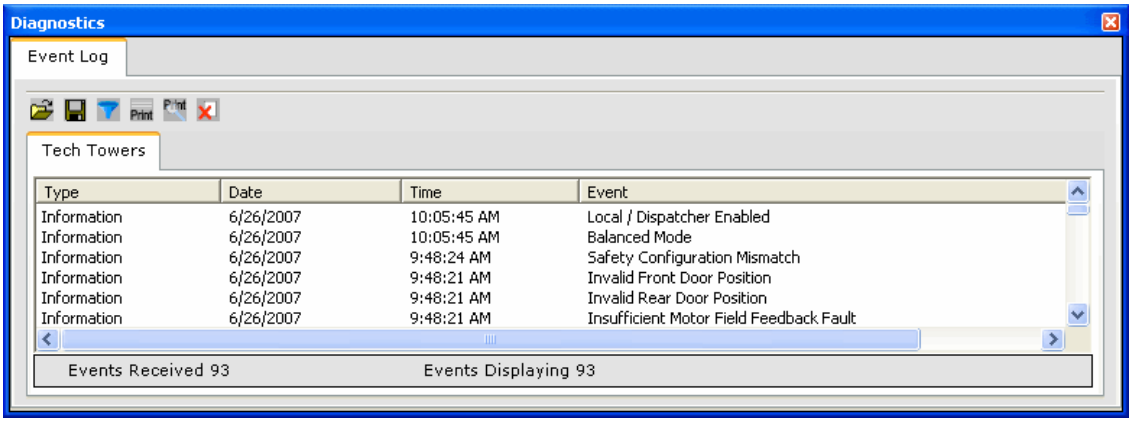
iView windows can be undocked from their assigned position and moved to another position on the screen.

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.



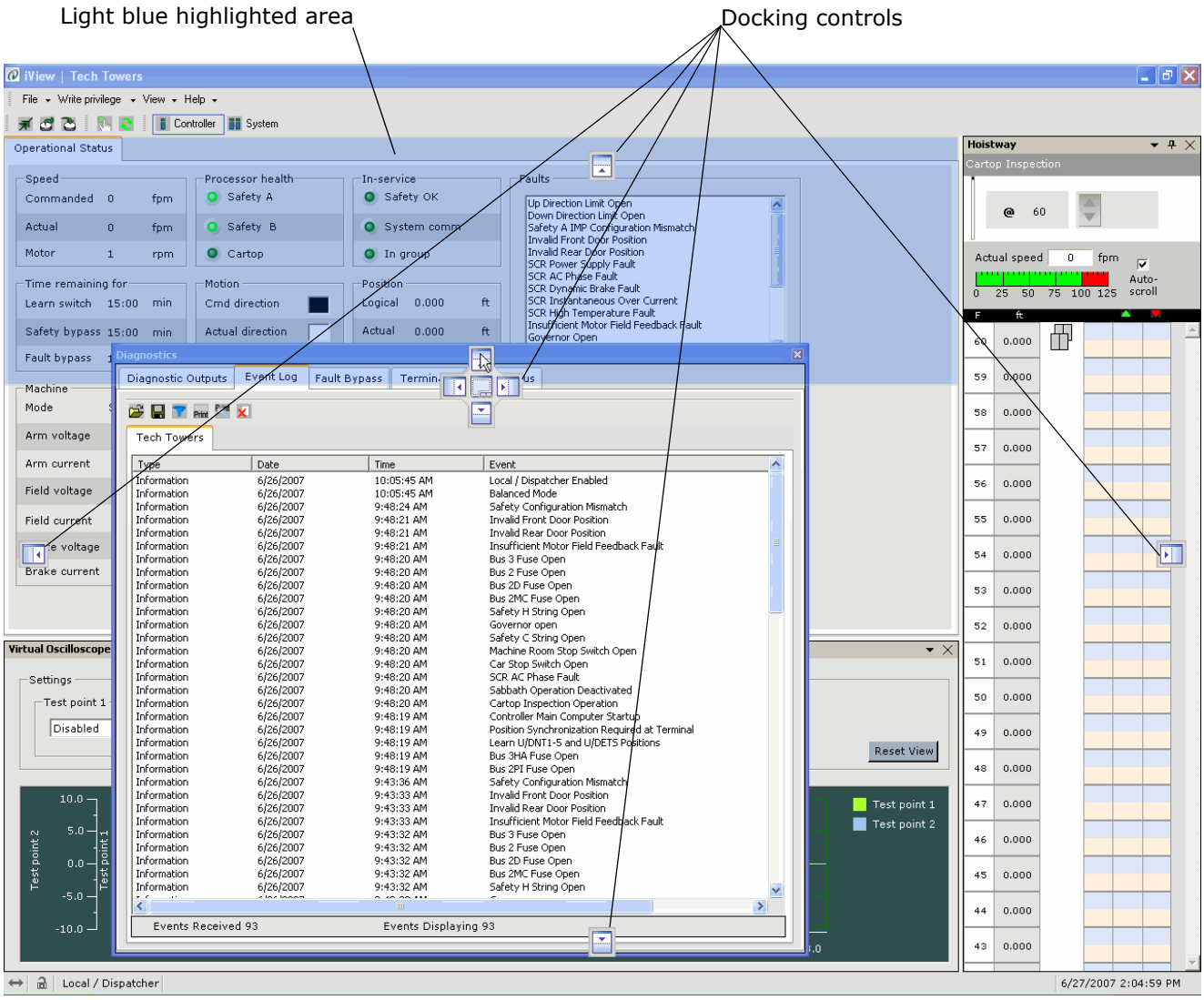
2. The title bar and frame around the Diagnostics window change to a solid blue line indicating that the window is now undocked and can be moved.



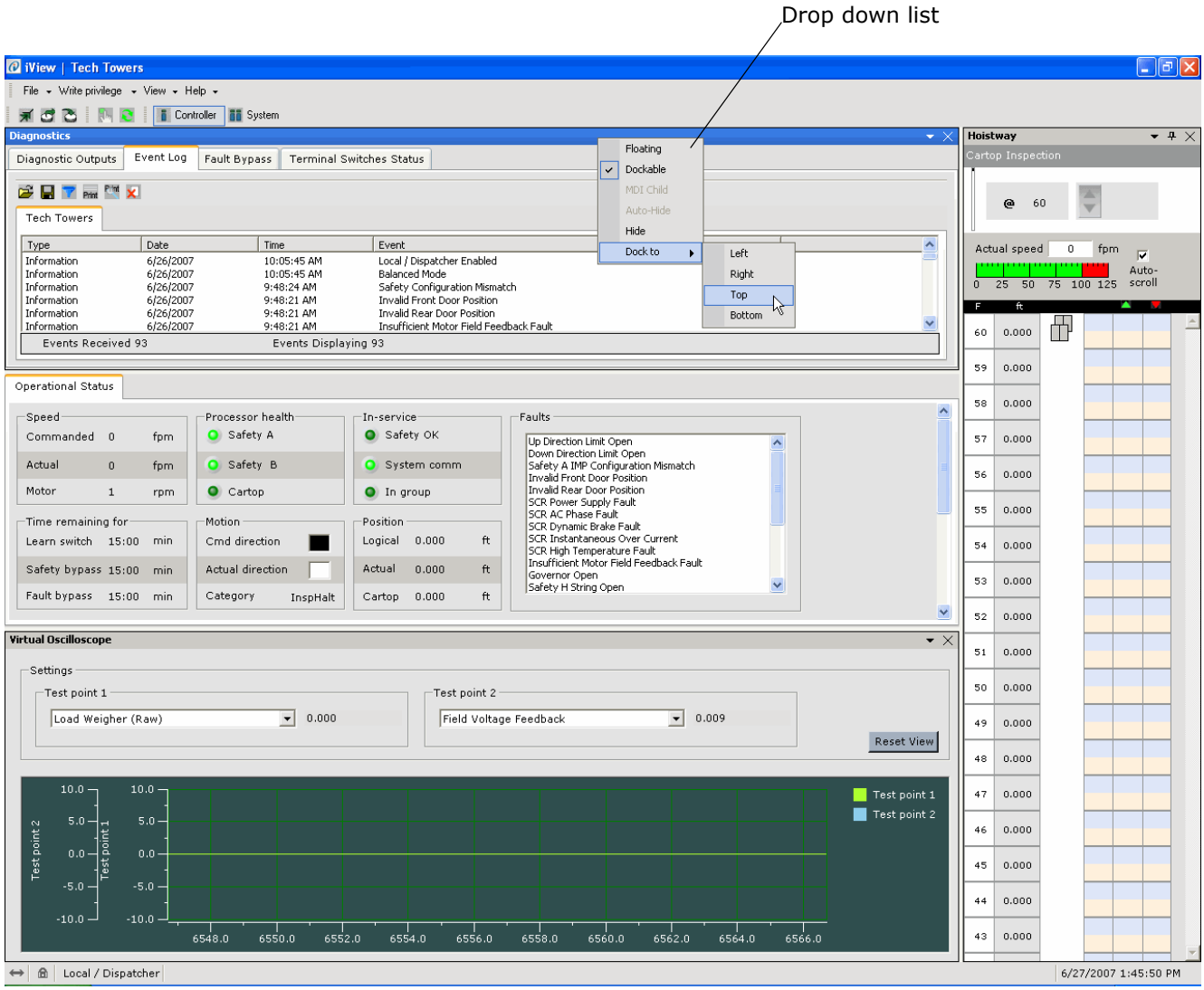
3. Click the title bar and drag (hold down the left mouse button while moving the mouse) the window to a new location.
4. Release the mouse button. The undocked window will appear in the new location, on top of what ever is in that location. You can tell that it is undocked because the solid blue frame 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.



2. 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.



3. 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.

Contents Index MCE Web

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 (widow 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.

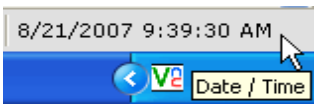
3. Open the Wordpad application (Start > All Programs > Accessories > Wordpad).
4. Select *Paste* from the *Edit* menu or press and hold the Ctrl key while pressing and releasing the "v" key to paste the captured screen into Wordpad.
5. Select *Print* from the *File* menu to print the screen.
6. Save the file if you want to keep a record of the screen on the PC hard drive.

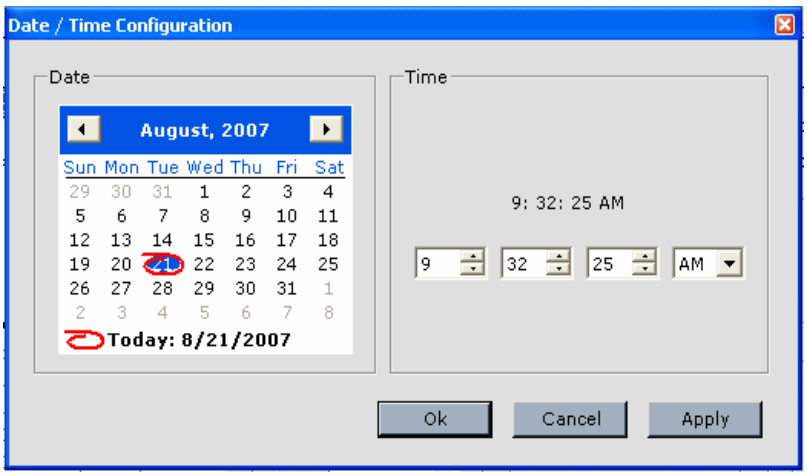
Setting the System Date and Time

The iControl system date and time can be set using the iView application connected to the Central Dispatcher (iCue PC), Local/Dispatcher or Simplex car controller. Dispatcher time and date are transferred to all running local cars and to 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:





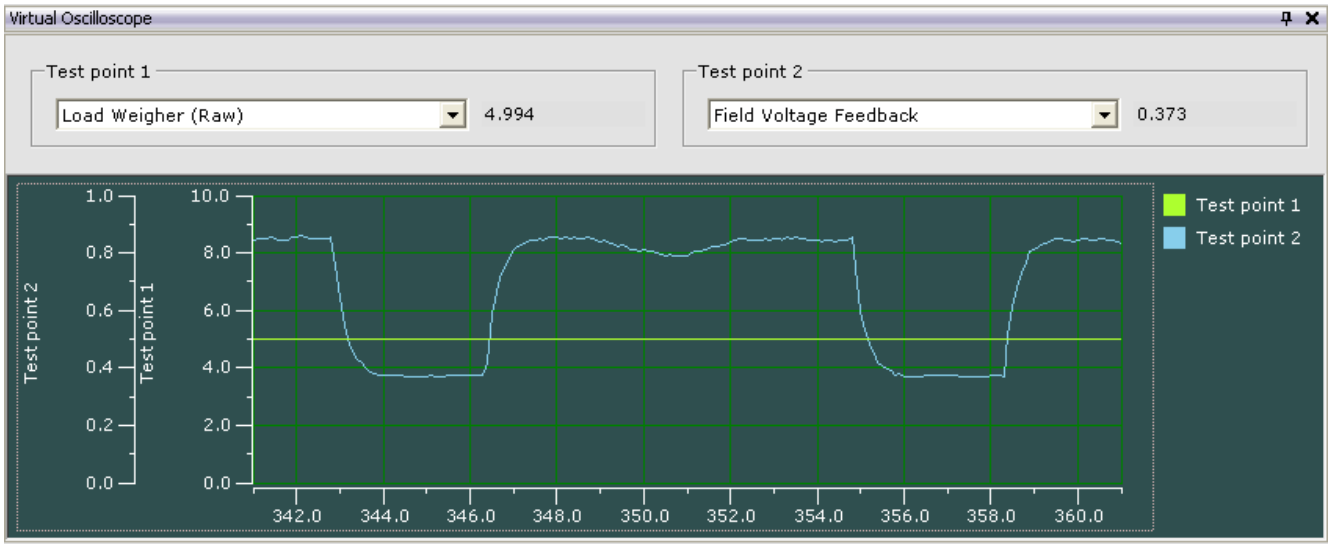
3. Use the controls to set the date and/or time and click Apply or OK. The date and time will be updated on all controllers communicating with the dispatcher.

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.

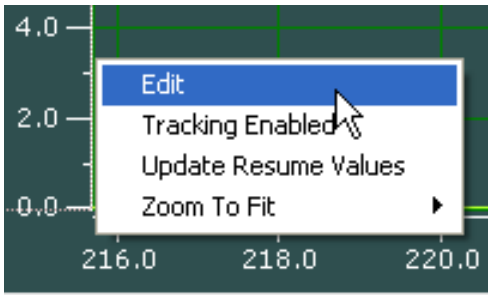
Editing Dynamic Displays

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.

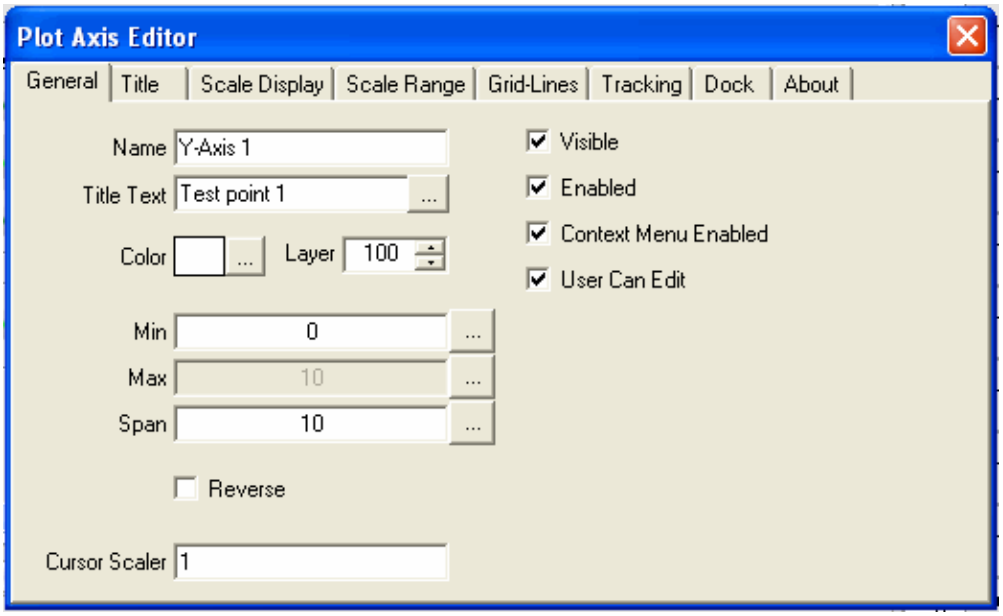


To edit a display:

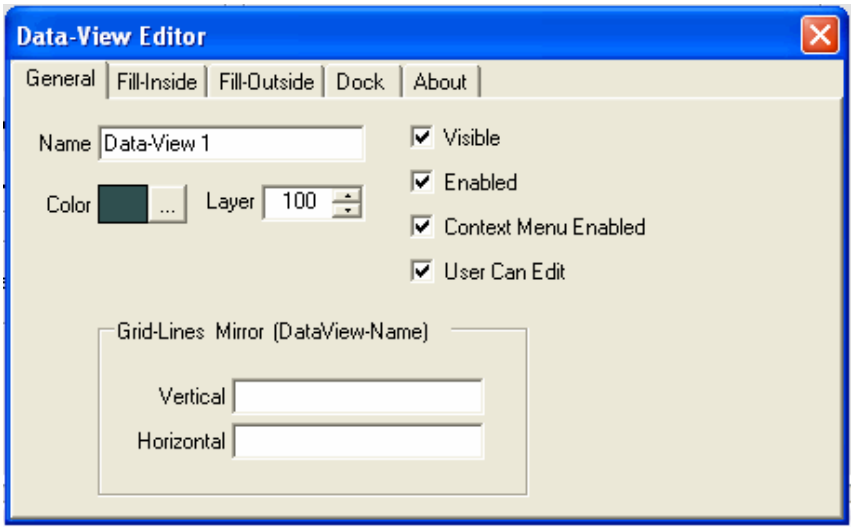
1. Right-click on the graph or on one of the scales to reveal a popup menu. Select *Edit* from the menu.



2. Experiment with modifying the display to find the combinations that suit the signal types you are currently examining. The Edit menu is extensive:



3. Several different editors are available depending on where you click in the graphic display.



Updating Controller Firmware

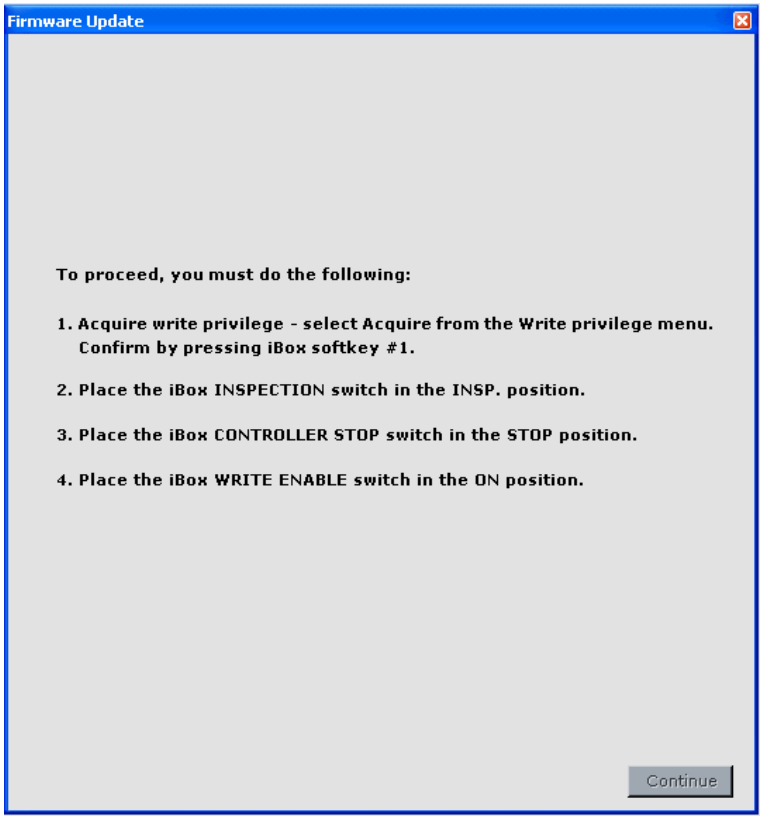
Warning! Do not attempt this procedure without first contacting MCE Technical Support. Failure to do so can result in catastrophic failure of the iBox.

Firmware Update allows you to install updated iControl operating software. It is likely that two firmware program files will be updated. They are:

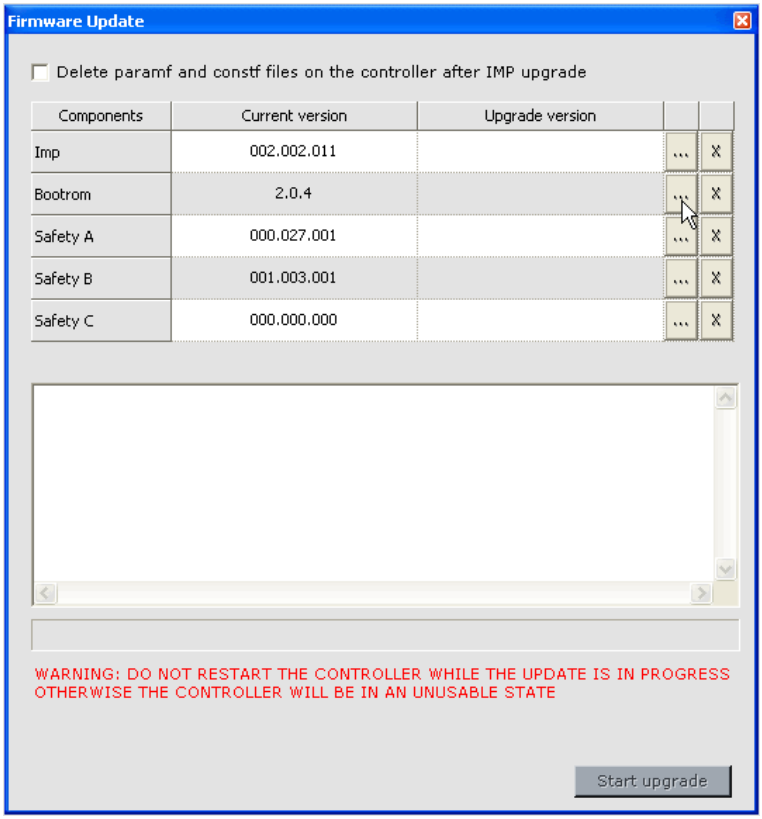
- Bootrom.mce, the iControl boot-up program.
- vxworks.mce, the iControl IMP computer program.

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

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.
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.

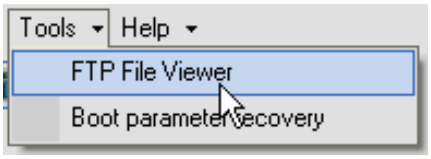


FTP File Viewer

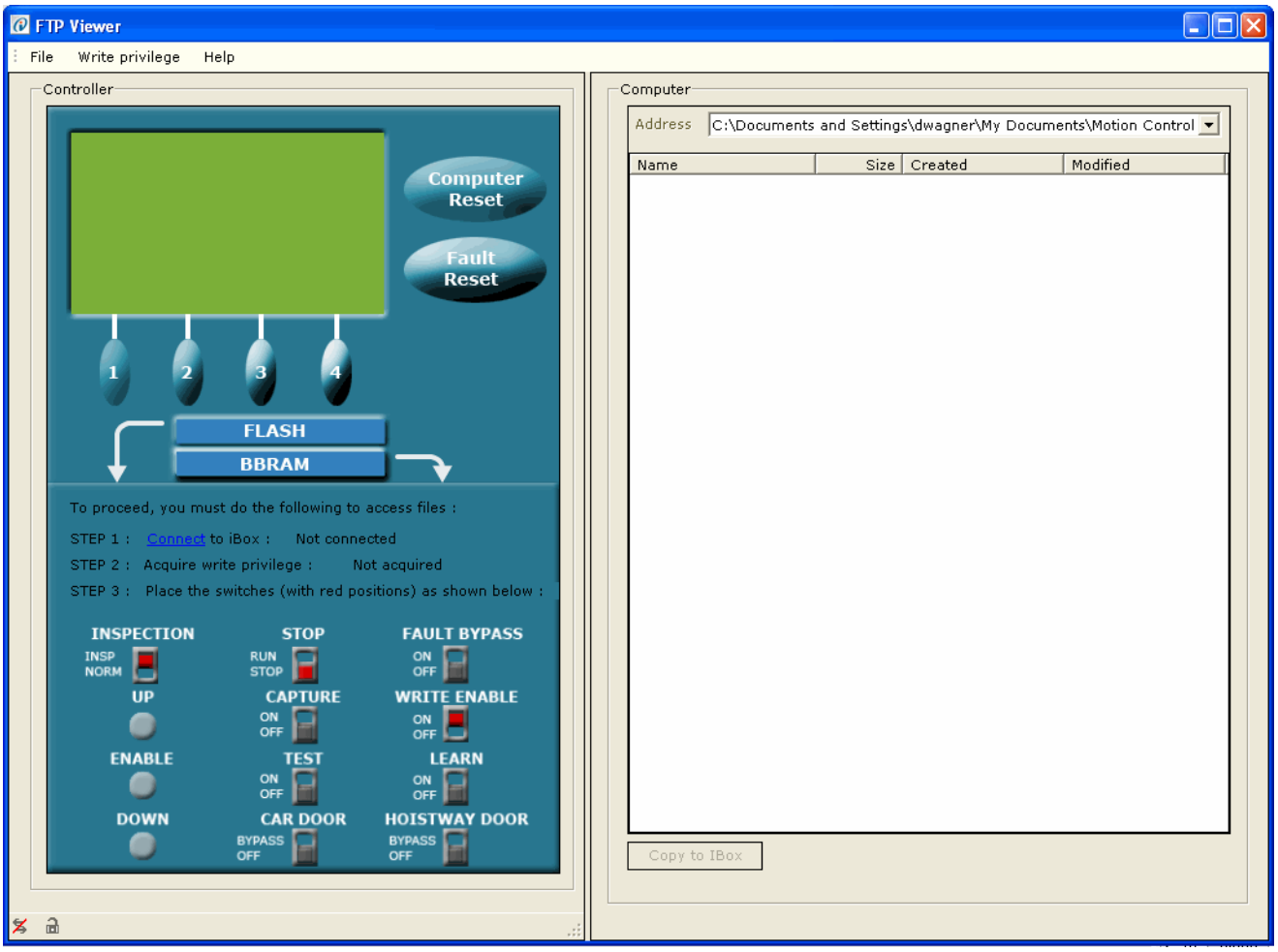
The FTP File Viewer is a very useful troubleshooting tool. It can be used to copy firmware files from an iBox to a PC, delete iBox firmware files or copy firmware files from a PC to an iBox. For example, the Controller's Event Log file could be copied from the iBox to the iView PC and then sent via e-mail to MCE for evaluation. Typically this would be done per instructions from MCE Tech Support.

Using the FTP File Viewer

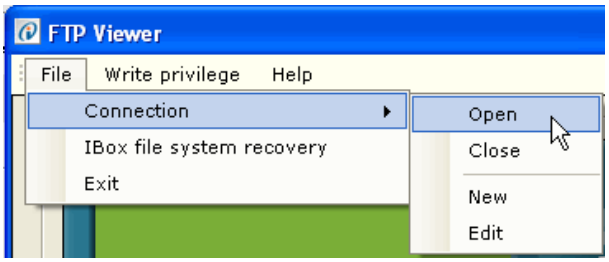
1. From the iView *Tools* menu, **click FTP File Viewer**.



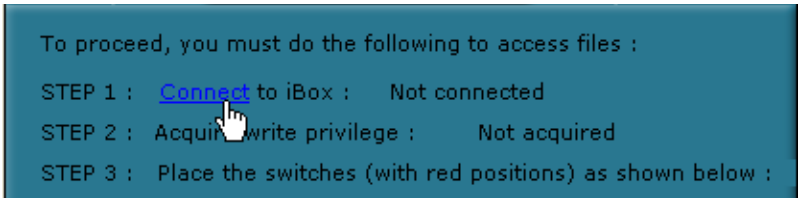
2. The FTP Viewer window opens.



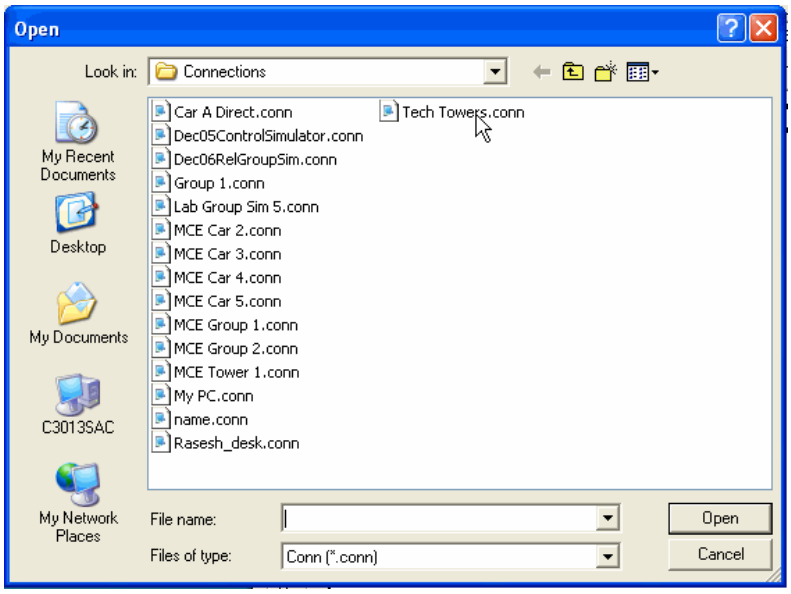
3. Connect the FTP File Viewer utility to a controller: **Select Connect** from the *File* menu and **click Open**



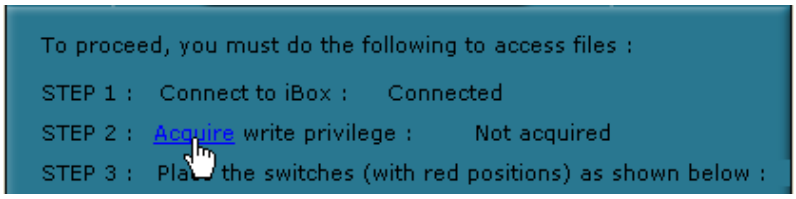
4. or **click <u>Connect</u>** next to STEP 1:



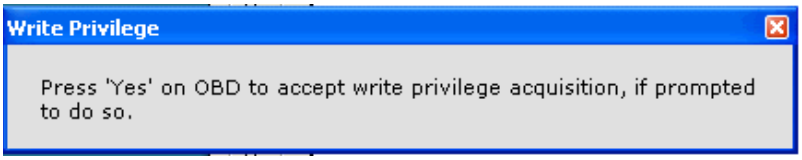
5. The Open dialog appears. **Click the desired connection.**



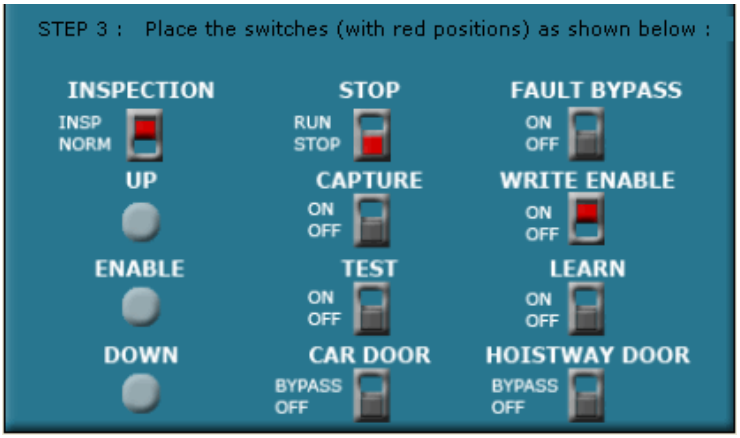
6. Next acquire write privilege. **Click <u>Acquire</u>** next to STEP 2:



7. The Write Privilege dialog appears. **Press Yes (1)** on the iBox Onboard Display

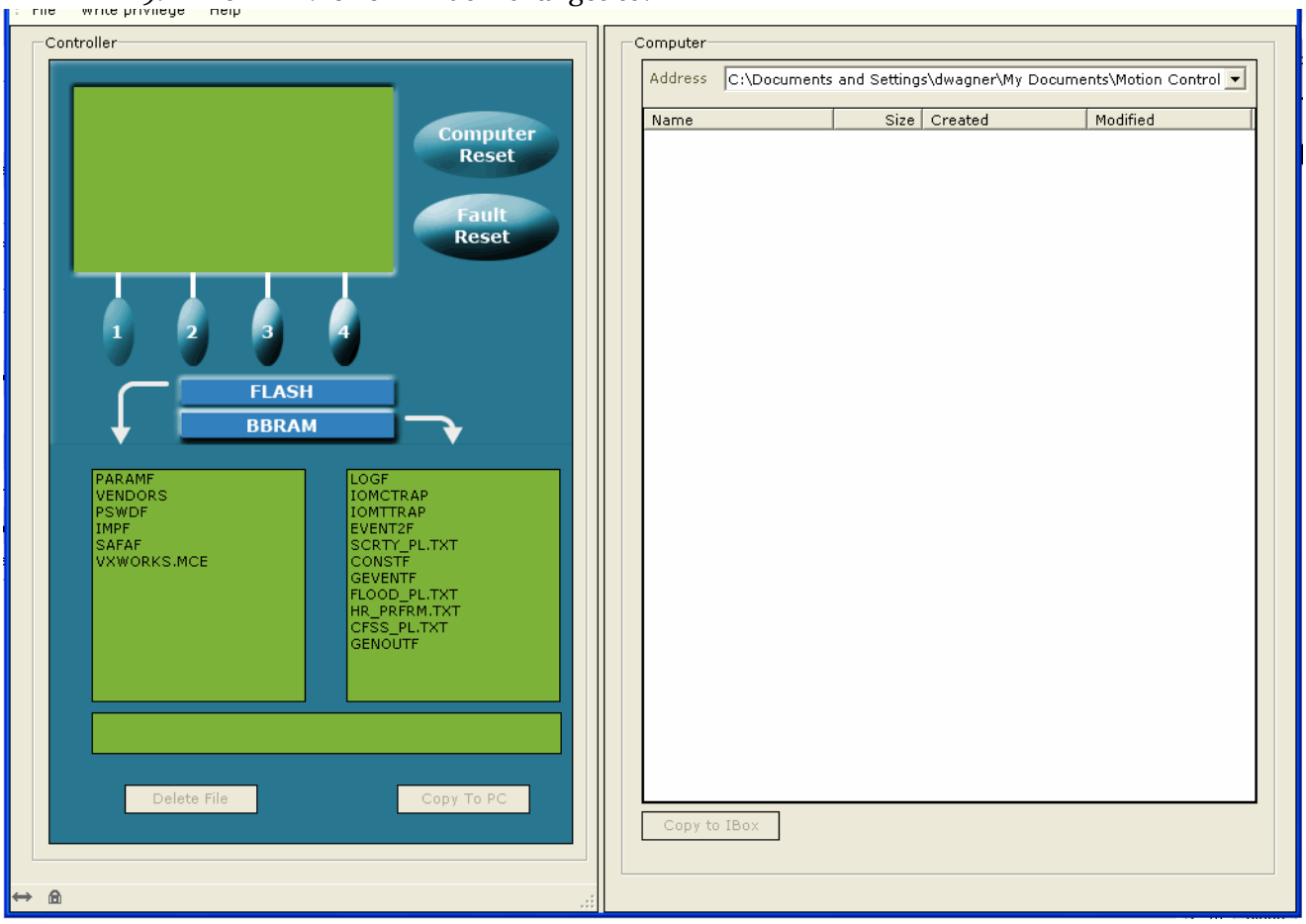


8. **Set** the iBox ***INSPECTION, CONTROLLER STOP*** *and* ***WRITE ENABLE*** **switches** as shown.

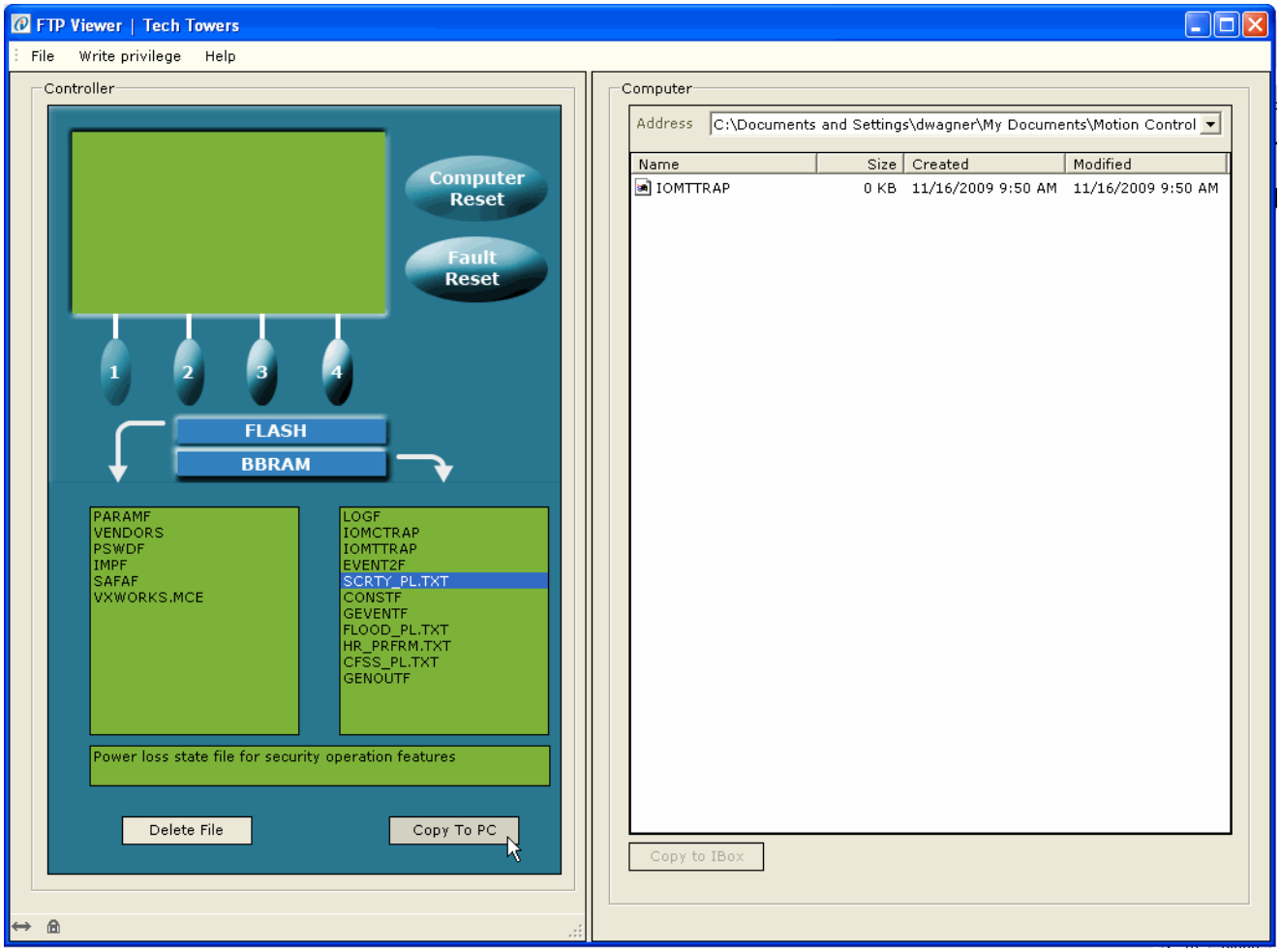


8

9. The FTP Viewer window changes to:



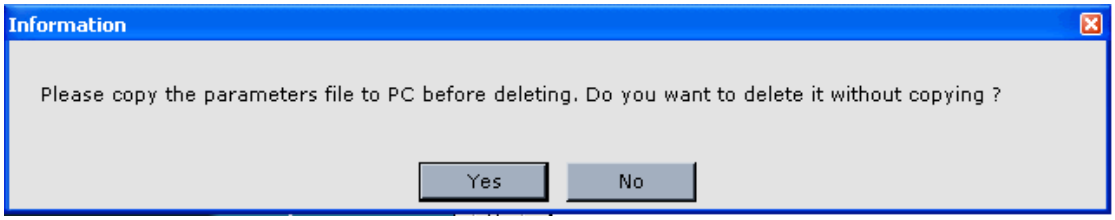
10. **To copy a file from an iBox to a PC, select a file** in the *Controller* FLASH or BBRAM list and then click **Copy to PC.** The default folder to which the files are copied is Documents and Settings*User's name*\My Documents\Motion Control Engineering\FTP Viewer. Note that a description of the file is shown in the list box below the lists.



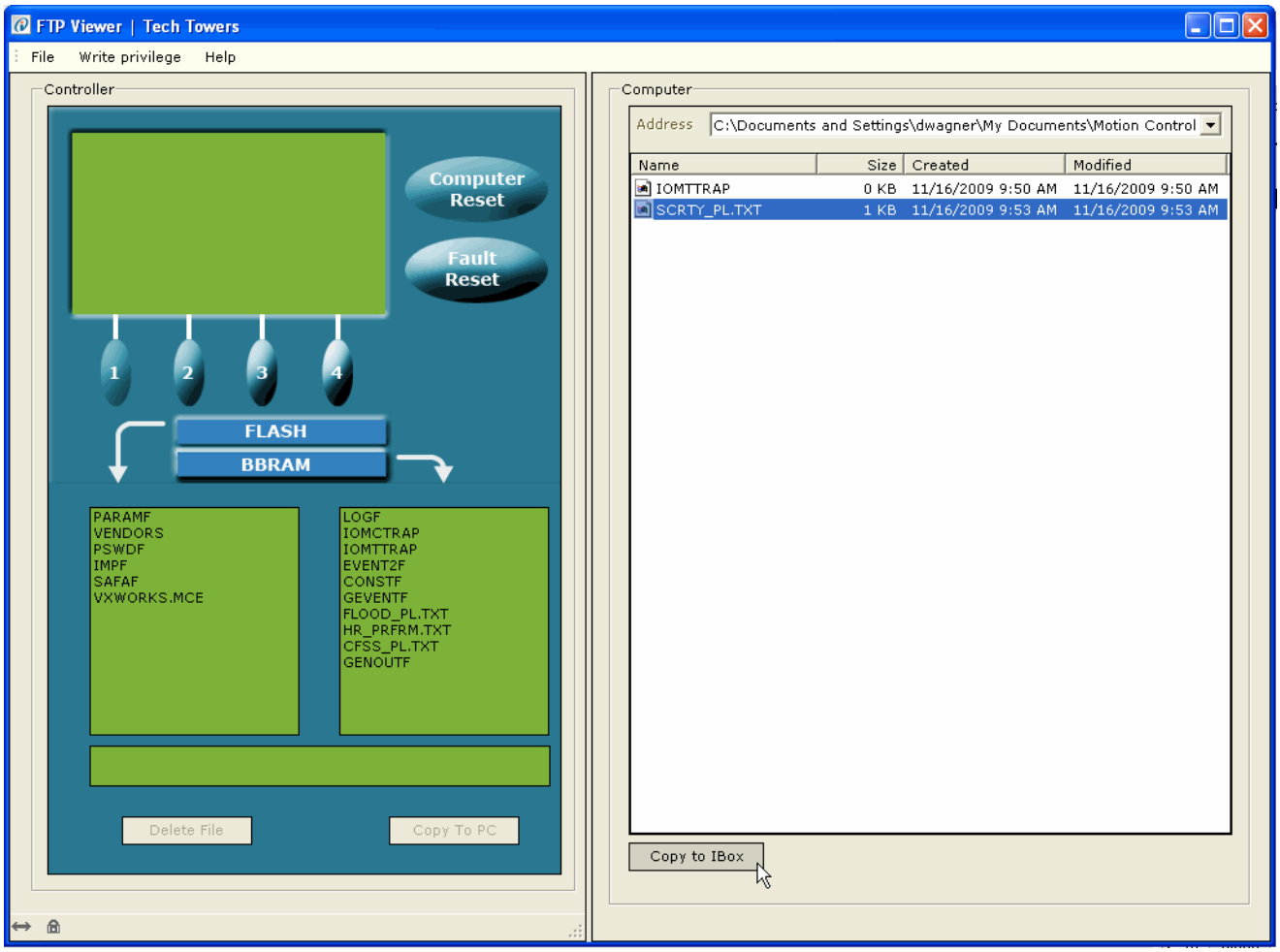
11. **To delete a file from the *Controller* FLASH or BBRAM lists, select a file** and then **click Delete File**.

Note

If you attempt to delete the PARAMF file, the following *Information* message appears:

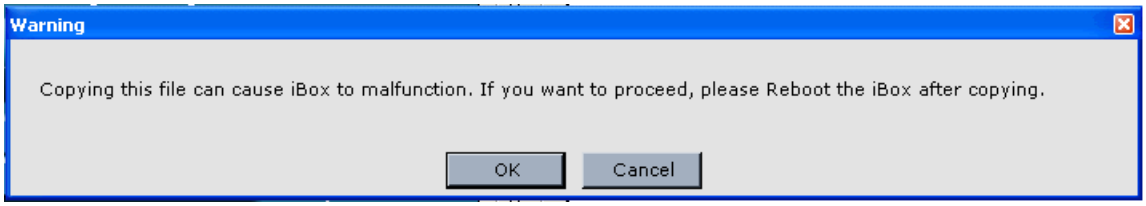


12. **To copy a file from a PC to an iBox, select the file** in the *Computer* list box and then **click Copy to iBox.**



Note

If you attempt to copy the VXWORKS file to the iBox, the following *Warning* message appears:



Boot parameter recovery

In very rare instances the iBox may refuse to boot up. 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.

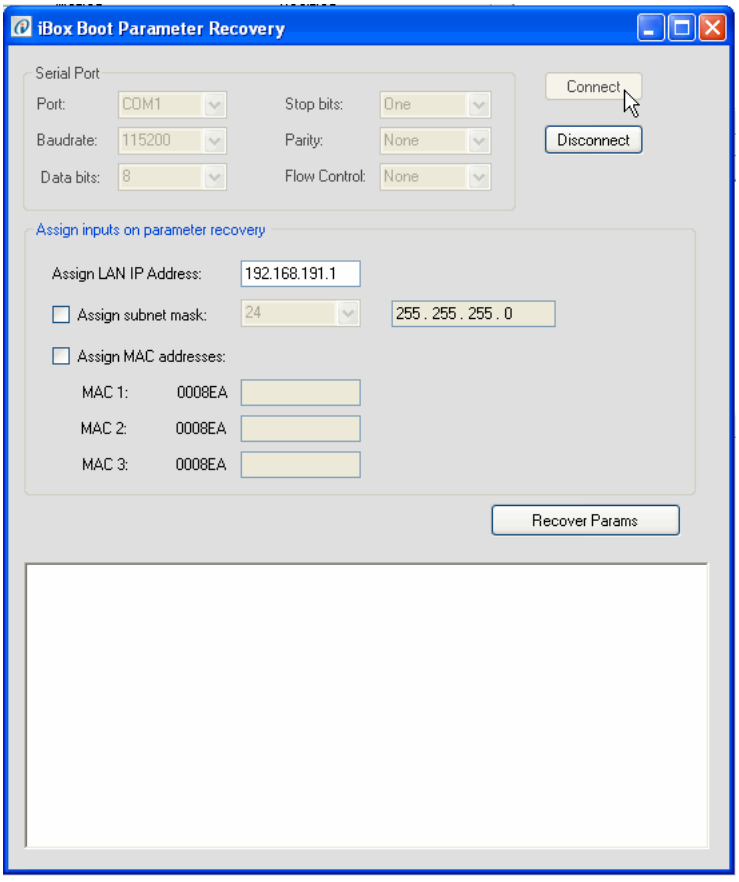
2. Launch the Boot parameter recovery utility by selecting **Boot parameter recovery** from the iView *Tools* menu.



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 boot up, 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.

```
iBox
Boot ROM
Version 4.0.2

System Booting
```

Continue holding in the ENTER button until the **Boot Menu** is displayed.

```
Boot Menu:

1: Change IP Address
2: Default Boot Prms
3: Start FTP server
4: Boot
```

Change IP Address - Use this option to change the IP address of the LAN Network port before boot up (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.

```
IP Address
010.010.052.041
^
Mask:
FFFF0000

Use Arrows To Edit
Press Enter to Save
```

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.

```
Parameters Defaulted
Press Enter
To Return
```

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.

```
FTP Server Running..
To recover Controller
1. Open iView
2. Launch FTP Viewer
3. File > IBox File
   System Recovery
4. Press Reset
```

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.



Nidec MCE

About this Section

This section contains detailed information about:

- iControl AC 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 9-2).
- 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 9-6).
- Terminal Field Connections (see page 9-12).
- System and LAN Ethernet: Information about TCP/IP addresses (see page 9-12).
- Control Techniques E300 AC Drive Parameters: A table of the CT menus and parameters (see page 9-23).
- TORQMAX F5 Drive v3.xx Parameters Quick Reference: A listing of TORQMAX F5 drive parameters and their default and typical settings (see page 9-28).
- PowerBack R6 Parameters Quick Reference: A listing of PowerBack R6 Regenerative drive parameters and their default and typical settings (see page 9-38).
- Magnetek HPV900 Series 2 Parameters Quick Reference: A listing of HPV900 Series 2 Drive parameters and their default settings (see page 9-39).
- Magnetek Quattro AC Quick Reference: A listing of Quattro AC drive parameters and their default settings. (See page 9-46.)
- TORQMAX F5 Drive v1.xx Setup: Instructions for using the v1.xx keypad and setting up the v1.xx TORQMAX F5 drive. (see page 9-61.)
- TORQMAX F5 Drive v1.xx Parameters Quick Reference: listing of TORQMAX F5 drive parameters and their default and typical settings (see page 9-65.)

iControl AC Specifications

Table 9.1 iControl AC Specifications

Parameter	Specification
Car Speed	Up to 1800 fpm (9 m/s)
Jerk	15 ft/sec^3 (7.62 m/sec^3) maximum 8 ft/sec^3 (2.44 m/sec^3) nominal 1 ft/sec^3 (0.305 m/sec^3) minimum
Acceleration	10 ft/sec^2 (3.04 m/sec^2) maximum 4 ft/sec^2 (1.52 m/sec^2) nominal 1 ft/sec^2 (0.31 m/sec^2) minimum
Number of Stops	Up to 96 (60 for Simplex operation)
Number of Cars in Group	Up to 15
Floor Leveling Accuracy	+/- 0.25 inches (6.35mm) guaranteed +/- 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 12,000 ft (3,658m) altitude 95% relative humidity (non-condensing)

Software Test Point 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)	Prefiltered 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.

Table 9.2 Test Point Signals

Test Signal	Description / Text References
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. Normal: 0 = Idle - before motor contactor picks [PID - Standard] 1 = Idle - after motor contactor picks [PID - Start (normal)] 2 = Acceleration [PID - Standard] 3 = Peak [PID - Steady-State (normal)] 4 = Deceleration [PID - Standard] 5 = Flare [PID - Stop (normal)] 6 = Leveling [PID - Standard] 7 = Idle - before motor contactor drops [PID - Standard] Relevel: 8 = Idle - before motor contactor picks [PID - Standard] 9 = Idle - after motor contactor picks [PID - Start (relevel)] 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.
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.
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.

Table 9.2 Test Point Signals

Test Signal	Description / Text References
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.
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. Please refer to "Pretorque Gain Adjustments" on page 4-17.
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.
Over Current Power	Armature power accumulated. Used for Loop Over Current. Adjusted using Rated Loop Over Current and Loop Over Current Fault Time.
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.
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.
Pattern (Command)	Post-filtered pattern command signal. Please refer to "Following Error Margin" on page 2-76. Please refer to "Verifying a One Floor Run" on page 4-4. Please refer to "Pattern Scaling" on page 4-7. Please refer to "Setting Pattern Parameters" on page 4-14.
Pattern (Directional)	Directional pattern signal.
Pattern (Filtered)	Prefiltered pattern signal. Please refer to "Tach Error Tripping Threshold Adjustment" on page 2-77

Table 9.2 Test Point Signals

Test Signal	Description / Text References
Pattern (Interpolated)	Interpolated (smoothed) pattern signal.
Pattern (Phase)	The numbers displayed represent segments of the speed profile. Please refer to "Shaping the Speed Profile" on page 4-12. 0 = Idle 1 = Initial Jerk 2 = Acceleration 3 = Low Roll Jerk (during acceleration, high speed is reached) 4 = Peak (High Speed) 5 = High Roll Jerk (during acceleration, high speed not reached) 6 = High/Low Roll Jerk (during deceleration) 7 = Deceleration 8 = Flare Jerk (transition from deceleration to leveling) 9 = Approach Jerk (transition from deceleration to leveling) 10 = Leveling
Pattern (Raw)	Raw pattern signal.
Pattern (Region)	The numbers reflect a simplified representation of the speed profile in comparison to Pattern (Phase). 0 = Idle 1 = Acceleration 2 = Peak 3 = Deceleration 4 = Flare 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 "Following Error Margin" on page 2-76.Please refer to "Tach Error Tripping Threshold Adjustment" on page 2-77. 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 4-14. Please refer to "Tach Error Tripping Threshold Adjustment" on page 4-42.
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.

Table 9.2 Test Point Signals

Test Signal	Description / Text References
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 2-77. Please refer to "Tach Error Tripping Threshold Adjustment" on page 4-42.
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 2-77. Please refer to "Tach Error Tripping Threshold Adjustment" on page 4-42.
Tachometer Signal	Raw tachometer signal.

iBox Field Connections

The majority of field connections to the iBox are made through pluggable 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.

Table 9.3 iBox Field Connections

Source	Connection	Signal Description
TACH	TS	Tach positive signal. Analog. 0 - 30 VDC (15 VDC @ 1000 RPM).
	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-

Table 9.3 iBox Field Connections

Source	Connection	Signal Description
VELOCITY ENCODER	A+	Positive going, +12V, digital pulse from motor velocity encoder. Please refer to "Velocity Encoder Installation and Wiring " on page 2-10.
	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-)
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 3-3.
	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.

Table 9.3 iBox Field Connections

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. 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.

Table 9.3 iBox Field Connections

Source	Connection	Signal Description
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 9.3 iBox Field Connections

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 ADB) 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. It 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.
BRAKE	BD	Brake Drive relay indicator. When the BD relay on the iBox IRB board is closed to pick the brake, this LED will light. 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.

Table 9.3 iBox Field Connections

Source	Connection	Signal Description
DRIVE	MD	Motor Drive relay indicator. When the MD relay on the 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.
SAFETY	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 contacts in the string are closed, there will be 110 VDC on this input.
SPARES	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. When brake is set = 110 VDC. When brake is picked (brake pick switch open) = 0 VDC.
	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.
COMMON	1	Common Bus connections. 0 V
	1	Common Bus connections. 0 V
	1	Common Bus connections. 0 V
	1	Common Bus connections. 0 V
120 VAC	2 PI	120 VAC. Fused, 2PI.
	2 PI	120 VAC. Fused, 2PI.
	2	120 VAC. Fused, F2.
	2	120 VAC. Fused, F2.
110 VDC	3 HA	110 VDC. Fused, F3HA.
	3 HA	110 VDC. Fused, F3HA.
	3	110 VDC. Fused, F3.
	3	110 VDC. Fused, F3.

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 9.4 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				
	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	"	"	"

"= same as above

Elevator LAN Network

Normally extends throughout a building and may span to other buildings, networks, or locations across the Internet/Intranet.

"= same as above
* = see Note #1

LAN Network Hub (Blue cables)				
	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 – 192.168.191.102	"	"	"
iCue	192.168.191.201 – 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	"	"	"
iView	192.168.191.103 – 192.168.191.104	"	"	"
iCue	192.168.191.203 – 192.168.191.204	"	"	"
Group 3 – LAN Network (Blue cables)				
	IP	**Subnet**	**Gateway**	**DNS**
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	"	"	"
iView	192.168.191.105 – 192.168.191.106	"	"	"
iCue	192.168.191.205 – 192.168.191.206	"	"	"
Group 4 – LAN Network (Blue cables)				
	IP	**Subnet**	**Gateway**	**DNS**
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	"	"	"
iView	192.168.191.107 – 192.168.191.108	"	"	"
iCue	192.168.191.207 – 192.168.191.208	"	"	"
Group 5 – LAN Network (Blue cables)				
	IP	**Subnet**	**Gateway**	**DNS**
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	"	"	"
iView	192.168.191.109 – 192.168.191.110	"	"	"
iCue	192.168.191.209 – 192.168.191.210	"	"	"
Group 6– LAN Network (Blue cables)				
	IP	**Subnet**	**Gateway**	**DNS**
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	"	"	"
iView	192.168.191.111 – 192.168.191.112	"	"	"
iCue	192.168.191.211 – 192.168.191.212	"	"	"
Group 7– LAN Network (Blue cables)				
	IP	**Subnet**	**Gateway**	**DNS**
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	"	"	"
iView	192.168.191.113 – 192.168.191.114	"	"	"
iCue	192.168.191.213 – 192.168.191.214	"	"	"
Group 8 – LAN Network (Blue cables)				
	IP	**Subnet**	**Gateway**	**DNS**
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	"	"	"
iView	192.168.191.115 – 192.168.191.116	"	"	"
iCue	192.168.191.215 – 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	"	"	"
iView	192.168.191.117 – 192.168.191.118	"	"	"
iCue	192.168.191.217 – 192.168.191.218	"	"	"



#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	
3rd-Party access address	192.168.191.223
With Optional Firewall / Router / Modem Dial-in	
DHCP addresses / VPN Tunnel addresses / Extra Dial-in addresses / 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

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	"	"	"
iCue	192.168.192.201 – 192.168.192.202	"	"	"
Digi Hall Calls UDP 3000-3007	192.168.192.211 – 192.168.192.214	"	"	"

Group #1 -LAN Network (Blue cables)				
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 – 192.168.191.102	"	"	"
iCue	192.168.191.201 – 192.168.191.202	"	"	"

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	"	"	"
iView	192.168.191.103 – 192.168.191.104	"	"	"
iCue	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	"	"	"
iView	192.168.191.105 – 192.168.191.106	"	"	"
iCue	192.168.191.205 – 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	"	"	"
iView	192.168.191.107 – 192.168.191.108	"	"	"
iCue	192.168.191.207 – 192.168.191.208	"	"	"

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	"	"	"
iView	192.168.191.109 – 192.168.191.110	"	"	"
iCue	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	"	"	"
iView	192.168.191.111 – 192.168.191.112	"	"	"
iCue	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	"	"	"
iView	192.168.191.113 – 192.168.191.114	"	"	"
iCue	192.168.191.213 – 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	"	"	"
iView	192.168.191.115 – 192.168.191.116	"	"	"
iCue	192.168.191.215 – 192.168.191.216	"	"	"

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	"	"	"
iView	192.168.191.117 – 192.168.191.118	"	"	"
iCue	192.168.191.217 – 192.168.191.218	"	"	"

Control Techniques Parameter Table

Enter any settings adjustments you make into the MCE Values column of the following tables.

Table 9.5 Menu A User Menu

Parameter Description		Range	Default	MCE Values
A01	User Security Status {H02}	User Menu A (0) All Menus (1) Read-only User Menu A (2), Read-only (3) Status Only (4) No Access (5)		1=All Menus
A02	Drive Control Mode {B01}	Open loop (1), RFC-A (2), RFC-S (3)	Open loop (1) RFC-A (2) FRFC-S (3)	Open loop (1) RFC-A (2) RFC-S (3)
A10	Control Input Mode {H11}	Analog Run Prmt (0) Analog 2 Dir. (1) Priority 1 Dir (2) Binary 1 Dir (3) Priority 2 Dir (4) Binary 2 Dir (5) Control Word (6) DCP3 (7), DCP4 (8)	Priority 1 Dir (2)	0=Analog Run Prmit
A12	Drive Encoder Type {C01}	AB (0), FD (1), FD (2), AB Servo (3), FD Servo (4), FR Servo (5), SC (6) CSC Hyperface (7), EnDat (8), SC EnDat (9) SSI (10), SC SSI (11), SC Serco (12), SC Sc (15)	AB (0) AB Servo (3)	0=AB (Incremental encoder) 9=SC EnDat (EnDat encoder)
A13	Drive Encoder Auto Configuration Select {C02}	Disabled (0) or Enabled (1)	Enabled (1)	0=Disabled (AB) 1=Enabled (SC EnDat)
A14	Drive Encoder Rotary Pulses Per Revolution {C03}	1 to 100,000 ppr	1024 ppr 4096 ppr	[encoder specific] (AB) 2048 (SC EnDat)
A15	Drive Encoder Voltage Selection {C04}	5V (0), 8V (1), 15V (2)	5V (0)	[encoder specific]
A16	Position Feedback Phase Angle {C13}	0.0 to 359°	0.0^{o}	[encoder specific] Only used for PM synchronous motor
A18	Motor Rated Current {B02}	+VM_RATED_CURRENT A	Maximum Heavy Duty Rating (J05)	[motor specific]
A19	Motor Rated Voltage {B03}	+VM_AC_VOLTAGE_SET V	200V drive: 300V 50Hz-400V drive: 400V 60Hz-400 V drive: 460V 575V drive: 575V 690V drive: 690V	[motor specific]
A20	Number of Motor Poles {B05}	Automatic (0) to 480 Poles (240)	Automatic (0) 16 Poles (3)	[motor specific] Commonly 6 poles for induction motor
A21	Motor Rated Frequency {B06}	0.0 to 550.0 Hz	50 Hz: 50.0 60 Hz: 60.0	[motor specific] Only used for induction motor (60 Hz USA)
A22	Motor Rated Speed {B07}	0 to 33000 RPM	50Hz: 1500.0 RPM 60 Hz: 1800.0 RPM 3000.00 RPM 3000.00 RPM	[motor specific]
A24	Symmetrical Current Limit {B16}	± VM_MOTOR1_CUR-RENT_LIMIT %	OL: 165.0% RFC: 175.0%	[motor specific] Only used for PM synchronous motor
A25	Maximum Switching Frequency {B13}	2 kHz (0), 3 kHz (1), 4 kHz (2), 6 kHz (3), 8 kHz (4) 12 kHz (5), 16 kHz (6)	8 kHz (4)	8 kHz (4)
A26	Motor Autotune {B11}	**OL:** None (0), Static (1), Rotating (2) **RFC-A:** None (0), Static (1), Rotating (2), Inertia 1 (3), Inertia 2 (4) **RFC-S:** None (0), Static (1), Rotating (2), Inertia 1 (3), Inertia 2 (4),Full Stationary (5)	None (0)	1=Stationary (Induction motor) 5=Full Stationary (PM synchronous motor)

Table 9.5 Menu A User Menu

Parameter Description		Range	Default	MCE Values
A28	Nominal Elevator Speed mm/s {E01}	OL: 0 to 1000 mm/s RFC: 0 to 10000	1000 mm/s	[job specific] Set to contract speed
A29	Sheave Diameter {E02}	1 to 32,767 mm	400 mm 480 mm	[job specific]
A30	Roping {E03}	1:1 (1), 2:1 (2), 3:1 (3), 4:1 (4)	1:1 (1)	[job specific] 1=1:1, 2=2:1
A31	Gear Ratio Numerator {E04}	1 to 32767	31 1	[motor specific] Note: 1=gearless application n=geared application (n>10)
A32	Gear Ratio Denominator{E05}	1 to 32767	1	[job specific] 1=gearless application 10=geared application
A33	Nominal Elevator Speed RPM {E07}	1.00 to 4000.00 RPM	1480.14 RPM 39.48 RPM	[job specific] Adjust A29{E02} for gearless applications and A31{E04} for geared applications to affect this value
A35	Run Jerk 1 {G13}	1 to 65535 mm/s³ x10	50 mm/s³ x10	10,000
A36	Run Jerk 2 {G14}	1 to 65535 mm/s³ x10	100 mm/s³ x10	10,000
A37	Run Jerk 3 {G15}	1 to 65535 mm/s³ x10	100 mm/s³ x10	10,000
A38	Run Jerk 4 {G16}	1 to 65535 mm/s³ x10	50 mm/s³ x10	10,000
A39	Creep Stop Jerk {G18}	1 to 65535 mm/s³ x10	100 mm/s³ x10	10,000
A40	Acceleration Rate {G11}	0 to 10000 mm/s²	800 mm/s²	5,000
A41	Deceleration Rate {G12}	0 to 10000 mm/s²	800 mm/s²	5,000
A42	Creep Stop Deceleration Rate {G17}	0 to 10000 mm/s²	800 mm/s²	5,000
A47	Brake Control Release Delay {D04}	0 to 10000 ms	500 ms	5
A48	Brake Control Apply Delay {D05}	0 to 10000 ms	500 ms	5
A49	Start Speed Loop P Gain {I01}	0.0 to 200.0 s/rad	0.35 s/rad	[job specific] Set initially to 0.2 (RFC-S) or 0.02 (RFC-A). Commonly between 0.01 and 2.0. Must be greater than or equal to A52{I06}
A50	Start Speed Loop I Gain{I02}	0.0 to 655.35 s²/rad	15.0 s²/rad	[job specific] Set initially to 2.0 (RFC-S) or 0.2 (RFC-A). Commonly between 0.1 and 20.0. Must be greater than or equal to A53{I07}
A51	Start Current Loop Filter {I05}	0.0 to 25.0 ms	2.0 ms	[job specific] Set initially to 2.0. Commonly between 2.0 and 10.0
A52	Run Speed Loop P Gain {I06}	0.01 to 2.0	0.2 (RFC-S) or 0.02 (RFC-A)	[job specific] Set initially to 0.2 (RFC-S) or 0.02 (RFC-A). Commonly between 0.01 and 2.0
A53	Run Speed Loop I Gain {I07}	0.1 to 20.0	2.0 (RFC-S) or 0.2 (RFC-A)	[job specific] Set initially to 2.0 (RFC-S) or 0.2 (RFC-A). Commonly between 0.1 and 20.0.
A54	Run Current Loop Filter {I10}	2.0 to 10.0	2.0	[job specific] Set initially to 2.0. Commonly between 2.0 and 10.0

Table 9.6 Menu B Motor Table

Parameter		Range	Default	MCE Values
B20	Motor Thermal Time Constant 1		89.0	[job specific] Set initially to 89.0
B54	Minimal Movement Phasing Test Angle		0.00 Degrees	[job specific] Set initially to 0.00. If A26{B11} is unsuccessful initially and with two motor leads swapped, set to 0.01 and repeat 26{B11}

Table 9.7 Menu E Mechanical

Parameter Description		Range	Default	MCE Values
E10	Load Cell Compensation Enable	Off (0) or On (1)	Off (0)	[job specific] On (0)
E12	Load Cell Compensation Filter	0 to 32767 ms	50 ms	50 ms
E14	Inertia Compensation Mode	None (0), Torque (2)	None (0)	[job specific]
E15	Inertia Compensation Total Inertia	0.05 to 0.20.	0.05	[job specific]
E19	Load Cell Compensation Offset		0.0%	0.0%
E20	Load Cell Compensation Scaling		1.0	1
E33	Alternative Torque Feed Forward Select	Off (0) or On (1)	Off	On
E34	Alternative Torque Feed Forward Value	-1000.0 to 1000.0	0.0	Read-Only

Table 9.8 Menu F I/O Hardware

Parameter Description		Range	Default	MCE Values
F18	T24 Digital I/O 01 Source/ Destination	A00 to AN99		A00
F19	T25 Digital I/O 02 Source / Destination	A00 to AN99		A00
F20	T26 Digital I/O 03 Source / Destination	A00 to AN99		A00
F21	T27 Digital Input 04 Destination	A00 to AN99		A00
F22	T28 Digital Input 05 Destination	A00 to AN99		A00
F23	T29 Digital Input 06 Destination	A00 to AN99		A00
F24	T24 Digital I/O 01 Output Select	Off (0) or On (1)	On (1)	Off
F25	T25 Digital I/O 02 Output Select	Off (0) or On (1)	On (1)	Off
F26	T26 Digital I/O 03 Output Select	Off (0) or On (1)	Off (0)	Off
F27	T41 T42 Relay Output Source	A00 to AN99		S33
F28	T41 T42 Relay Output Invert	Not Invert (0), Invert (1)	Not Invert (0)	On
F41	Analog Input 1 Destination	A00 to AN99	G35	G49 (Analog Speed Reference)
F48	T7 Analog Input 2 Destination	A00 to AN99		A00
F74	Motor Thermistor Input Select	No Thermistor (0), T8 Analog IP 3 (1), Encoder D Type (2)	T8 Analog IP 3 (1)	No Thermistor (0)

Table 9.9 Menu H Configuration

Parameter Description		Range	Default	MCE Values
H15	Maximum Speed Error Threshold	0 to 10000 mm/s	300 mm/s	[job specific] Set initially to 100
H16	Maximum Distance Error Threshold	0 to 10000 mm/s	100 mm/s	0 mm
H40	Drive Name Characters 1-4			[job number characters 1-4]
H41	Drive Name Characters 5-8			[job number characters 5-8]
H42	Drive Name Characters 9-12			[job number characters 9-12] Append car number as letter
H43	Drive Name Characters 13-16			[leave blank]
H54	Digital Override Analog Input Mode			4 (Velocity)

Table 9.10 Menu I Tuning

Parameter Description		Range	Default	MCE Values
I19	Variable Gains Mode	0=Start Only 1=Start+Run 2=Start+Run+Stop	1=Start+Run	0= Start Only Select 1=Start+Run or 2=Start+Run+Stop if necessary after initial adjustment.

Table 9.11 Menu O Backup Power

	Parameter Description	Range	Default	MCE Values
005	UPS Controller Enable			Read-Only

Table 9.11 Menu O Backup Power

	Parameter Description	Range	Default	MCE Values
006	UPS Maximum Power Setpoint			[job specific] If TAPS is used, enter rating of unit (3kw or 6kw); otherwise ignore set-point value
007	UPS evacuation current full load limit			150% The UPS load limit value may need to be increased if insufficient. If TAPS is not used, ignore load limit values
008	UPS evacuation current no load limit			150% The UPS load limit value may need to be increased if insufficient. If TAPS is not used, ignore load limit values

Table 9.12 Menu R Application Setup

Parameter Description		Range	Default	MCE Values
R06	EIA-RS485 Mode	0 to 255	1	6
R07	EIA-RS485 Baud Rate	300bps (0), 600bps (1), 1200bps (2), 2400bps (3), 4800bps(4), 9600bps (5), 19200bps (6), 38400bps (7), 57600bps (8), 115200bps (9)	4	57600 bps
R11	Clock Task Scheduling	0 to 200 ms	10 ms	0 ms
R12	POS Task Scheduling Rate	0=Disable, 1=25us, 2=500us, 3=1 ms, 4=2 ms, 5=4 ms, 6=8 ms	0=Disable	3=1 ms
R15	Disable Reset on Trip Cleared	Off (0) or On (1)	Off (0)	On

Table 9.13 Menu S Application Menu 1

Parameter Description		Range	Default	MCE Values
S30	Controller Control Word	Bit 0=enable Bit 1=reset Bit 2= run Bit 3= direction Bit 4-6=zone Bit 10=battery Bit 11=generator Bit 12=inspection	Read-Only	Read-Only

Table 9.14 Menu T Application Menu 2

Parameter Description		Range	Default	MCE Values
T11	Inverter Address	1 to 32767	0	1
T13	Number of Good Messages Received		Read-Only	Read-Only
T14	Received Message Duration		Read-Only	Read-Only Nominally 6 to 10 ms
T15	Received Message Periodicity		Read-Only	Read-Only Nominally 20 ms
T16	Max Received Message Periodicity		Read-Only	Read-Only Message lost if greater than 40 ms
T17	Error Messages Received		Read-Only	Read-Only Since power up
T18	Last Error Message Code	1=no STX 2=service ID not supported 3=message ID invalid 4=no ETX 5=BCC does not match 6=wrong inverter address.	Read-Only	Read-Only
T20	Velocity Command Inertia Filter	1 to 50 Hz	50 Hz	5 Hz
T21	Inertia Compensation Filter	1 to 50 Hz	10 Hz	5 Hz

Table 9.14 Menu T Application Menu 2

Parameter Description		Range	Default	MCE Values
T22	Inertia Acceleration Option	Controller Acceleration (0), Estimated Acceleration (1), Controller Acceleration when direction-active; otherwise, Estimated Acceleration (2)	0=Controller Acceleration	0=Controller Acceleration
T31	Speed Inversion	0= Off, 1=On	0=Off	0n=iControl
T32	Controller			0n=iControl
T51	SI Application Version		Read-Only	Read-Only [format=xxyyzz]

Table 9.15 Menu U Application Menu 3

Parameter Description		Range	Default	MCE Values
U22	Estimated Acceleration		Read-Only	Read-Only: mm/s2
U23	Controller Acceleration		Read-Only	Read-Only: mm/s2
U24	Inertia Compensation Acceleration		Read-Only	Read-Only: mm/s2
U25	G54 Velocity Command		Read-Only	Read-Only: mm/s
U26	Filtered Velocity Command		Read-Only	Read-Only: mm/s
U27	E13 + E34		Read-Only	Read-Only: %
U28	Estimated Inertia Compensation for E15		Read-Only	Read-Only 10,000=scale (7500 correlates to 0.07500)

Table 9.16 Menu Slot 2.02 SI-IO Digital I/O

Parameter Description		Range	Default	MCE Values
2.02.019	Relay 1 Invert	Off (0), On (1)	0=Off	0=Off
2.02.020	Relay 2 Invert	Off (0), On (1)	0=Off	0=Off
2.02.029	Relay 1 Source	A00 to AN99	A00	0. S33 (There is a space between the period and letter S)
2.02.030	Relay 2 Source	A00 to AN99	A00	0. S32 (There is a space between the period and letter S)

TORQMAX F5 Drive v3.xx Parameters Table

Enter the settings you make while adjusting into the Field column of the following table.

Table 9.17 TORQMAX F5 Drive, v3.21 LCD Parameter Settings

Para	Name	Setting	Num	Range	Units	Default	Field Setting
WARNING: ***Do not change drive parameters while the elevator is running. Incorrect drive parameter values can cause erratic operation.***							
WARNING: Parameters with an asterisk (*) must be set correctly for your specific motor / machine / job. Refer to the adjustment manual for detailed information.							
CH	**Configuration Handling Parameters**						
CH01	Default Parameters	Off - No action taken	0	-	-	Off	Off
		Factory Reset-Will load defaults, as created by controller OEM	1				
CH02	Save Parameters	Off - No action taken	0	-	-	Off	Off
		Save to Flash-All current parameter settings are saved to keypad operator flash memory	1				
		This function is not available	2				
		Write to Drive- Current keypad operator settings downloaded to drive	3				

Table 9.17 TORQMAX F5 Drive, v3.21 LCD Parameter Settings

Para	Name	Setting	Num	Range	Units	Default	Field Setting
CH03	Restore Parameters	**Off** - No action taken	0	-	-	Off	Off
		Restore from Flash- Previously saved parameter settings are restored from internal keypad operator flash	1	-	-		
		Load Parameters- Select below MCE config file as per controller Type and AC machine. **ECLIMGLS.DW5 1468**-Element closed loop with Induction Gearless Machine **ECLIMGRD.DW5 1466**- Element closed loop with Induction Geared Machine **ECLPMGLS.DW5 1473**- Element closed loop with PM Gearless Machine **ECLPMGRD.DW5 1471**- Element closed loop with PM Geared Machine **EOLIMGRD.DW5 1451**- Element open loop with Induction Geared Machine **ICLIMGLS.DW5 1469**- iController closed loop with Induction Gearless Machine **ICLIMGRD.DW5 1467**- iController closed loop with Induction Geared Machine **ICLPMGLS.DW5 1473**- iController closed loop with PM Gearless Machine **ICLPMGRD.DW5 1471**- iController closed loop with PM Geared Machine **IOLIMGRD.DW5 1452**- iController open loop with Induction Geared Machine **MCLIMGLS.DW5 1468**- Motion closed loop with Induction Gearless Machine **MCLIMGRD.DW5 1466**- Motion closed loop with Induction Geared Machine **MCLPMGLS.DW5 1473**- Motion closed loop with PM Gearless Machine **MCLPMGRD.DW5 1471**- Motion closed loop with PM Geared Machine **MOLIMGRD.DW5 1451**- Motion open loop with Induction Geared Machine	2	-	-		
		Restore from Drive- Current drive settings are uploaded from drive to keypad operator	3	-	-		
		Load Motor Data- Loads data from **.dw5** stored to flash.	4	-	-		
CH10-CH15	LED Diagnostics	-	-	-	-	-	-
US	**Basic Setup Parameters**						
US02	System Units	m/sec ft/min	0 1	-	ft/min	ft/min	(1) ft/min
US03	Motor Type	Induction Geared Induction Gearless PM Synchronous Geared PM Synchronous Gearless	0 1 2 3	-	-	Induction Geared	*
US04	Control Type	Digital Speed Selection Binary Speed Selection Absolute Analog Speed BiPolar Analog Speed Serial Spd DIN66019, Serv.49 Serial Spd DIN66019, Serv.50 Serial Binary Spd DIN66019, Serv.50	0 1 2 3 4 5 6	-	-	Binary Speed Selection	(5) Serial Spd DIN66019 Serv.50

Table 9.17 TORQMAX F5 Drive, v3.21 LCD Parameter Settings

Para	Name	Setting	Num	Range	Units	Default	Field Setting
US05	Load Configuration	Not configured Configuration OK Write config. to Drive Read Config. from drive Write config. to Flash Read config. From Flash Write config. to SD Card Read config. From SD Card Create OEM Defaults Restore OEM Defaults Restore KEB Defaults	0 1 2 3 4 5 6 7 8 9 10	-	-	Not Configured	(1) Configuration OK
US06	Contract Speed	-	-	0-1600	ft/min	0	*
LI	**Input Parameters**						
LI01	Type of Input	PNP NPN	0 1	-	-	PNP	(0) PNP
LI04-LI11	Input 1 Function (11)	No Function UPS Operation Reduced Torque Fault reset Up Direction	0 1 2 16 25	-	-	-	No Function
LI15	Direction Selection Inputs	Up and Down Inputs Down Input Only Up & Down and Serial Control Word	0 1 2	-	-	(0) Up and Down Inputs	(0) Up and Down Inputs + Function By direction inputs
LM	**Motor Data Parameters**						
LM01	Motor Power	Induction Geared, Gearless	-	0.5-299.5	HP	10	*
		PM (Read Only)	-	0.5-299.5	HP	Calculated	
LM02	Motor Power	Induction Geared	-	20-4000	RPM	1164	-
		Induction Gearless	-	20.0-500.0	RPM	100.0	-
		PM Geared	-	400-4000	RPM	1000	-
		PM Gearless	-	20.0-500.0	RPM	100.0	-
LM03	Motor Current	Name Plate Motor Current	-	1.0-1000	AMPs	1.0	-
LM04	Motor Frequency	Induction Geared, Gearless	-	4.0-200.0	Hz	60.0	-
		PM Geared, Gearless	-	4.0-200.0	Hz	50.0	-
LM05	Motor Voltage	Induction Geared, Gearless: Name plate rated voltage.	-	10-32000	V	400	*
		PM Geared, Gearless: No-load, phase-to- *phase back EMF rms voltage at LF.11. MCE default setting is **80% of motor name plate voltage** but during auto tuning process, this value is mea-sured and will provide the best value.	-	10-500	V	100	*
LM06	Motor Power Factor	Induction Geared, Gearless- if not known then set 0.9, for high Slip motor 0.75 PM Machine—N/A	-	0.5-1.00	-	0.90	*

Table 9.17 TORQMAX F5 Drive, v3.21 LCD Parameter Settings

Para	Name	Setting	Num	Range	Units	Default	Field Setting
LM07	Motor Torque	Induction Geared (Read Only)	-	0.0-479.7	lb-ft	Calculated	*
		Induction Gearless (Read Only)	-	0.1-4947.0	lb-ft	Calculated	
		PM Geared	-	0.0-479.7	lb-ft	0	
		PM Gearless	-	0-4797	lb-ft	0	
LM08	Electric Motor Protection	Off On	0 1	-	-	On	On
LM09	Electric Motor Protection Current	Induction Geared, Gearless	-	1.0-1000.0	AMPs	0.90	*
		PM Geared, Gearless		N/A		N/A	
LM10	Motor Over Heat Temp	-	-	50-240	°C	140	140
LM20	Motor LS	Induction Geared, Gearless	-	0.01-655.35	mH	10.00	Learned
		PM Geared, Gearless		0.01-500.00		0.01	
LM21	Motor RS	Induction Geared, Gearless	-	0.000-68.535	Ohm	1.000	Learned
		PM Geared, Gearless					
LM22	Motor RR	Induction Geared, Gearless	-	0.000-65.535	Ohm	1.000	N/A
		PM Geared, Gearless		N/A		N/A	
LM23	Motor LM	Induction Geared, Gearless	-	0.1-3276.7	Ohm	100.0	N/A
		PM Geared, Gearless		N/A		N/A	
LM24	Field Weakening Corner	Induction Geared, Gearless	-	1-4000	RPM	Calculated	N/A
		PM Geared, Gearless		N/A		N/A	
LM25	Field Weakening Speed	Induction Geared, Gearless	-	1-4000	RPM	Calculated	N/A
		PM Geared, Gearless		N/A		N/A	
LM26	Motor LS Max.	Induction Geared, Gearless	-	0.01-500.0	mH	N/A	N/A
		PM Geared, Gearless		N/A		0.01	
LM27	Motor Inductance Mode	Induction Geared, Gearless	-	N/A	-	-	-
		PM Geared, Gearless		Ld <> Lq Ld = Lq	0 1	Ld <> Lq	Ld <> Lq
LM30	Motor Control	Induction Geared, Gearless		0 Off 1 Motor Model 2 Off+Vmax Regulation 4 Flux Current 8 Flux Proofing 10 Zero Speed Model can be selected together	-	Off+Vmax Regulation	Off+Vmax Regulation
		PM Geared, Gearless		0 Off 1 Motor Model 2 Off+Vmax Regulation can be selected together	-	Off+Vmax Regulation	
LM31	Vmax Regulation	-	-	0-110	%	97	97
LM32	KP Current	-	-	1-32767	-	Calculated	Auto Calc
LM33	KI Current	-	-	1-32767	-	Calculated	Auto Calc

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Table 9.17 TORQMAX F5 Drive, v3.21 LCD Parameter Settings

Para	Name	Setting	Num	Range	Units	Default	Field Setting
LE	**LE Encoder Data Parameters**						
LE01	Encoder 1 Interface (X3A)	-	-	-	-	Read-Only	*
LE02	Encoder Pulse Number	For Incle and SinCo=Customer data For HIPER = 1024 For Endat = 2048	-	256-16384	ppr	1024	*
LE03	Swap Encoder Channels	Not Inverted A-B Swapped Inverted Rotation A-B Swapped & Inv. Rotation	0 1 2 3	-	-	Not Inverted	(0)
LE04	Sample Rate for Encoder	0.5 ms (2kHz) 1 ms (1kHz) 2 ms (500Hz) 4 ms (250Hz) 8 ms (125Hz) 16 ms (63Hz) 32 ms (31Hz)	0 1 2 3 4 5 6	-	ms (Hz)	(4) 8 ms 125 Hz	(4) 8 ms 125 Hz
LE05	Encoder 1 Multiplier	2 For Geared mode 8 for Gearless mode	2 8	-	-	2 or 8	*
LE06	Encoder 1 Pole Position	Induction Geared, Gearless PM Geared, Gearless	--	N/A Learned	--	N/A Learned	Learned
LE07	Rotor Detection Mode	Off NOP Power On NOP + Power on After Reset NOP + After Reset Power On + After Reset NOP + Power On + After Reset	0 1 2 3 4 5 6 7	-	-	0	Off
LE11	Serial Encoder 1 Type	-	-	-	-	Read-Only	Read-Only
LE12	Serial Encoder 1 Status	-	-	-	-	Read-Only	Read-Only
LN	**Machine Data Parameters**						
LN01	Traction Sheave Diameter	-	-	3.94-62.99	in	24.00	*
LN02	Gear Reduction Ratio	Program LN02 = LN05	-	1.00250.00	x:1	30.00	*
LN03	Roping Ratio	-	-	1-4	x:1	1	*
LN04	Load	-	-	0-3000	lb	0	*
LN05	Estimated Gear Ratio	-	-	0.00	x:1	Calculated	Calculated
LS	**Speed Profile Parameters**						
LS01	Leveling Speed	-	-	0-25	ft/min	4	4

Table 9.17 TORQMAX F5 Drive, v3.21 LCD Parameter Settings

Para	Name	Setting	Num	Range	Units	Default	Field Setting
LS02	High Speed	-	-	0-1600	ft/min	0	*
LS03	Inspection Speed	Maximum setting = 150 ft/min or contract speed, whichever 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	-	-		ft/min	0	0
LS09	Emergency Power Speed	-	-	0-1600	ft/min	0	0
LS10	Battery Operation Speed	Maximum setting = 50 ft/min or contract speed, whichever is less	-	0-50	ft/min	0	*
LS15	High Speed Profile	Custom Medium Soft Hard	0 1 2 3	-	-	(0) Custom +External	(0) Custom +External Profile + Ogive off
LS16	One Floor Profile	Custom Medium Soft Hard	0 1 2 3	-	-	(0) Custom	(0) Custom
LS17	Emergency Profile	Same as LS16	" "	-	-	(0) Custom	(0) Custom
LS20	Acceleration High Speed	-	-	0.3-12.00	ft/min	2.3	2.3
LS21	Start Jerk High Speed	-	-	0.3-32.00	ft/min	2.3	Auto Calc
LS22	Acceleration Jerk Speed	-	-	0.3-32.00	ft/min	2.3	Auto Calc
LS23	Deceleration High Speed	-	-	0.3-32.00	ft/min	2.3	2.3
LS24	Deceleration Jerk High Speed	-	-	0.3-32.00	ft/min	2.3	Auto Calc
LS25	Stop Jerk High Speed	-	-	0.3-32.00	ft/min	2.3	Auto Calc
LS27-LS55	Speed Profile Parameter	-	-	0.0-6.0	ft/min	0	KEB Default
LL	**Tune Parameters**						
LL01	Motor Tuning	Off Start	0 1	-	-	Off	(0) Off
LL02	Turning Current	Induction Geared, Gearless PM Geared, Gearless	-	N/A 10-100	-	-	100

Table 9.17 TORQMAX F5 Drive, v3.21 LCD Parameter Settings

Para	Name	Setting	Num	Range	Units	Default	Field Setting
LL05	SPI	Induction Geared, Gearless PM Geared, Gearless	0 1	N/A Off, Start	-	N/A Off	Off
LL06	Encoder Pole Position Learn	Induction Geared, Gearless PM Geared, Gearless	0 1	N/A Off, Start	-	N/A Off	Off
LL07	Encoder Synchronization	Off Start	0 1	-	-	Off	(0) Off
LL10	Inertia Lean	Off Start	0 1	-	-	Off	(0) Off
LL115	Overspeed Test	Off Start	0 1	-	-	Off	(0) Off
LL16	Overspeed Test Speed	-	-	0-2400	ft/min	0	0
LL17	Safety Release	Off Start	0 1	-	-	Off	(0) Off
LC	**Control Setting Parameters**						
LC01	Control Mode	Open Loop V/Hz Open Loop Vector Closed Closed Loop FOC Closed Loop Analog Pretorque Closed Loop Digital Pretorque Closed Loop Synth. Pretorque Note: **Motion and Element:** Program 3 (Closed Loop Analog Pretorque)" **iController:** Program 4 (Closed Loop Digital Pretorque)	0 1 2 3 4 5	-	-	Closed Loop Digital Pretorque	4
LC02	Speed Gain Optimization	-	-	0-25	-	0	0
LC03	KP Speed Acceleration	-	-	1-50000	-	3000	3000
LC04	KP Speed Deceleration	-	-	1-50000	-	3000	3000
LC05	KP Speed Pretorque	-	-	1-50000	-	3000	3000
LC08	KI Speed Acceleration	-	-	1-25000	-	250	250
LC09	KI Speed Deceleration	-	-	1-25000	-	250	250
LC10	KI Speed Pretorque	-	-	1-30000	-	500	500
LC11	KI Speed Offset Accel	-	-	0-20000	-	3000	3000
LC12	KI Speed Offset Decel	-	-	0-20000	-	1000	1000
LC13	Speed for max KI Accel	-	-	1-50	-	4	4
Lc14	Speed for min KI Decel	-	-	1-200	-	16	16
LC15	Speed for max KI Accel	-	-	1-50	-	8	8

Table 9.17 TORQMAX F5 Drive, v3.21 LCD Parameter Settings

Para	Name	Setting	Num	Range	Units	Default	Field Setting
LC16	Speed for min KI Decel	-	-	1-200	ft/min	24	24
LC20	Gain Profile Mode	Variable Resonant	-	0 1	-	Variable	Variable
LC21	KP Speed Resonance Accel	-	-	0-5000	%	50	50
LC22	Speed at Resonance Accel	-	-	1-2000	ft/min	1	1
LC23	KP Speed Resonance Decel	-	-	0-5000	%	50	50
LC24	Speed at Resonance Decel	-	-	0-2000	ft/min	1	1
LC25	KP Speed High	-	-	0-400	-	100	100
LC30	Maximum Torque	Typically set between 200% and 250% (150% during commissioning)	-	0-500	%	150	150
LC31	Reduced Maximum Torque	-	-	0-500	%	100	100
LC32	Low Speed Torque Boost	Induction Geared, Gearless	-	0-25.5	%	5.0	*
		PM Geared, Gearless		N/A			
LC33	Auto Boost Gain	Induction Geared, Gearless	-	0-25.5	-	0.00	*
		PM Geared, Gearless		N/A		N/A	
LC34	Digital Pretorque	-	-	-100.00-100.00	%	0	0
LC40	Accel. Torque	-	-	0-12036	lb-ft	0	0
LC41	System Inertia	Induction Geared, PM Geared	-	0-65501	lb-in2	0	0
		Induction Gearless, PM Gearless		0.00-1073.7		0	0
LC42	FFTC Filter	Off 250Hz 125Hz 63Hz 31Hz 16Hz 8.0Hz 4.0Hz 2.0Hz 1.0Hz	-	0 1 2 3 4 5 6 7 8 9	Hz	Off	Off
LC43	FFTC Gain	-	-	0-200	%	0	0
LC44	Torque Command Filter	Off 2000Hz 1000Hz 500Hz 250Hz 125Hz 63Hz 31Hz	-	0 1 2 3 4 5 6 7	Hz	2000	2000
LT	**Timer Parameters**						

Table 9.17 TORQMAX F5 Drive, v3.21 LCD Parameter Settings

Para	Name	Setting	Num	Range	Units	Default	Field Setting
LT01	Brake release Delay	-	-	0.00-1.00	sec	0.40	0.00
LT02	Control Hold Off	-	-	0.00-1.00	sec	0.40	0.40
LT03	Speed Start Delay	-	-	0.0-10.00	sec	0.70	10.00
LT10	Brake Drop delay	-	-	0.00-1.00	sec	0.10	0.00
LT12	Current Hold Time	-	-	0.00–2.00	sec	0.50	0.00
LT13	Current Ramp Down time	-	-	0.10–0.50	sec	0.30	0.30
LP	**Positioning Parameters**						
LX	**Special Functions Parameters**						
LX01	Auto Reset	-		0-10		5	10
LX02	Switching Frequency	8 kHz 12 kHz 16 kHz	0 1 2	-	kHz	8	(0) 8khz
LX06	Function Test	Off Fans On	0 1	-	-	(0) Off	(0) Off
LX08	Phase Current Check	Mag Current check Phase Current Check	0 1	-	-	1	(1) Phase Current Check
LX10	EdOH Function	On- To activate Drive temp sensor Input (T1 and T2) Off- Whenever Drive input temp. sensor input (T1 and T2) not used	0 1	-	-	(0) Off	Off
LX11	Reference Splitting	-	-	0-127	msec	0	40
LX13	Speed Following Errors	Warning Digital Output On with Error % Contract Speed On with Error % Command Speed	0 1 2	-	-	-	(1) On with Error % Contract Speed
LX14	Speed Difference	-	-	0-50	%	10	10
LX15	Speed for Pre-opening	-	-	1-100	ft/min	59	59
LX16	Decel Confir-mation Speed	-	-	0-1600	ft/min	0	Auto Cal
LX17	ETS Speed	-	-	0-1600	ft/min	0	0
LX18	Braking Resis-tance	-	-	0-200	Ohm	0	0
FB	**Field Bus Parameters- These parameters require Access Level- OEM (Password 479) and MCE product specific. Don't make any changes (Consult MCE).**						
FB05	Control Word Mask	-	-	0h-FFFFh	-	FFFFh	FFFFh
FB06	Speed Scale Multiplier	-	-	0-65535	-	1	1

Table 9.17 TORQMAX F5 Drive, v3.21 LCD Parameter Settings

Para	Name	Setting	Num	Range	Units	Default	Field Setting
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 Node ID	-	-	1-128	-	1	1
FB11	DIN66019 Baud Rate	9600 bps 19200 bps 38400 bps 55500 bps 115200 bps	0 1 2 3 4	-	-	38400	3
FB12	DIN66019 Watchdog	-	-	20-1000	ms	50	50
FB13	PDO1 Map Assignment	DG02 Inverter status	-	1: DG02 2: DG50 3: DG05 7: DG07 39: DG49	-	-	1: DG02
FB14	PDO2 Map Assignment	Motion and Element-DG50 (Elevator Speed) iController- DG49 (Signed Elevator Speed)	-		- 	- 	39: DG49
FB15	PDO3 Map Assignment	Motion and Element- DG07 Motor Speed iController- DG05 Actual Torque	-		- 	- 	3: DG05
FB17	PDI1 Map Assignment	FB02 Speed	-	1: FB01 2: FB02 3: FB03	-	-	2: FB02
EB18	PDI2 Map Assignment	FB01 Control Word	-		-	-	1: FB01
FB19	PDI3 Map Assignment	FB03 Pretorque	-		-	-	3: FB03
FB21	Special Function 1	No Function UPS Operation Reduced Torque Inspection Speed	0 1 2 32	-	-	No Function	1
FB22	special Function 2			-	-	No Function	2
FB23	Special Function 3			-	-	No Function	No Function
FB24	Special Function 4			-	-	No Function	32
FB25	Special Function 5			-	-	No Function	No Function
FB26	Special Function 6			-	-	No Function	No Function
FB27	Special Function 7			-	-	No Function	No Function
FB54	RS485 Mode	Full Duplex, Half Duplex	-	0-1	-	Full Duplex	Full Duplex

PowerBack R6 Regenerative Drive Quick Reference

This section includes quick reference information for the PowerBack R6 Regenerative AC drive. Please refer to the R6 Regenerative drive manual provided with the iControl for detailed explanation of the parameters.

Table 9.18 Quick Reference for PowerBack R6 Regenerative Drive

WARNING: Do not change drive parameters while the elevator is running. Incorrect values of drive parameters can cause erratic elevator operation.				
Display	**Parameter Description**	**Setting Range**	**Resolution**	**Field/MCE Setting**
CP. 0	Password input	0...9999	1	---
CP. 1	Status display	---	---	---
CP. 2	Main Line Frequency	---	0.1 Hz	---
CP. 3	AC-Phase current L1	---	0.1 A	---
CP. 4	AC-Phase current L2	---	0.1 A	---
CP. 5	AC-Phase current L3	---	0.1 A	---
CP. 6	Actual Load	---	1%	---
CP. 7	Actual Load / peak value	---	1%	---
CP. 8	DC output current	---	0.1 A	---
CP. 9	Actual DC voltage	---	1 V	---
CP.10	DC voltage / peak value	---	1 V	---
CP.11	Heat sink temperature	---	1 ^{0}C	---
CP.12	Over load counter	---	1%	---
CP.13	Active power	---	0.1kW	---
CP.14	Total regen kWhr counter	---	0.1 kWh	---
CP.15	Total motor kWhr counter	---	0.1 kWh	---
CP.16	Total net kWhr counter	---	0.1 kWh	---
CP.17	Apparent power / Line input	---	0.1 kVA	---
CP.18	Analog output 1 / amplification factor	-20.00...20.00	0.01	1.00
CP.19	DC bus switching level	+/- 30000.00	0.01	Set to 260 for 208 - 240Vac Set to 600 for 460 - 480Vac
CP.20	Auto error reset counter	0...10	1	3
CP.21	Last Error	---		---
CP.22	Last Error 1	---		---
CP.23	Last Error 2	---		---
CP.24	Last Error 3	---		---
CP.25	Last Error 4	---		---
CP.26	Last Error 5	---		---
CP.27	Last Error 6	---		---
CP.28	Last Error 7	---		---
CP.29	Software version	---		
CP.30	Software date code	DDMM.Y		
CP.31	Power part ID code	---		Set to 250 for 208 - 240Vac Set to 253 for 460 - 480Vac
CP.32*	Pulse off Level	-100kW...0.0kW	0.1kW	-0.8kW
CP.33*	Operating Mode 0: Master with Commutation Choke 2: Slave with Commutation Choke	0...3	1	Set to 0 for Main Regen drive Set to 2 for Second drive
CP.34*	Control Angle	0.0...60.0	0.1	29.0
*NEW PARAMETERS in software version 1.3				

Job #:	Drive Serial #:
Production Order #	Test Technician:
Drive Model #:	Date:

Magnetek HPV900 Series 2 Parameters Quick Reference

This section includes quick reference information for the Magnetek HPV900 Series 2 AC Elevator drive parameters. Please refer to the Magnetek drive manual provided with iControl for a detailed explanation. Enter the settings you make while adjusting into the Field Setting column.

Table 9.19 Magnetek AC Drive Parameters Table

#	Operator Display	Parameter Description	Unit	Setting Range	MCE Defaults	Field Setting
		Adjust A0				
A1	**Drive**					
	Contract Car Spd	Elevator Contract Speed	fpm	0 - 3000	0.1	
	Contract Mtr Spd	Motor Speed at elevator contract speed	rpm	50 - 3000	1130	
	Response	Speed regulator sensitivity. Set too high, motor current and speed jittery. If too small, motor will be sluggish.	rad/ sec	1.0 - 20.0	10	
	Inertia	System inertia	sec	0.25 - 50.00	2.0	
	Inner Loop Xover	Inner speed loop crossover frequency (only with Ereg speed regulator)	rad/ sec	0.1 - 20.0	2.0	
	Gain Reduce Mult	Speed regulator response percentage to use in low gain Mode. 100% = no reduction.	%	10 - 100	100	
	Gain Chng Level	Speed level to change to low gain mode (only with internal gain switch)	%	0 - 100.0	100	
	Tach Rate Gain	Compensates for rope resonance. Use only after A1, Inertia, and A1, Response, have been set correctly.	%	0 - 30.0	0	
	Spd Phase Margin	Phase margin of speed regulator (only with PI speed regulator)	o	45 - 90	80	
	Ramped Stop Time	Time to ramp from rated torque to zero (only with torque ramp down stop function)	sec	0 - 2.50	0.20	
	Contact Flt Time	Time before a contactor fault is declared	sec	0.10 - 5.00	0.75	
	Brake Pick Time	Time before a brake pick fault is declared	sec	0 - 5.00	0.00	
	Brake Hold Time	Time before a brake hold fault is declared	sec	0 - 5.00	0.00	
	Overspeed Level	Threshold for detection of overspeed fault	%	100.0 - 150.0	125.0	
	Overspeed Time	Time before an overspeed fault is declared	sec	0 - 9.99	1.00	
	Overspeed Mult	Multiplier for overspeed test (U4)	%	100 - 150	100	
	Encoder Pulses	Encoder counts per revolution	ppr	600 - 10000	1024	
	Spd Dev Lo Level	Range around speed reference for speed deviation low logic output	%	00.1 - 10.0	10	
	Spd Dev Time	Time before speed deviation low logic output is true	sec	0 - 9.99	1.00	
	Spd DevHi Level	Level for declaring speed deviation alarm	%	0 - 99.9	20.0	
	Spd Command Bias	Subtracts an effective voltage from actual speed command voltage	volts	0 - 6.00	0.00	
	Spd Command Mult	Scales analog speed command	-	0.90 - 3.00	1.00	
	Pretorque Bias	Subtracts an effective voltage from actual Pretorque command voltage	volts	0 - 6.00	0.00	
	Pretorque Mult	Scales Pretorque command	-	-10.00-10.00	1.00	
	Zero Speed Level	Threshold for zero speed logic output	%	0 - 99.99	1.00	

Table 9.19 Magnetek AC Drive Parameters Table

#	Operator Display	Parameter Description	Unit	Setting Range	MCE Defaults	Field Setting
	Zero Speed Time	Time before zero speed logic output is declared true	sec	0 - 9.99	0.10	
	Up/Dwn Threshold	Detection threshold, up or down direction	%	0 - 9.99	1.00	
	Mtr Torque Limit	Motoring torque limit. Torque Limit LED will light when this limit is reached.	%	0 - 250.0	250.0	
	Regen Torq Limit	Regenerating torque limit. Torque Limit LED will light when this limit is reached.	%	0 - 250.0	250.0	
	Flux Wkn Factor	Defines torque limit at higher speeds	%	60.0 - 100.0	75.0	
	Ana 1 Out Offset	Subtracts an effective voltage to actual analog output 1	%	-99.9 - 99.9	0.00	
	Ana 2 Out Offset	Subtracts an effective voltage to actual analog output 2	%	-99.9 - 99.9	0.00	
	Ana 1 Out Gain	Scaling factor for analog output 1	-	0 - 10.0	1.0	
	Ana 2 Out Gain	Scaling factor for analog output 2	-	0 - 10.0	1.0	
	Flt Reset Delay	Time Before a fault is automatically reset	sec	0 - 120	5	
	Flt Reset / Hour	Number of faults allowed to reset automatically per hour	fault	0 - 10	3	
	Up to SPD. Level	The logic output function is true when the motor speed is above the user specified speed defined here	%	0 - 110.00	080.00	
	Mains DIP Speed	When enabled by Main DIP Speed (A1) parameter, speed reduced by this percent when undervoltage alarm declared	%	5 - 99.9	25.00	
	Run Delay Timer	Delays drive recognition of RUN signal.	sec	0.00 - 0.99	0.00	
	AB Zero Spd Lev	Auto Brake Function - N/A to MCE products	%	0.00 - 2.00	0.00	
	AB Off Delay	N/A to MCE products	sec	0.00 - 9.99	0.00	
	Contactor DO Dly	N/A to MCE products	sec	0.00 - 5.00	0.00	
	TRQ Lim Msg Dly	Time duration drive is in torque limit before Hit Torque Limit message displayed.	sec	0.50 - 10.00	0.50	
	SER2 INSP SPD	Defines serial mode 2 Inspection (only serial mode 2)	ft/min	0 - 100	30	
	SER2 RS CRP SPD	Creep speed used in “rescue mode”	ft/min	0 - 100	10	
	SER2 RS CPR Time	Maximum time drive will continue to run at rescue creep speed (only serial mode 2)	sec	0 - 200	180	
	SER2 FLT TOL	Maximum time that may elapse between valid run time messages before a serial fault is declared (only serial mode 2)	sec	0.0 - 2.0	0.04	
	Rollback Gain	Ant-rollback gain	-	1 - 99	1	
	Notch Filter Frq	Notch Filter Center Frequency	Hz	5 - 60	20	
	Notch Filt Depth	Notch filter maximum attenuation	%	0 - 100	0	
	MSPD Delay 1-4	Recognition time delay for a defined multistep speed command	sec	0.00 - 10.0	0.00	
A2	**S-Curves**					
	Accel Rate 0	Acceleration rate #0	ft/s^2	0 - 7.99	7.99	7.99
	Decel Rate 0	Deceleration rate #0	ft/s^2	0 - 3.999	7.99	7.99

Table 9.19 Magnetek AC Drive Parameters Table

#	Operator Display	Parameter Description	Unit	Setting Range	MCE Defaults	Field Setting
	Accel Jerk in 0	Rate of increase in acceleration, up to ACCEL Rate, when increasing elevator speed	ft/s^3	0 - 8.0	0.00	0.00
	Accel Jerk out 0	Rate of decrease of acceleration to zero when approaching contract elevator speed	ft/s^3	0 - 8.0	0.00	0.00
	Decel Jerk in 0	Rate of increase of deceleration, up to Decel Rate, when decreasing elevator speed	ft/s^3	0 - 8.0	0.00	0.00
	Decel Jerk out 0	Rate of decrease of deceleration to zero when slowing the elevator to leveling speed	ft/s^3	0 - 8.0	0.00	0.00
	Accel Rate 1	Acceleration rate #1	ft/s^2	0 - 7.99	3.00	
	Decel Rate 1	Deceleration rate #1	ft/s^2	0 - 7.99	3.00	
	Accel Jerk in 1	Rate of increase of acceleration, up to ACCEL Rate, when increasing elevator speed	ft/s^3	0 - 8.0	8.0	
	Accel Jerk out 1	Rate of decrease of acceleration to zero when approaching contract elevator speed	ft/s^3	0 - 8.0	8.0	
	Decel Jerk in 1	Rate of increase of deceleration, up to Decel Rate, when decreasing elevator speed	ft/s^3	0 - 8.0	8.0	
	Decel Jerk out 1	Rate of decrease of deceleration to zero when slowing the elevator to leveling speed	ft/s^3	0 - 8.0	8.0	
	Accel Rate 2	Acceleration rate #2	ft/s^2	0 - 7.99	3.00	
	Decel Rate 2	Deceleration rate #2	ft/s^2	0 - 7.99	3.00	
	Accel Jerk in 2	Rate of increase of acceleration, up to ACCEL Rate, when increasing elevator speed	ft/s^3	0 - 8.0	8.0	
	Accel Jerk out 2	Rate of decrease of acceleration to zero when approaching contract elevator speed	ft/s^3	0 - 8.0	8.0	
	Decel Jerk in 2	Rate of increase of deceleration, up to Decel Rate, when decreasing elevator speed	ft/s^3	0 - 8.0	8.0	
	Decel Jerk out 2	Rate of decrease of deceleration to zero when slowing the elevator to leveling speed	ft/s^3	0 - 8.0	8.0	
	Accel Rate 3	Acceleration rate #3	ft/s^2	0 - 7.99	3.00	
	Decel Rate 3	Deceleration rate #3	ft/s^2	0 - 7.99	3.00	
	Accel Jerk in 3	Rate of increase of acceleration, up to ACCEL Rate, when increasing elevator speed	ft/s^3	0 - 8.0	8.0	
	Accel Jerk out 3	Rate of decrease of acceleration to zero when approaching contract elevator speed	ft/s^3	0 - 8.0	8.0	
	Decel Jerk in 3	Rate of increase of deceleration, up to Decel Rate, when decreasing elevator speed	ft/s^3	0 - 8.0	8.0	
	Decel Jerk out 3	Rate of decrease of deceleration to zero when slowing the elevator to leveling speed	ft/s^3	0 - 8.0	8.0	
A3	**Multi-step Ref**					
	Speed Command 1	Multi-Step Speed command #1	ft/m		0	
	Speed Command 2	Multi-Step Speed command #2	ft/m		0	
	Speed Command 3	Multi-Step Speed command #3	ft/m		0	
	Speed Command 4	Multi-Step Speed command #4	ft/m		0	
	Speed Command 5	Multi-Step Speed command #5	ft/m		0	
	Speed Command 6	Multi-Step Speed command #6	ft/m		0	

Table 9.19 Magnetek AC Drive Parameters Table

#	Operator Display	Parameter Description	Unit	Setting Range	MCE Defaults	Field Setting
	Speed Command 7	Multi-Step Speed command #7	ft/m		0	
	Speed Command 8	Multi-Step Speed command #8	ft/m		0	
	Speed Command 9	Multi-Step Speed command #9	ft/m		0	
	Speed Command 10	Multi-Step Speed command #10	ft/m		0	
	Speed Command 11	Multi-Step Speed command #11	ft/m		0	
	Speed Command 12	Multi-Step Speed command #12	ft/m		0	
	Speed Command 13	Multi-Step Speed command #13	ft/m		0	
	Speed Command 14	Multi-Step Speed command #14	ft/m		0	
	Speed Command 15	Multi-Step Speed command #15	ft/m		0	
A4	**Power Convert**					
	Id Reg Diff gain	Flux Current regulator differential gain	-	0.80 - 1.20	1.00	
	Id Reg Prop Gain	Flux current regulator proportional gain	-	0.20 - 0.40	0.30	
	Iq Reg Diff Gain	Torque current regulator differential gain	-	0.80 - 1.20	1.00	
	Iq Reg Prop Gain	Torque current regulator proportional gain	-	0.20 - 0.40	0.30	
	PWM Frequency	Carrier frequency	kHz	2.5 - 16.0	10.0	
	UV Alarm Level	Level for undervoltage alarm	%	80 - 99	80	
	UV Fault Level	Level for undervoltage fault	%	50 - 88	80	
	Extern Reactance	External choke reactance	%	0 - 10	0	
	Input L-L Volts	Nominal line-line AC input Voltage, RMS	volts	110 - 480	Drive dep.	
A5	**Motor**					
	Motor ID	Motor Identification	-	4 Pole DFLT, 6 Pole DFLT, MCE Test	MCE Test	
	Rated Mtr Power	Rated motor output power	HP	1.0 - 500	5.0	
	Rated Mtr Volts	Rated motor terminal RMS voltage	volts	190.0 - 575.0	460	
	Rated Excit Freq	Rated excitation frequency	Hz	5.0 - 400.0	60	
	Rated Motor Curr	Rated motor current	amps	1.00 - 800.00	6.8	
	Motor Poles	Motor poles	-	2 - 32	6	
	Rated Mtr Speed	Rated motor speed at full load	RPM	50.0 - 3000.0	1130	
	% No Load Curr	Percent no load current	%	10.0 - 60.0	45	
	Stator Leakage X	Stator leakage reactance	%	0 - 20.0	9.0	
	Rotor Leakage X	Rotor leakage reactance	%	0 - 20.0	9.0	
	Stator Resist	Stator resistance	%	0 - 20.0	1.5	
	Motor Iron Loss	Iron loss at rated frequency	%	0 - 15.0	0.5	
	Motor Mech Loss	Mechanical loss at rated frequency	%	0 - 15.0	1.0	
	Ovld Start Level	Maximum continuous motor current	%	100 - 150	110	
	Ovld Time Out	Time that defines motor overload curve	sec	5.0 - 120.0	60.0	
	Flux Sat Break	Flux saturation curve slope change point	%	0 - 100	75	
	Flux Sat Slope 1	Flux saturation curve slope for low fluxes	%	0 - 200.0	0	
	Flux Sat Slope 2	Flux saturation curve slope for high fluxes	%	0 - 200.0	50	

Table 9.19 Magnetek AC Drive Parameters Table

#	Operator Display	Parameter Description	Unit	Setting Range	MCE Defaults	Field Setting
		Configure C0				
C1	**User Switches**					
	Spd Command Src	Speed Command Source	-	Analog input Multi-step Serial	Analog input	Analog input
	Run Command Src	Run Command Source	-	External TB Serial Serial+extern	Analog input	Analog input
	Hi/Lo Gain Src	High / low gain change switch source	-	External TB 1 Serial Internal	Internal	
	Speed Reg Type	Chooses speed regulator	-	Elev spd reg Pi speed reg	Elev spd reg	Elev spd reg
	Motor Rotation	Allows user to reverse direction of motor rotation	-	Forward Reverse	Forward	
	Spd Ref Release	Determines when speed reference release is asserted	-	Reg release Brake picked	Reg release	
	Cont Confirm Src	Enables external logic input for contactor confirmation.	-	None External TB	None	External TB
	Pretorque Source	Enables and determines the source of the Pretorque command	-	None Analog input Serial	Analog input	Analog input
	Pretorque Latch	Determines if analog Pretorque command is latched	-	Not latched Latched	Not latched	
	PT torq Latch Clck	Determines source of Pretorque latch control (if used)	-	External TB Serial	External tb	
	Fault Reset Src	Fault reset source	-	External TB Serial Automatic	External tb	
	Overspd Test Src	Determines external logic source to trigger overspeed test	-	External TB Serial	External tb	
	Brake Pick Src	If drive controls mechanical brake, determines source of brake pick command	-	Internal Serial	Internal	
	Brake Pick Cnfrm	Enables a logic input to use for brake pick confirmation	-	None External TB	None	
	Brake Hold Src	If drive controls mechanical brake, determines source of brake hold command	-	Internal Serial	Internal	
	Ramped Stop Sel	Selects normal stop or torque ramp down stop	-	None Ramp on stop	Ramp on stop	Ramp on stop
	Ramp Down En Src	Determines the source that signals the torque ramp down stop (if used)	-	External TB Run logic Serial	Run logic	Run logic
	Brk Pick Flt Ena	Brake pick fault enable	-	Enable Disable	Disable	
	Brk Hold Flt Ena	Brake hold fault enable	-	Enable Disable	Disable	
	Ext Torq Cmd Src	When Speed Reg Type = External Reg, sets the source of the torque command	-	None Serial	None	

Table 9.19 Magnetek AC Drive Parameters Table

#	Operator Display	Parameter Description	Unit	Setting Range	MCE Defaults	Field Setting
	Dir Confirm	Confirms proper analog signal polarity when enabled and a logic input is programmed to Run Up and Run Down	-	Enabled Disabled	Disabled	
	S-Curve Abort	Addresses how the S-Curve Speed Reference Generator handles a reduction in the speed command before the S-Curve Generator has reached its target speed.	-	Enabled Disabled	Disabled	
	Fast Flux	Reduces starting takeoff time by reducing motor fluxing time	-	Enabled Disabled	Enabled	
	Main DIP Ena	Enables the Mains DIP Speed (A1) parameter that reduces speed when an undervoltage alarm is declared	-	Enabled Disabled	Disabled	
	DB Protection	Dynamic braking Protection fault or alarm selection		Fault Alarm	Fault	
	Encoder Fault	Temporarily disables the Encoder Fault	-	Enabled Disabled	Enabled	
	Stopping Mode	Determines stopping mode when Spd Command Src = multi-step	-	Immediate Ramp to stop	Immediate	
	Motor Ovrld Sel	Motor Overload Selection	-	Alarm Flt Immediate Fault at Stop	Fault at Stop	Fault at Stop
	Auto Stop	Auto Stop Function enable	-	Disable Enable	Disable	
	Serial Mode	Serial Protocol selection	-	Mode 1 Mode 2 Mode 2 test	Mode 1	
	SER2 FLT Mode	Defines reaction to a serial communication fault while in Serial Mode 2 (Only serial mode 2)	-	immediate	Immediate Run remove rescue	
	DRV Fast Disable	Addresses how fast the drive responds to the removal of Drive Enable logic input.	-	Disable	Disable Enable	
	MLT-SPD to DLY1	Assigns multi-step speed command to recognition delay timer 1	-	None	None mspd1- mspd15	
	MLT-SPD to DLY2	Assigns multi-step speed command to recognition delay timer 1	-	None	None mspd1- mspd15	
	MLT-SPD to DLY3	Assigns multi-step speed command to recognition delay timer 1	-	None	None mspd1- mspd15	
	MLT-SPD to DLY4	Assigns multi-step speed command to recognition delay timer 1	-	None	None mspd1- mspd15	
C2	**Logic Inputs**					
	Log In 1 TB1-1	Terminal 1 Selection	-	-	DRIVE ENABLE	DRIVE ENABLE
	Log In 2 TB1-2	Terminal 2 Selection	-	-	RUN	RUN

Table 9.19 Magnetek AC Drive Parameters Table

#	Operator Display	Parameter Description	Unit	Setting Range	MCE Defaults	Field Setting
	Log In 3 TB1-3	Terminal 3 Selection	-	-	FAULT RESET	FAULT RESET
	Log In 4 TB1-4	Terminal 4 Selection	-	-	FAULT RESET	NO FUNCTION
	Log In 5 TB1-5	Terminal 5 Selection	-	-	STEP REF B0	NO FUNCTION
	Log In 6 TB1-6	Terminal 6 Selection	-	-	STEP REF B1	NO FUNCTION
	Log In 7 TB1-7	Terminal 7 Selection	-	-	STEP REF B2	NO FUNCTION
	Log In 8 TB1-8	Terminal 8 Selection	-	-	STEP REF B3	NO FUNCTION
	Log In 9 TB1-9	Terminal 9 Selection	-	-	S-CURVE SEL 0	NO FUNCTION
C3	**Logic Outputs**					
	Log Out 1 tb1-14	Terminal 14 Selection	-	-	SPEED DEV LOW	NO FUNCTION
	Log Out 2 tb1-15	Terminal 15 Selection	-	-	RUN COM-MAND	NO FUNCTION
	Log Out 3 tb1-16	Terminal 16 Selection	-	-	MTR OVERLOAD	NO FUNCTION
	Log Out 4 tb1-17	Terminal 17 Selection	-	-	ENCODER FAULT	NO FUNCTION
	Relay Coil 1	Relay 1 Function Selection	-	-	READY TO RUN	READY TO RUN
	Relay Coil 2	Relay 2 Function Selection	-	-	SPEED REG RLS	SPEED REG RLS
C4	**Analog Outputs**					
	Ana Out 1 tb1-33	Terminal 33 Selection	-	-	SPEED CMD	
	Ana Out 2 tb1-35	Terminal 35 Selection	-	-	SPEED FEEDBK	SPEED FEEDBK
Utility U0						
U1	**Password**	Password	-	-	000000	
U2	**Hidden Items**	Enable or disable hidden parameters Enable Disable	-	-	ENABLE	
U3	**Unit**	Unit for parameters English Metric	-	-	ENGLISH	
U4	**Overspeed Test**	Allows overspeed test during inspection Yes No	-	-	No	
U5	**Restore Dflts**	Reset all parameters to default values				
U6	**Drive Info**	Drive information: _____ Drive Version: _____ Boot Version: _____ Cube ID: _____ Drive Type: _____				
U7	**HEX Monitor**	Hex Monitor				

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Magnetek Quattro AC Quick Reference

This section includes quick reference information for the Magnetek Quattro AC Elevator drive parameters. Please refer to the Magnetek drive manual provided with iControl for a detailed explanation. Enter the settings you make while adjusting into the Field Setting column.

Table 9.20 Quattro PM Elevator Drive, iControl

WARNING: Do not change drive parameters while elevator is running. Incorrect drive parameters can cause erratic operation. Parameters with an asterisk must be set correctly for specific motor/ machine / job. Refer to drive manual for detailed information.					
Parameter	**Description**	**Units**	**Range**	**Def**	**Fac**
Adjust A0					
A1 Drive sub menu					
CONTRACT CAR SPD	Elevator Contract Speed	fpm	0.0 – 1500.0	100.0	*
CONTRACT MTR SPD	Motor Speed at elevator contract speed	RPM	30.0 – 3000.0	50.0	*
RESPONSE	Sets sensitivity of drive speed regulator in terms of speed regulator bandwidth in radians	rad/sec	1.0 – 20.0	10.0	10.0
INERTIA	Inertia /torque ratio as seen by the drive	sec	0.25 – 50.00	2.00	2.00
INNER LOOP XOVER	This parameter is used as a stiffness factor	rad/sec	0.1 – 20.0	2.0	2.0
GAIN REDUCE MULT	Percentage of "response" the speed regulator should use in "low gain" mode	%	10 – 100	100	100
GAIN CHNG LEVEL	When the HI/LO GAIN SRC in sub-menu C1 is set to internal, the drive will control the high/ low gain switch	% of rated spd	0.0 – 100.0	100.0	100.0
TACH RATE GAIN	Reduces effects of rope resonance or stretch	none	0.0 – 30.0	0.0	0.0
SPD PHASE MARGIN	Sets phase margin of speed regulator assuming a pure inertial load	degrees	45 – 90	80	80
RAMPED STOP TIME	Used only by torque ramp down function during a stop sets time to decrease motor rated torque to zero.	sec	0.00 – 2.50	0.20	0.20
CONTACT FLT TIME	Determines allowable time for motor contactor feedback to be out of sync with commanded state before contactor FLT occurs.	sec	0.10 – 5.00	0.50	0.50
BRAKE PICK TIME	If brake pick CNFM is set to internal time, this parameter sets time the drive waits before it assumes brake has been picked. If brake pick CNFM is set to external TB, parameter sets time drive waits receive a brake pick confirmation before a brake pick fault is declared	sec	0.00 – 5.00	1.00	0.0
BRAKE HOLD TIME	Determines time drive will wait until a BRK HOLD FLT is declared if a logic input is set to MECH BRK HOLD	sec	0.00 – 5.00	0.50	0.10
OVERSPEED LEVEL	Sets percentage of rated speed drive uses (in conjunction with OVERSPEED TIME) to determine when an OVERSPEED fault occurs.	% of contract spd	90.0 – 150.0	115.0	115.0
OVERSPEED TIME	Sets time drive can be at or above OVERSPEED LEVEL (A1), before it declares OVERSPEED FLT.	sec	0.00 – 9.99	1.00	1.00

Table 9.20 Quattro PM Elevator Drive, iControl

OVERSPEED MULT	Sets percentage of CONTRACT CR SPD (A1) for OVERSPEED TEST (U4)	%	100.0 – 150.0	125.0	125.0
ENCODER PULSES	Sets pulses per revolution (per channel) drive expects from encoder. Set to agree with pulses per revolution on encoder nameplate if directly coupled to motor shaft. If roller is used to measure linear velocity, this is a calculated value equal to counts expected from encoder when motor makes exactly one revolution.	PPR	600 – 20000	2048	*
SERIAL CNT / REV	Number of discrete absolute positions per rotor revolution from absolute encoder. Heidenhain = 8192.	Cnts / rev	600 – 25000	8192	*
ABS REF OFFSET	Magnetek personnel only. Sets angular offset for absolute position reference exported through an analog output.	Deg	-180.00 - +180.00	0.00	
SPD DEV LO LEVEL	Range around speed reference for speed deviation low logic output. Percent of contract speed.	% of contract spd	0.1 – 20.0	10.0	10.0
SPD DEV TIME	Speed deviation time. Defines time speed feedback needs to be in range around speed reference defined by SPD DEV LO LEVEL before Speed Deviation Low logic output is true.	Sec	0.00 – 9.99	0.50	0.50
SPD DEV ALM LVL	Speed deviation alarm level. Sets level at which a speed deviation alarm will be declared.	%	0.0 – 99.9	10.0	10.0
SPD DEV FLT LVL	Speed deviation fault level. Sets the level at which a speed deviation fault is declared.	%	0.0 – 99.9	25.0	25.0
SPD COMMAND BIAS	Subtracts an effective voltage from the actual analog speed command signal.	volts	0.00 – 6.00	0.00	0.00
SPD COMMAND MULT	Scales the analog speed command.	none	0.90 – 5.00	1.00	1.00
PRETORQUE BIAS	Subtracts an effective voltage from actual analog pretorque / torque command (channel 2) voltage signal.	volts	-6.00 – +6.00	0.00	0.00
PRETORQUE MULT	Scales analog pretorque / torque command (channel 2). If set to 1.00, a 10V signal will call for 100% torque.	none	-10.00 – +10.00	1.00	1.00
PRETORQUE TIME	Time to ramp torque from zero to pretorque value. When set to zero, Pretorque applied immediately. Helps eliminate bump felt upon starting caused by torque being immediately set to rated pretorque. Setting to zero will disable Pretorque Ramp Up function. With a non-zero setting for Pretorque Time, torque reference will be linearly ramped from zero to value given through Analog input or serial channel.	sec	0.00 –10.00	0.00	0.00
ZERO SPEED LEVEL	Sets threshold for zero speed detection. Used only to generate zero speed logic output.	% of contract spd	0.00 – 99.99	1.00	1.00

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ZERO SPEED TIME	Sets time drive is at or below ZERO SPEED LEVEL (A1) before zero speed logic output is true.	sec	0.00 – 9.99	0.10	0.10
UP/DWN THRESH-OLD	Sets threshold for direction sense logic outputs. If speed feedback does not reach this level, drive will not detect directional change. Used only to generate direction sense logic outputs	% of contract spd	0.00 – 9.99	1.00	1.00
TORQUE LIMIT	Sets maximum torque allowed. Adjust to reduce effects of field weakening. Units in percent of rated torque.	%	0.0 – 275.0	200.0	200.0
ANA 1 OUT OFFSET	(Digital to Analog #1 Output Offset) Offset for scaling Analog Output Channel	%	-99.9 – +99.9	0.0	0.0
ANA 2 OUT OFFSET	(Digital to Analog #2 Output Offset) Offset for scaling Analog Output Channel #2.	%	-99.9 – +99.9	0.0	0.0
ANA 1 OUT GAIN	(Digital to Analog #1 Output Gain) Adjusts the scaling for the Analog Output Channel #1.	none	0.0 – 10.0	1.0	1.0
ANA 2 OUT GAIN	(Digital to Analog #2 Output Gain) Adjusts the scaling for the Analog Output Channel #2	none	0.0 – 10.0	1.0	1.0
FLT RESET DELAY	When drive is set for automatic fault reset, determines wait time before a fault is automatically reset.	sec	0 – 120	5	5
FLT RESETS/HOUR	When drive is set for automatic fault reset, this is the number of faults allowed to be automatically reset per hour	faults	0 – 10	3	3
UP TO SPD. LEVEL	Sets threshold for up-to-speed logic output. Used only to generate up-to-speed logic output.	% of contract spd	0.00 – 110.00	80.00	80.00
RUN DELAY TIMER	Allows user to delay drive recognition of RUN signal to allow more time for motor contactor to set.	sec	0.00 – 0.99	0.00	0.00
AB ZERO SPD LEV	Sets speed point considered as zero speed for auto brake function. Units are % of contract speed. In order to use Auto Brake Function, a logic output needs to be configured for AUTO BRAKE (C3), SPD COMMAND SRC (C1) = multi-step, SPD REF RELEASE (C1) = BRAKE PICKED, and BRAKE PICK CFRM (C1) = EXTERNAL TB1.	%	0.00 – 2.00	0.00	0.00
AB OFF DELAY	Determines time after zero speed is reached (level determined by the AB ZERO SPD LEV parameter) until Auto Brake logic output goes false.	sec	0.00 – 9.99	0.00	0.00
CONTACTOR DO DLY	When drive controls motor contacts via CLOSE CONTACT logic output, allows user to delay dropout of motor contactor. Delay time starts when speed regulator release signal goes false.	sec	0.00 – 5.00	0.00	0.00
TRQ LIM MSG DLY	Determines amount of time drive is in torque limit before "HIT TORQUE LIMIT "alarm message is displayed.	sec	0.00 – 10.00	0.50	0.50
SER2 INSP SPD	Used to select speed during inspection mode	Ft/min	0 -100	30	30
SER2 RS CRP SPD	Used to select speed during rescue mode	Ft/min	0 - 300	10	10
SER2 RS CRP TIME	Maximum time to allow rescue mode	Sec	0 - 200	180	180

Table 9.20 Quattro PM Elevator Drive, iControl

SER2 FLT TOL	Maximum time to allow between reception of packets in serial mode	Sec	0 – 2.00	0.04	0.04
ARB INERTIA	Anti rollback inertia. Inertia/gain setting when drive is in ARB Mode. Too high a setting may cause motor instability. If motor growls or vibrates, lower setting. Too low a setting may cause excessive rollback. Recommend: Start value at same value as system inertia (INERTIA).	None	0.10 – 20.00	0.30	0.30
ARB START TIME	Anti rollback start time. Dwell time between logic output SPD REG RLS and brake starting to pick. ARB will not become activated until ARL START TIME has occurred. Too long a value will cause major rollback. Too short a value will cause ARB to begin while brake is still set. Adjust to begin just as brake is lifting.	Sec	0.00 – 5.00	2.00	*
ARB DECAY RATE	Anti rollback decay rate. Determines slew rate for torque while in ARB Mode. The higher the value, the more torque change may occur. The lower the value, the less torque change may occur. Setting to maximum 0.99 indicates limited decay. The faster the brake lifts, the higher this value should be. Adjusting this may cause ARB RESPONSE to also need adjustment.	Sec	0.500 – 0.999	0.850	*
ARB RESPONSE	Anti rollback response. Determines how quickly drive will react to brake opening. For most systems, should be close to 20. Too high a value may cause large torque bumps, more rollback. The lower the value of ARB DECAY RATE, the lower the value of ARB RESPONSE will need to be to hold car from rollback.	None	5 – 100	25	*
ARB TORQUE TIME	Anti rollback torque time. Helps smooth out torque requirement from drive to motor. Set at zero, drive will step up torque as required to hold motor. The higher the value, the smoother the torque transition to the motor. However, with higher values more rollback may occur.	Sec	0.00 – 10.00	0.00	*
NOTCH FILTER FRQ	Determines notch filter center frequency	Hz	5 – 60	20	20
NOTCH FILT DEPTH	Determines notch filter maximum attenuation	%	0 – 100	0	0
MSPD DELAY 1-4	Multi step speed delay 1 – 4. Determines recognition time delay for a defined multi-step speed command.	Sec	0.000 – 10.000	0.000	0.000
MID SPEED LEVEL	Sets level/threshold for mid speed detection. Used only to generate mid speed logic output. Units in percent of contract speed.	%	0.00 – 110.00	80.00	80.00
BRK FAULT LEVEL	Sets level of speed error that will cause drive to fault with a BRK IS OPEN fault during an auto align or auto tune.	%	0.0 – 20.0	2.0	2.0
ENCDR FLT SENSE	Determines percentage of voltage rise to occur before an Encoder Fault occurs due to voltage rise at beginning of run. Units in percent of Rated Mtr Volts.	%	10 – 100	30	30

Table 9.20 Quattro PM Elevator Drive, iControl

DSPR TIME	Drive Standby Power reduction Time. Determines how long drive will remain energized with motor field current at standby amps before completing drive shutdown. Used only when DPSR ENABLE (C1) set to Enable	min	0 – 500	10	10
A2 S-Curves Sub-menu					
ACCEL RATE 0	Acceleration rate Limit	ft/s2	0.00 – 7.99	7.99	7.99
DECEL RATE 0	Deceleration Rate limit	ft/s2	0.00 – 7.99	7.99	7.99
ACCEL JERK IN 0	Rate of increase in acceleration up to ACCEL RATE when increasing elevator speed	ft/s3	0.0 – 29.9	0.0	0.0
ACCEL JERK OUT 0	Rate of decrease in acceleration to zero when approaching contract elevator speed.	ft/s3	0.0 – 29.9	0.0	0.0
DECEL JERK IN 0	Rate of increase in deceleration to DECEL RATE when decreasing elevator speed	ft/s3	0.0 – 29.9	0.0	0.0
DECEL JERK OUT 0	Rate of decrease in deceleration to zero when slowing the elevator to leveling speed.	ft/s3	0.0 – 29.9	0.0	0.0
ACCEL RATE 1	Acceleration rate Limit	ft/s2	0.00 – 7.99	7.00	7.00
DECEL RATE 1	Deceleration Rate limit	ft/s2	0.00 – 7.99	3.00	3.00
ACCEL JERK IN 1	Rate of increase in acceleration up to ACCEL RATE when increasing elevator speed	ft/s3	0.0 – 29.9	8.0	8.0
ACCEL JERK OUT 1	Rate of decrease in acceleration to zero when approaching contract elevator speed.	ft/s3	0.0 – 29.9	8.0	8.0
DECEL JERK IN 1	Rate of increase in deceleration to DECEL RATE when decreasing elevator speed	ft/s3	0.0 – 29.9	8.0	8.0
DECEL JERK OUT 1	Rate of decrease in deceleration to zero when slowing the elevator to leveling speed.	ft/s3	0.0 – 29.9	8.0	8.0
ACCEL RATE 2	Acceleration rate Limit	ft/s2	0.00 – 7.99	3.00	3.0
DECEL RATE 2	Deceleration Rate limit	ft/s2	0.00 – 7.99	3.00	3.0
ACCEL JERK IN 2	Rate of increase in acceleration up to ACCEL RATE when increasing elevator speed	ft/s3	0.0 – 29.9	8.0	8.0
ACCEL JERK OUT 2	Rate of decrease in acceleration to zero when approaching contract elevator speed.	ft/s3	0.0 – 29.9	8.0	8.0
DECEL JERK IN 2	Rate of increase in deceleration to DECEL RATE when decreasing elevator speed	ft/s3	0.0 – 29.9	8.0	8.0
DECEL JERK OUT 2	Rate of decrease in deceleration to zero when slowing the elevator to leveling speed.	ft/s3	0.0 – 29.9	8.0	8.0
ACCEL RATE 3	Acceleration rate Limit	ft/s2	0.00 – 7.99	3.00	3.0
DECEL RATE 3	Deceleration Rate limit	ft/s2	0.00 – 7.99	3.00	3.0
ACCEL JERK IN 3	Rate of increase in acceleration up to ACCEL RATE when increasing elevator speed	ft/s3	0.0 – 29.9	8.0	8.0
ACCEL JERK OUT 3	Rate of decrease in acceleration to zero when approaching contract elevator speed.	ft/s3	0.0 – 29.9	8.0	8.0
DECEL JERK IN 3	Rate of increase in deceleration to DECEL RATE when decreasing elevator speed	ft/s3	0.0 – 29.9	8.0	8.0
DECEL JERK OUT 3	Rate of decrease in deceleration to zero when slowing the elevator to leveling speed.	ft/s3	0.0 – 29.9	8.0	8.0

Table 9.20 Quattro PM Elevator Drive, iControl

A3 Multi-step Ref Sub-menu					
SPEED COMMAND 1	Multi-step Speed Command#1	ft/min	-3000.0 – +3000.0	0.0	0.0
SPEED COMMAND 2	Multi-step Speed Command#2	ft/min	-3000.0 – +3000.0	0.0	0.0
SPEED COMMAND 3	Multi-step Speed Command#3	ft/min	-3000.0 – +3000.0	0.0	0.0
SPEED COMMAND 4	Multi-step Speed Command#4	ft/min	-3000.0 – +3000.0	0.0	0.0
SPEED COMMAND 5	Multi-step Speed Command#5	ft/min	-3000.0 – +3000.0	0.0	0.0
SPEED COMMAND 6	Multi-step Speed Command#6	ft/min	-3000.0 – +3000.0	0.0	0.0
SPEED COMMAND 7	Multi-step Speed Command#7	ft/min	-3000.0 – +3000.0	0.0	0.0
SPEED COMMAND 8	Multi-step Speed Command#8	ft/min	-3000.0 – +3000.0	0.0	0.0
SPEED COMMAND 9	Multi-step Speed Command#9	ft/min	-3000.0 – +3000.0	0.0	0.0
SPEED COMMAND 10	Multi-step Speed Command#10	ft/min	-3000.0 – +3000.0	0.0	0.0
SPEED COMMAND 11	Multi-step Speed Command#11	ft/min	-3000.0 – +3000.0	0.0	0.0
SPEED COMMAND 12	Multi-step Speed Command#12	ft/min	-3000.0 – +3000.0	0.0	0.0
SPEED COMMAND 13	Multi-step Speed Command#13	ft/min	-3000.0 – +3000.0	0.0	0.0
SPEED COMMAND 14	Multi-step Speed Command#14	ft/min	-3000.0 – +3000.0	0.0	0.0
SPEED COMMAND 15	Multi-step Speed Command#15	ft/min	-3000.0 – +3000.0	0.0	0.0

Table 9.20 Quattro PM Elevator Drive, iControl

A4 Motor Side Power Converter					
Id REG DIFF GAIN	Differential gain for current regulator flux generation. Meant for advanced operation. RARELY needs to be changed from default. Locked by ENGR PARM LOCK, C1.	None	0.00 – 0.40	0.00	0.00
Iq REG PROP GAIN	Proportional gain for current regulator flux generation. Advanced operation. RARELY needs to be changed from default.	None	0.150 – 3.000	0.700	0.700
Id REG INTGRL GAIN	Internal gain for current regulator flux generation. Advanced operation. RARELY needs to be changed from default.	None	0.00 – 2.00	1.00	1.00
Iq REG DIFF GAIN	Differential gain for current regulator of motor torque. Advanced operation. RARELY needs to be changed from default value. Locked by ENGR PARM LOCK, C1.	None	0.00 – 0.40	0.00	0.00
Iq REG PROP GAIN	Proportional gain for current regulator torque generation. Advanced operation. RARELY needs to be changed from default value.	None	0.150 – 3.000	0.700	0.700
Iq REG INTG GAIN	Integral gain for current regulator torque generation. Advanced operation. RARELY needs to be changed from default value.	None	0.00 – 2.00	1.00	1.00
PWM FREQUENCY	Sets PWM or carrier frequency of motor armature portion of drive	kHz	2.5 – 16.0	10.0	10.0
UV ALARM LEVEL	Under voltage alarm level. Sets level at which under voltage alarm declared. Units in % of L-L voltage	%	80 – 99	90	90
UV FAULT LEVEL	Under voltage alarm level. Sets level at which under voltage fault occurs. Units in % of L-L voltage	%	50 – 99	80	80
EXTERN REACTANCE	Sets externally connected reactance (as a percentage of base impedance) between drive and motor. Units in percent of base impedance.	%	0.0 – 10.0	0.0	0.0
FINE TUNE OFST	Manual offset for absolute position feedback for TESTING purposes. WARNING: Changing this can lead to motor runaway. Should always be set to ZERO for NORMAL OPERATION. Locked by ENGR PARM LOCK, C1.	Deg	-75.00 - +75.00	0.00	0.00
Id REF THRESHOLD	Magnetek personnel only. Used to manually set non-zero current reference for flux production.	None	0.00 – 0.20	0.00	0.00
FLUX WEAKEN RATE	Determines slew rate of flux weakening controls. The higher the value, the faster flux weakening will respond to voltage limit. Setting to zero will disable flux weakening.	None	0.000 – 1.000	0.000	0.000
FLUX WEAKEN LEV	Determines how close to the voltage limit the drive will get before it will flux weaken. Locked by Engr Parm Lock C1.	None	0.70 - 1.00	0.95	0.95
ALIGN VLT FACTOR	Open Loop Alignment Voltage Reference Scaling Factor. Use to scale open loop voltage reference at initial phase of open loop alignment.	None	0.05 – 1.99	1.00	0.00

Table 9.20 Quattro PM Elevator Drive, iControl

A5 Line Side Power Convert Sub-menu					
LS Id REG P GAIN	Proportional gain, out of phase current regulator.	None	0.00 – 9.99	0.30	0.30
LS Id REG I GAIN	Internal gain for out of phase current regulator.	None	0 – 999	10	10
LS Iq REG P GAIN	Proportional gain for in phase current regulator.	None	0.00 – 9.99	0.30	0.30
LS Iq REG I GAIN	Integral gain for in phase current regulator.	None	0 – 999	40	40
DC BUS REG P GAIN	Proportional gain for bus voltage regulator.	None	0 – 9.00	3.00	3.00
DC BUS REG I GAIN	Integral gain for bus voltage regulator.	None	0 – 999	40	40
INPUT L-L VOLTS	Input Line to Line Voltage: Must be set correctly to calibrate DC Bus voltage regulation and pre-charge	volts	150 – 552	480	*
INITIAL L FREQ	Initial Line Freq sets initial freq of input line voltage. Default 55Hz for most applications. But, when line power switched from utility to emergency, should be set to actual line power input frequency.	Hz	50 – 60	55	55
DC BUS V BOOST	DC Bus voltage reference adjusts the DC bus voltage boost above the peak of line voltage	volts	15 – 75	30	30
SW BUS OV LEVEL	Software Bus overvoltage level trip point	volts	100 – 850	850	850
BUS VREF SOURCE	Bus voltage reference source. Selects bus voltage boost reference: Track Line V uses actual line voltage for bus reference. Recommended for a still line. Trk Vin Param uses INPUT L-L VOLTS for bus reference. Recommended for a soft line.	none	– track line v – trk vin param	TRACK LINE V	TRACK LINE V
PLL FILTER FC	Phase Lock Loop Filter frequency	Hz	20.0 – 150.0	40.0	40.0
POLE FILTER	Pole Filter setting. Adds a low pass filter to the line side to help alleviate nuisance noise issue	kHz	0.1 – 3.0	2.2	2.2
PRE CHGE THRESH	Pre charge threshold. Determines allowable variance between actual and calculated bus voltage during power up	none	1 – 60	28	28
LS PWM FREQUENCY	Line Side PWM freq. Sets PWM of "carrier" freq of converter portion of drive.	kHz	8.0 – 12.0	10.0	10.0

Table 9.20 Quattro PM Elevator Drive, iControl

A6 Motor Sub-menu					
MOTOR ID	Motor Identification	none	-pm default	-pm def	-pm default
RATED MOTOR POWER	Sets rated power in horsepower (HP) or kilowatts (kW) of motor. Value obtained from motor nameplate.	HP	1.0 – 500.0	0.0	*
		kW	0.75 – 400.00	0.00	*
RATED MTR VOLTS	Sets rated motor voltage. Value obtained from motor nameplate.	Volts	85.0 – 575.0	0.0	*
RATED MOTOR CURR	Sets rated motor current. Value obtained from motor nameplate.	Amps	1.00 – 800.00	0.00	*
MOTOR POLES	Sets number motor poles. MUST be even number or Setup Fault #3 will occur. Value obtained from motor nameplate or calculated from motor excitation frequency and rated motor speed.	None	2 – 128	0	*
RATED MTR SPEED	Sets rated rpm of Motor. Function of motor only. Does not need to match Control Mtr Speed setting. Value obtained from motor nameplate.	RPM	18.0 – 3000.0	0.0	*
D AXIS INDUCT	Sets amount of inductance in flux producing equivalent circuit of vector controlled PM motor. Higher inductances used for higher horsepower motors. Obtain from motor specifications.	mH	0.50 – 50.00	10.00	*
Q AXIS INDUCT	Sets amount of inductance in torque producing equivalent circuit of vector controlled PM motor. Higher inductances used for higher horsepower motors. Obtain from motor specifications.	mH	0.50 – 50.00	10.00	*
STATOR RESIST	Sets amount of resistance in motor stator as a percent of BASE IMPEDANCE, D2 which appears in the Power Data display.	%	0.0 – 20.0	7.0	*
MOTOR IRON LOSS	Sets motor iron loss at rated frequency. Units in percent of rated power.	%	0.0 – 15.0	0.0	0.0
MOTOR MECH LOSS	Sets motor mechanical losses at rated frequency. Units in percent of rated power.	%	0.0 – 15.0	1.0	1.0
OVLD START LEVEL	Defines maximum current at which motor can run continuously without triggering motor overload	%	100 – 150	110	110
OVLD TIME OUT	Motor Overload Time out. Defines amount of time before motor overload alarm occurs when motor is running at current level defined OVLD Start Level+40% rated motor current	sec	5.0 – 120.0	60.0	60.0
TRQ CONST SCALE	Torque constant scale. Drive automatically calculates torque constant. Value can scale calculated torque constant for better performance.	None	0.50 – 2.00	0.78	0.78
ENCODER ANG OFST	Encoder Angle Offset. Contains value of alignment determined during alignment procedure.	None	0 – 25000		

Table 9.20 Quattro PM Elevator Drive, iControl

Adjust C0					
C1 User Switches					
SPD COMMAND SRC	Speed Command Source	none	– serial – multi-step – ser mult step – analog input	MULTI-STEP	ANA-LOG INPUT
DRV ENABLE SRC	Drive enable source.	none	– external tb – serial – serial+extrn	EXTER-NAL TB	EXTER-NAL TB
BOOST ENABLE SRC	Determines method in which the drive will start precharge. Precharge is required after drive is first powered up or after DSPR has timed out.	none	– serial – enable on run – enable on de – external tb	ENABLE ON DE	ENABLE ON DE
RUN COMMAND SRC	Run command source. Sets the source of the run command from one of the following.	none	– external tb – serial – serial+extrn	EXTER-NAL TB	EXTER-NAL TB
HI/LO GAIN SRC	High/ Low gain change switch source	none	– internal – external tb – serial	INTER-NAL	INTER-NAL
SPEED REG TYPE	Speed Regulator Type	none	– elev spd reg – pi speed reg – external reg	ELEV SPD REG	ELEV SPD REG
MOTOR ROTATION	Allows the user to change Motor rotation.	none	– forward – reverse	FOR-WARD	FOR-WARD
SPD REF RELEASE	Speed reference Release	none	– reg release – brake picked	REG RELEASE	REG RELEAS E
CONT CONFIRM SRC	Contactor Confirm source	none	– external tb – none	NONE	EXTER-NAL TB
PreTorque SOURCE	Pretorque Source	none	– none – analog input – serial	NONE	ANA-LOG INPUT
PreTorque LATCH	Pretorque Latch	none	– latched – not latched	NOT LATCHE D	NOT LATCHE D
PTorq LATCH CLCK	Pretorque Latch Clock	none	– external tb – serial	EXTER-NAL TB	EXTER-NAL TB
FAULT RESET SRC	Fault Reset Source	none	-- external tb -- serial -- automatic	EXTER-NAL TB	EXTER-NAL TB
OVERSPD TEST SRC	Overspeed Test Source	none	-- external tb	EXTER-NAL TB	EXTER-NAL TB
BRAKE PICK SRC	Brake Pick Source	none	-- internal -- serial	EXTER-NAL TB	INTER-NAL
BRAKE PICK CNFM	Brake Pick Confirm	none	– none – external tb – internal time	NONE	NONE
BRAKE HOLD SRC	Brake Hold Source	none	-- internal -- serial	INTER-NAL	INTER-NAL
RAMPED STOP SEL	Ramp stop select	none	-- none -- ramp on stop	NONE	RAMP ON STOP

Table 9.20 Quattro PM Elevator Drive, iControl

RAMP DOWN EN SRC	Ramp Down Enable Source	none	-- external tb -- run logic -- serial	EXTER-NAL TB	RUN LOGIC
BRK PICK FLT ENA	Brake Pick Fault Enable	none	-- disable -- enable	DISABLE	DIS-ABLE
BRK HOLD FLT ENA	Brake Hold Fault Enable	none	-- disable -- enable	DISABLE	DIS-ABLE
EXT TORQ CMD SRC	External Torque Command Source	none	-- none -- serial -- analog input	NONE	NONE
DIR CONFIRM	Direction Confirm: When enabled, allows con-firmation of polarity of initial analog speed command via Run UP or Run Down logic inputs.	none	-- disable -- enable	DISABLE	DIS-ABLE
S-CURVE ABORT	Addresses how S-curve speed reference gen-erator handles reduction in speed command before S-curve generator reaches target speed	none	-- disable -- enable	DISABLE	DIS-ABLE
I-REG INNER LOOP	Current regulator inner loop. Disables/enables current regulator inner loop function. Used to enhance current loop performance.	None	- disable - enabled low - enabled high	Enabled low	Enabled low
ENCODER FAULT	Allows temporary disabling of Encoder Fault during initial start up when motor model is not clearly defined. If disabled, drive will display "Encoder Fault OFF" every time RUN command is removed. Enable after A5 motor parameters established.	none	-- disable -- enable	ENABLE	ENABLE
STOPPING MODE	Multi-step stopping mode selection	none	-- immediate -- ramp to stop	IMMEDI-ATE	IMME-DIATE
MOTOR OVRLD SEL	Motor overload select. Select action to be taken by drive when declaring user selectable Motor Overload. Alarm only. Flt immediate: declare fault, turn off output. Fault at stop: Delay declaring fault until run command removed.	None	- alarm - flt immediate - fault at stop	ALARM	Fault at stop
AUTO STOP	Auto stop Function Enable	none	-- disable -- enable	DISABLE	DIS-ABLE
SERIAL MODE	Select the serial protocol	none	-- none -- Mode 1 -- Mode 2 -- Mode 2 -- Mode 2 test	NONE	NONE
SER2 FLT Mode	Select the fault response to be used when run-ning serial mode 2	none	-- Immediate -- Run remove -- Rescue	IMMEDI-ATE	IMME-DIATE
MLT-SPD TO DLY1	Multi-step speed command delay. Assigns multi-step speed command to recognition delay timer x as defined by MSPD DELAY x (A!) parameter.	none	None -mspd 1 through mspd15		
MLT-SPD TO DLY2					
MLT-SPD TO DLY3					
MLT-SPD TO DLY4					
ENCODER SELECT	Magnetek only. Presently, only EnDat absolute encoder is available.	None	Endat abslute	Endat abslute	Endat abslute
ENGR PARM LOCK	Magnetek personnel only. Used to lock out parameters that should only be changed by Magnetek engineers.	Non	- locked - unlocked	Locked	Locked

Table 9.20 Quattro PM Elevator Drive, iControl

PRIORITY MESSAGE	If disabled, user will not see priority messages. Faults and alarms will not be displayed but instead placed into fault history and active fault lists with Fault LED on. Leave enabled.	None	- disable - enable	Enable	Enable
ARB SELECT	Anti-rollback select. When enabled, drive calculates pretorque values when movement is seen on shaft. See drive manual	None	- enable - disable	Disable	Disable
C2 Logic inputs Sub-menu					
LOGIC INPUT 1 TB1(1)	Logic input #1: Drive prewired for CONTACT CONFIRM	None	contact cfirm, ctr pwr sense, drive enable, extrn fault 1, extrn fault 2, extrn fault 3, extrn /flt 4, fault reset, field enable, low gain sel, mech brk hold, mechbrkpick, no function, ospd test src, pre-trq latch, run, run down, run up, s-curve sel 0, s-curve sel 1, ser2insp ena, step ref b0, step ref b1, step ref b2, step ref b3, trq ramp down, up/dwn	CONTACT CFIRM	CONTACT CFIRM
LOGIC INPUT 2 TB1(2)	Logic input #2: Drive prewired for CTR PWR SENSE	None		CTR PWR SENSE	CTR PWR SENSE
LOGIC INPUT 3 TB1(3)	Logic input #3	None		NO FUNCTION	NO FUNCTION
LOGIC INPUT 4 TB1(4)	Logic input #4	None		DRIVE ENABLE	DRIVE ENABLE
LOGIC INPUT 5 TB1(5)	Logic input #5	None		RUN	RUN
LOGIC INPUT 6 TB1(6)	Logic input #6	None		UP/DWN	NO FUNCTION
LOGIC INPUT 7 TB1(7)	Logic input #7	None		STEP REF B0	NO FUNCTION
LOGIC INPUT 8 TB1(8)	Logic input #8	None		STEP REF B1	NO FUNCTION
LOGIC INPUT 9 TB1(9)	Logic input #9	None		FAULT RESET	FAULT RESET

Table 9.20 Quattro PM Elevator Drive, iControl

C3 Logic Outputs Sub-menu					
LOGIC OUTPUT 1 TB1(25)	Logic Output 1	None	Alarm, alarm+flt, auto brake, brake hold, brake pick, brk hold flt brk pick flt, car going dwn, car going up , charge fault, close contact, contactor flt, curr reg flt, drv overload, encoder flt, fault, flux confirm, ground fault, in low gain, motor trq lim, mtr overload, no faults, no function, not alarm, over curr flt, overspeed flt, overtemp flt, overvolt flt, ovrtemp alarm, phase fault, ramp down ena, ready 2 start, ready to run, regen trq lim, run com-manded, run confirm, speed dev, speed dev low, speed ref rls, speed reg rls, undervolt flt, up to speed, uv alarm, zero speed	CLOSE CON-TACT	CLOSE CON-TACT
LOGIC OUTPUT 2 TB1(26)	Logic Output 2	None		RUN COM-MANDED	RUN COM-MANDED
LOGIC OUTPUT 3 TB1(27)	Logic Output 3	None		MTR OVER-LOAD	MTR OVER-LOAD
LOGIC OUTPUT 4 TB1(28)	Logic Output 4	None		ENCODER FLT	ENCODER FLT
LOGIC OUTPUT 5 TB1(29)	Logic Output 5	None		FAULT	FAULT
LOGIC OUTPUT 6 TB1(30)	Logic Output 6	None		SPEED REG RLS	SPEED REG RLS
LOGIC OUTPUT 7 TB1(31)	Logic Output 7	None		SPEED REG RLS	SPEED REG RLS
SSR1 TB1(21/22)	Solid State Relay #1	None		NO FUNC-TION	NO FUNC-TION
SSR2 TB1(23/24)	Solid State Relay #2	None		NO FUNC-TION	NO FUNC-TION
RELAY COIL 1 TB2 (1/3/5)	Relay Coil #1	None		NO FUNC-TION	NO FAULT
RELAY COIL 2 TB2 (8/10/12)	Relay Coil #2	None		NO FUNC-TION	SPEED REG RLS

Table 9.20 Quattro PM Elevator Drive, iControl

C4 Analog Outputs Sub-menu					
ANA OUT 1 TB1-12	Analog output #1	None	– analog addr2 – analog addr3 – arm current – arm voltage – aux torq cmd – bus voltage – est motor spd – field current – arm error – ls pwr input – pretorque ref – motor mode – spd rg tq cmd – speed com-mand – speed error – speed feedbk – speed ref – tach rate cmd – tach speed – torque ref	SPEED REF	SPEED REF
ANA OUT 2 TB1-13	Analog Output #2	None		SPEED FEEDBK	SPEED FEEDBK

Table 9.21 Utility U0 Menu

U0	Param	Desc	Default	Choices
U1	Password	Data protection password.		
	Enter Password	Allows password entry	012345	
	New Password			
	Password Lockout	Enable password lockout	Disabled	enabled disabled
U2	Hidden Items			
	Hidden Items	Allows selected parameters to be blocked from drive display.	Enabled	enabled disabled
U3	Units			
	Unit Selection	Metric or English unit selection	English	metric English
U4	Overspeed Test			
	Overspeed Test?	Allows an overspeed test to be run from drive opera-tor.	No	Yes No
U5	Restore Defaults			
	Restore drive defaults?	Resets all parameters in A1, A2, A3, A4, C1, C2, C3, and C4 sub-menus. Also resets A6 parameters Flux Confirm Lev, Tach Volt Sense, Tach speed sense, Ovld Start Level, and Ovld time out.	No	Yes No
	Restore motor defaults?	Restores motor params to default value.	No	Yes No
	Restore Utility Defaults?	Resets A5 sub-menu parameters to default values. Also resets Gain Selection in the A4 sub-menu.	No	Yes No
U6	MS Drive Info	Motor Side Drive Information		

Table 9.21 Utility U0 Menu

U0	Param	Desc	Default	Choices
	MS Type	Read Only		
	MS Code Version			
	MS S/W Date			
	MS S/W Time			
	MS FPGA Rev			
	MS Cube ID			
U7	LS Drive Info	Line Side Drive Information		
	LS Type			
	LS Code Version			
	LS S/W Date			
	LS S/W Time			
	LS FPGA Rev			
	LS Cube ID			
U8	Hex Monitor			
	Addr1			
	Addr2&			
	Addr3&			
U10	Rotor Align	Rotor alignment procedure.		
	Alignment	Allows alignment procedure or value ENCODER ANG OFST, A5 to be changed.	Disable	Enable Disable
	Begin Alignment	Select alignment begin.	No	Yes On run No
	Alignment Method	Select alignment type.	Open Loop	Open loop Auto align
U11	Autotune Sel	Autotune Procedure		
	Autotune Select	Set to Yes or On Run to begin auto tune.	Disable	Disable On Run Yes

Table 9.22 Fault F0 Menu

F0	Param	Desc	Default	Choices
F1	Active Faults			
	Display Active Faults?	Lists active faults.		
	Reset Active Faults?	Resets active faults.		
F2	Fault History			
	Display Fault History?	Lists fault history.		
	Clear Fault History?	Clears fault history.		
	Display Fault Counters?	List of faults with number of occurrences.		

TORQMAX F5 Drive v1.xx Setup

Each controller 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**.

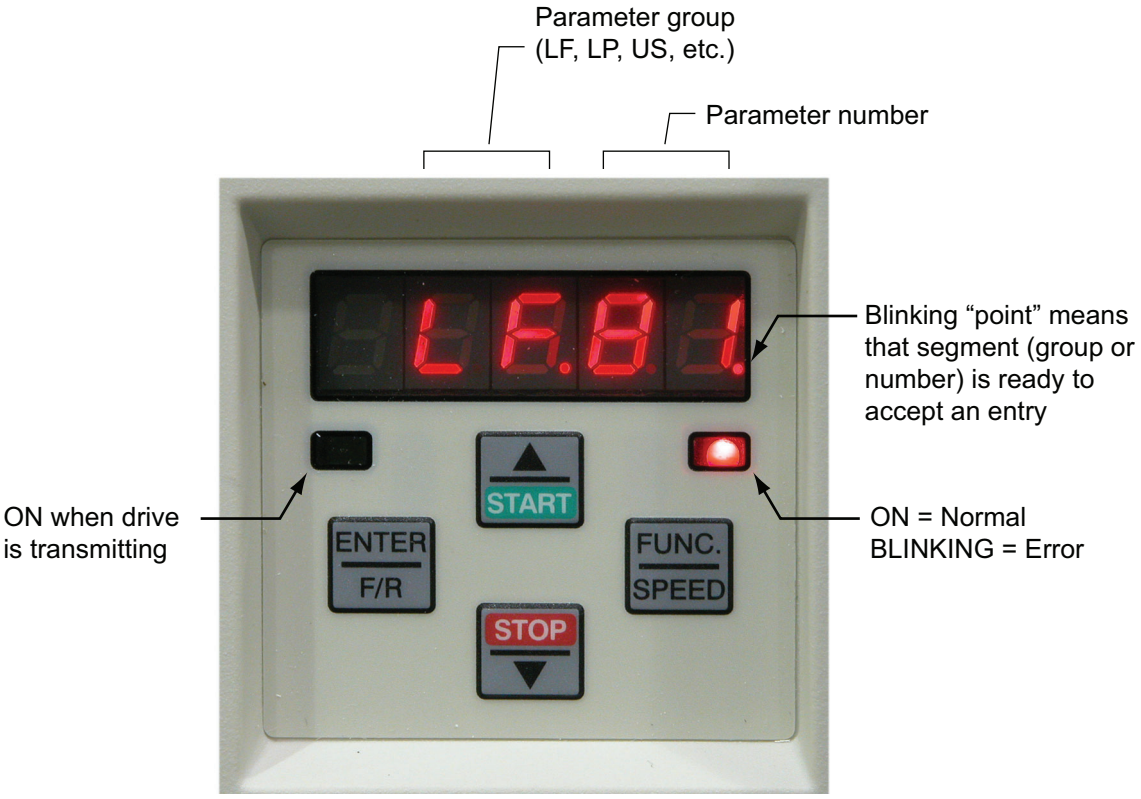
Danger

Remove AC power and wait for 5 to 10 minutes before removing the drive cover to allow capacitors to discharge.

TORQMAX F5 Drive v1.xx Introduction 9

The TORQMAX F5 drive is a KEB F5 with custom MCE software. Take time to study the drive manual. It has very important startup and other information beyond the scope of this manual.

Digital Operator The keypad and LED display are mounted on the digital operator. The operator must be plugged into the drive or the drive will not function. If the operator is removed while the drive is operating, the drive will shut down immediately. If you must remove the operator, do so while the elevator is standing still.



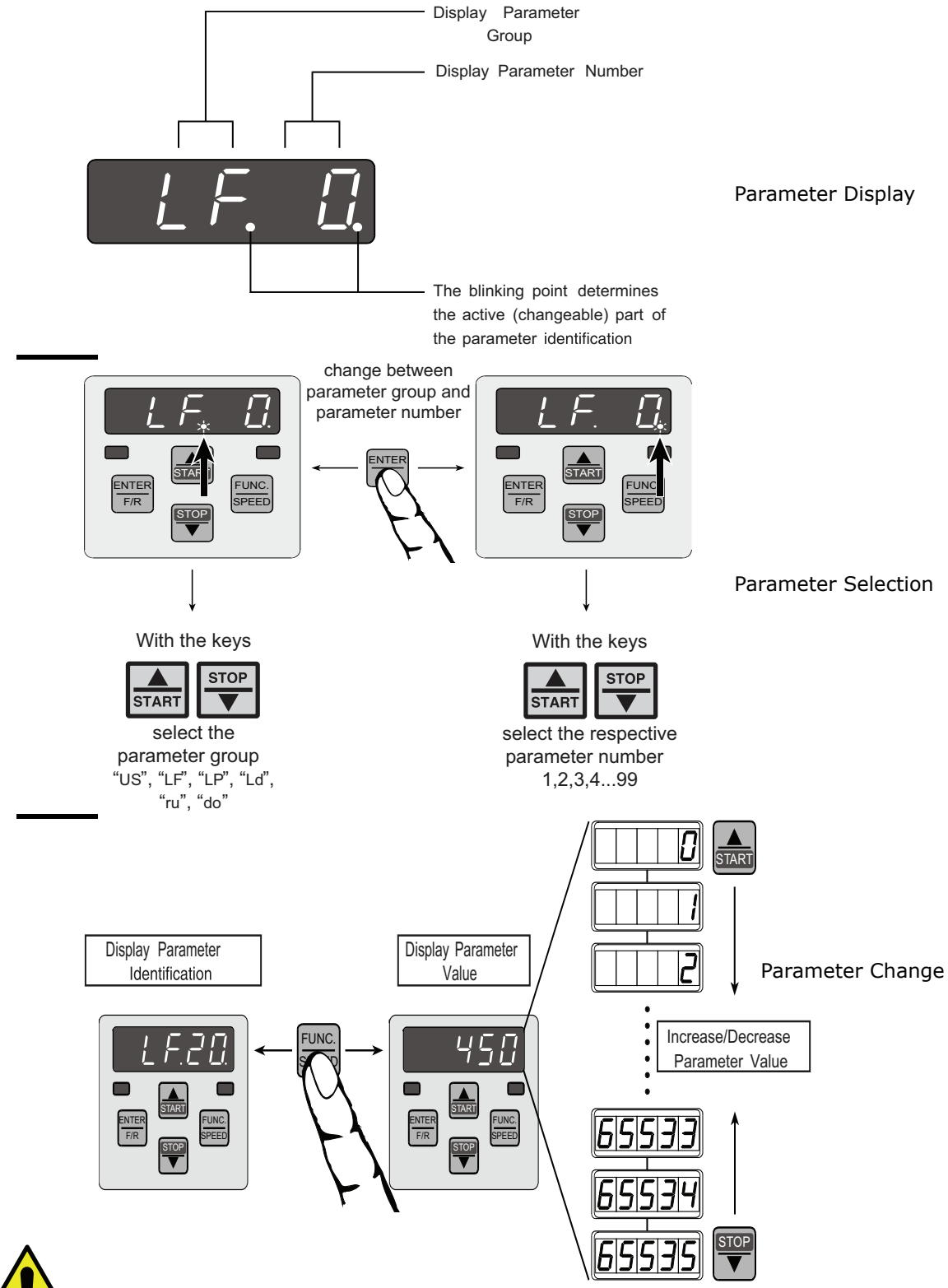
Keypad Operation Please refer to "KEB Keypad Overview" on page 9-62.

Clear Error If an error is displayed (E. UP, etc.), the drive will shut down. To clear the error:

- Press ENTER

The E.ENCC error is an exception and must be cleared using parameter LF.26 (0.LF.26).

Figure 9.1 KEB Keypad Overview



Changes are accepted and saved only after ENTER is pressed.
Some parameters cannot be changed while the elevator is operating.

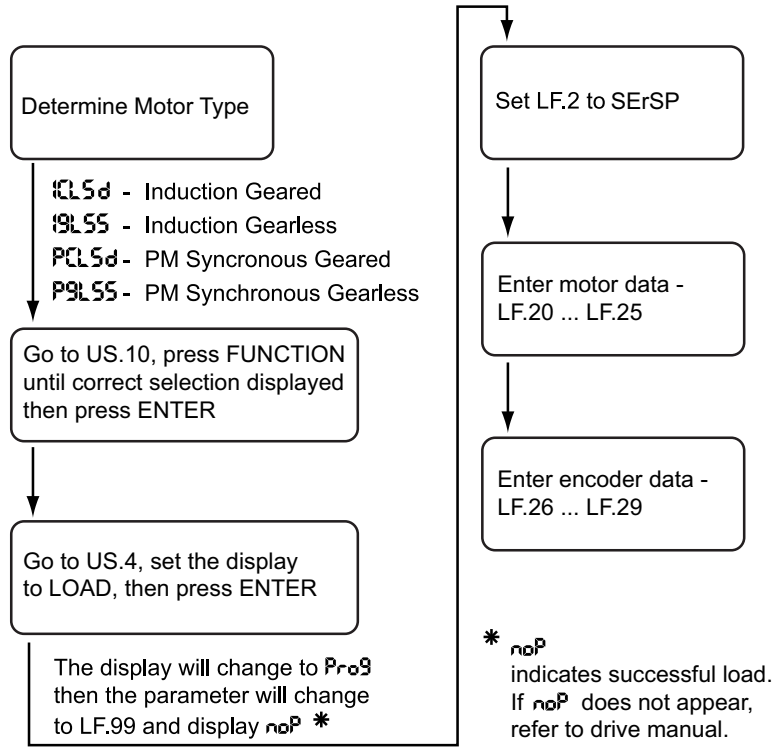
TORQMAX/KEB Drive Operation Overview

The LF.3 parameter determines the mode the drive is in. The drive default mode is “run.” Generally:

- Set LF.3 to **Stop** to adjust parameter values
- Press **Enter** to save the adjusted value
- Set LF.3 to **run** and press **Enter** to run the elevator using the controller Inspection controls or for normal operation

Drive Motor/Encoder Setup Overview

Figure 9.2 F5 Motor/Encoder Setup Overview



Learn or Enter Motor or Encoder Data In order to enter motor nameplate data into the drive, learn motor information, or learn encoder information, you must activate parameter LF.3 appropriately:

- conF (configuration): Operation troubleshooting (90 second time-out)
- S Lrn: Auto tuning drive to motor
- run: Sets drive to run mode
- I Lrn (inertia learn): Learns system inertial / activates FFTC.
- P Lrn (pole learn): Learns motor pole positions (see drive manual).

StoP: Motor cannot run. **Note:** When StoP is active, the drive will not respond to the direction inputs and therefore, the motor will not run.

The Drive Manual

The information included above is very basic. If you are not familiar with the TORQMAX F5 drive, take time to look through the drive manual to learn how to proceed, what to expect, and what adjustments are available through the drive.

Initial Drive Settings (TORQMAX F5)

Verify TORQMAX parameters below before startup using drive documentation or the 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.

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 "TORQMAX F5 Drive v1.xx Parameters Quick Reference" on page 9-65.

- LF.02 Operating Mode = A Spd
- LF.04 Motor-Selection = ICLSd or PgLDD (See Quick Reference in Section 11.)
- LF.05 Fault Reset = 5
- LF.10 Rated Motor Power (HP)
- LF.11 Rated Motor Speed (RPM)
- LF.12 Rated Motor Current (Amp)
- LF.13 Rated Motor Frequency (Hz)
- LF.14 Rated Motor Voltage
- LF.20 Contract Speed (FPM)
- LF.21 Traction Sheave Diameter (inches)
- LF.22 Gear Reduction Ratio
- LF.23 Roping Ratio
- LF.24 Load Weight
- LF.27 Encoder Pulse / Rev (PPR)
- LF.30 Control Method = 3 (Closed loop speed control with external Pretorque)
- LF.31 Kp speed accel / decel (proportional gain)
- LF.32 Ki speed accel / decel (integral gain)
- o.LF.36 Maximum Torque (LB / ft)
- LF.42 High Speed (FPM)
- LF.78 Brake Engage Time
- LF.79 Current Hold Time

Setting the Drive to Run Mode

Parameter LF.3 allows the drive to be configured, to learn, or to be placed in run mode. To set the drive to run mode:

1. Set LF.3 to **run**.
2. Press **ENTER**.

TORQMAX F5 Drive v1.xx Parameters Quick Reference

This section includes quick reference information for the TORQMAX F5 drive parameters. Please refer to the F5 drive manual provided with the iControl for a detailed explanation.

Caution

For Permanent magnet (PM Synchronous) motors, consult the following sections of the TORQMAX F5 Drive manual before roping the machine, 5.5 *PM Synchronous Motors,* 5.8 *Encoder Feedback and* 5.11 *Running the Motor.*

Table 9.23 TORQMAX F5 Drive Parameters Quick Reference for iControl AC

WARNING: Do not change drive parameters while the elevator is running. Incorrect drive parameters can cause erratic elevator operation. Parameters with an asterisk (*) must be set correctly for your specific motor/machine. Refer to the drive adjustment manual for detailed information.					
Digital Operator Display	**Parameter Description**	**Unit**	**Setting Range**	**Default Setting**	**Factory Setting**
LF.02	Signal operating mode: AbSpd = Absolute Analog Speed d SPd = Digital speed control A tor= Analog torque control A Spd= Analog speed control SErSP = Serial Com. Speed Control bnSPd = Binary Speed Selection S POS = Serial Position Feedback	-	AbSpd d SPd A tor A Spd SErSP bnSPd	bnSPd	A Spd
LF.03	Drive configuration: run = run mode conF = Configuration (5 minute time limit) Stop = Drive Stopped, Motor cannot run. S Lrn = activate auto tune I Lrn = Inertia Learn. Learns system inertia. P Lrn = Pole Learn. PM motor pole positions. SPI = Learns absolute encoder position for PM motor without sheave movement. **** OStST = Allows car to over speed for one run without changing drive parameters (see also LF.49).****	-	run conF Stop S Lrn I Lrn P Lrn SPI OStST	conF	run
LF.04	Motor selection: Displays mode selected using US.4 and US.10	-	Read only. See US.10	-	***
LF.05	Drive fault auto reset	1	0-10	5	5
LF.08	Electronic motor overload protection	-	on/off	off	on
LF.09	Electronic overload current: PM- Not visible, auto set same as LF.12.	A	1.0 - 110% Rtd	8.0	*_____
LF.10	Rated motor power PM- Read only, auto calc.	HP	0.00 - 125.00	5.0	IM*_____
LF.11	Rated motor speed	rpm	10.0-6000	1165 or 150	*_____
LF.12	Rated motor current	A	1.0 - 110% Drive rated	8.0	*_____
LF.13	Rated motor frequency	Hz	4.0 - 100.0	60.0	*_____
LF.14	Rated motor voltage IM - Name plate rated voltage (120 - 500V) PM - No-load, phase-to-phase back EMF rms voltage LF.11 (1 - 32000V/krpm)	V	-	230/460	*_____

Table 9.23 TORQMAX F5 Drive Parameters Quick Reference for iControl AC

Digital Operator Display	Parameter Description	Unit	Setting Range	Default Setting	Factory Setting
LF.15	IM: Power factor, PM: not visible	1	0.50 - 1.00	0.90	0.90
LF.16	IM: Field weakening speed PM - not visible	rpm	0.0-6000.0	set @ 80%of LF.11	*_____
LF.17	Rated motor torque, IM- Read only, auto calc. PM- enter motor name plate torque	lb ft	1 - 10000	IM - calc PM - 18	IM *** PM*_____
LF.18	PM: Motor stator resistance - from data sheet or perform learn procedure (see F5 Drive manual) IM: not visible	ohms	0.0-50.0	49.999	PM*_____
LF.19	PM: Motor leakage inductance - from data sheet or learn procedure (see F5 Drive manual) IM: not visible	mH	0.1 - 500.0	1.00	PM*_____
LF.20	Contract Speed	fpm	0 - 1600	0	*_____
LF.21	Traction sheave diameter (measured value)	inch	7.0 - 80.0	24.00	*_____
LF.22	Gear reduction ratio	1	1.00-99.99	30.00	*_____
LF.23	Roping ratio	1	1 - 8	1	*_____
LF.24	Load weight	lbs	0 - 30000	0	*_____
LF.25	Estimated gear ratio (Read only, auto calc.)	.01	1.00 - 99.99	calculated	***
0.LF.26	Encoder Interface: Displays feedback type		-	-	***
LF.27	Encoder pulse number For IncIE and SinCo see customer data For HIPEr set to 1024 For EndAt set to 2048	ppr	256 - 16835	1024	
LF.28	Encoder channel swap / direction 0 nothing reversed 1 encoder A<->B swapped 2 motor rotation reversed 3 motor rotation reversed and A<->B swapped	1	0 - 3	0	*_____
LF.29	Encoder sample time (recommend gearless = 4, geared = 8)	mSec	0.5 - 32	4	4 or 8 *_____
LF.30	Control mode: 0, 1 = Open loop induction motor operation 2 = Closed loop speed control (LF. 2 = A Spd) 3 = Closed loop speed fcontrol with Pretorque 4 = Closed loop torque control (LF. 2 = A tor) 5 = Closed loop speed control w/synth Pretorque	1	0 - 4	0	3 *_____
A.LF.31	Kp speed accell: Proportional gain, accel & run	1	1 - 50396	3000	** 3000
d.LF.31	Kp speed decell: Proportional gain, decel	1	1 - 50396	3000	** 3000
P.LF.31	KP speed torque (Synth. Pretorque	1	1 - 50396	2000	2000
A.LF.32	Ki speed accell: Integral gain, accel & run	1	1 - 26214	350	** 350
d.LF.32	Ki speed decell: Integral gain, decel	1	1 - 26214	250	** 250
P.LF.32	Ki speed torque (Synth. Pretorque)	1	1 - 26214	10000	10000
A.LF.33	Ki speed offset accell: Gain at low speed, accel	1	0 - 8000	3000	** 3000
d.LF.33	Ki speed offset decell: Gain at low speed, decel	1	0 - 8000	1000	** 1000
0.LF.36	Maximum torque (auto calculated by the drive)	lb.ft.	0-500% Trtd	calculated	***
1.LF.36	Maximum torque emergency operation (= LF.17)	lb.ft.	0-500% Trtd	calculated	***
LF.37	Open loop torque boost: Open loop op. only	%	0-25.5	10.0	10.0

Table 9.23 TORQMAX F5 Drive Parameters Quick Reference for iControl AC

Digital Operator Display	Parameter Description	Unit	Setting Range	Default Setting	Factory Setting
LF.38	Carrier frequency; 0= 8 KHz, 1= 16KHz (**Note: set LF.38 = 0 if E.OL2 error on drive**)	1	0, 1	0	*_____
LF.41	Leveling speed (Not used, must be set to 0)	fpm	0 - 25	0.0	0.0
LF.42	High speed	fpm	0 - LF.20	0.0	*_____
LF.43	Inspection speed (Not used, must be set to 0)	fpm	0 - 150.00	0.0	0.0
LF.44	High leveling speed (Not used, must be set to 0)	fpm	-	0.0	0.0
LF.45	Earthquake speed (Not used, must be set to 0)	fpm	-	0.0	0.0
LF.46	Emerg. power Speed (Not used, must be set to 0)	fpm	-	0.0	0.0
LF.47	Intermediate speed (Not used, must be set to 0)	fpm	-	0.0	0.0
LF.49	Over Speed Function Test: speed setting for Over Speed Test Function (see LF.3 - OStST). ****	fpm	1 - 2400	100	100
Note: Parameters LF.50 through LF.56 default to oFF when LF. 2 is set to AbSPd, A Spd or A Tor.					
0.LF.50	Profile 0 - Starting jerk (Not used)	ft/s^3	see note	see note	oFF
0.LF.51	Profile 0 - Acceleration (Not used)	ft/s^2	see note	see note	oFF
0.LF.52	Profile 0 - Deceleration jerk (Not used)	ft/s^3	see note	see note	oFF
0.LF.53	Profile 0 - Deceleration jerk (Not used)	ft/s^2	see note	see note	oFF
0.LF.54	Profile 0 - Deceleration jerk (Not used)	ft/s^3	see note	see note	oFF
0.LF.55	Profile 0 - Approach jerk (Not used)	ft/s^3	see note	see note	oFF
1.LF.50	Profile 1 - Starting jerk (Not used)	ft/s^3	see note	see note	oFF
1.LF.51	Profile 1 - Acceleration (Not used)	ft/s^2	see note	see note	oFF
1.LF.52	Profile 1 - Deceleration jerk (Not used)	ft/s^3	see note	see note	oFF
1.LF.53	Profile 1 - Deceleration jerk (Not used)	ft/s^2	see note	see note	oFF
1.LF.54	Profile 1 - Deceleration jerk (Not used)	ft/s^3	see note	see note	oFF
1.LF.55	Profile 1 - Approach jerk (Not used)	ft/s^3	see note	see note	oFF
2.LF.50	Profile 2 - Starting jerk (Not used)	ft/s^3	see note	see note	oFF
2.LF.51	Profile 2 - Acceleration (Not used)	ft/s^2	see note	see note	oFF
2.LF.52	Profile 2 - Deceleration jerk (Not used)	ft/s^3	see note	see note	oFF
2.LF.53	Profile 2 - Deceleration jerk (Not used)	ft/s^2	see note	see note	oFF
2.LF.54	Profile 2 - Deceleration jerk (Not used)	ft/s^3	see note	see note	oFF
2.LF.55	Profile 2 - Approach jerk (Not used)	ft/s^3	see note	see note	oFF
LF.56	Stop jerk (Not used)	ft/s^3	see note	see note	oFF
LF.57	Speed following error (0 = off, 1 = on)	-	off, on	on	on
LF.58	Speed difference	%	0 - 30	10	10
LF.59	Trigger time speed difference: Following error timer	sec	0.0 -1.0	1.0	1.0
LF.61	Emergency operation mode	-		off	off
LF.67	Pretorque gain	-	0.25 - 2.00	1.00	1.00
LF.68	Pretorque offset	%	-100 - 100	0.00	0.00
LF.69	Pretorque direction (-1 = -V, 1 = +V)	1	-1, 1	1	1
LF.70	Speed pick delay (Delay to turn on DRO).	sec	0.00 - 3.00	0.30	0.30
LF.71	Brake pick delay	sec	0.0 - 3.0	0.05	0.05
LF.76	Encoder resolution multiplier 2 for incremental encoder 8 for Sin/Cos, EnDat or Hiperface encoder	1	0 - 13	2	
LF.77	Absolute encoder position (measured)	1	0 - 65535h	0	0

Table 9.23 TORQMAX F5 Drive Parameters Quick Reference for iControl AC

Digital Operator Display	Parameter Description	Unit	Setting Range	Default Setting	Factory Setting
LF.78	Brake drop delay: Time motor will hold full current and control after direction inputs drop.	sec	0.0-3.00	0.50	0.50 - 0.80
LF.79	Current hold time: Delay in turning off the drive (Delay to turn OFF the motor current after the direction is dropped and LF.78 has expired)	sec	0.300 - 3.000	0.300	0.30
Diagnostic Parameters (Read only)					
LF.25	Estimated gear ratio	1			
LF.80	Software version				
LF.81	Software date		MMDD.Y		
LF.82	X2A-input state		see tables in F5 Drive Manual		
LF.83	X2A-output state				
LF.86	Operational mode				
LF.87	Actual inverter load (100% = rated load)	%			
LF.88	Motor command speed	rpm			
LF.89	Actual motor speed	rpm			
LF.90	Actual elevator speed	ft/m			
LF.93	Phase current	A			
LF.94	Peak phase current	A			
LF.95	Actual DC voltage	V			
LF.96	Peak DC Voltage	V			
LF.97	Actual output frequency	Hz			
O.LF.98	Last error				
US - Parameters					
US. 1	Password: With different passwords, different parameter groups can be accessed for advanced programming.	-	0-9999	-	-
US. 3	Load defaults. Select LoAd and press ENTER to cause all LF parameters to be reset to drive default values.	-	LoAd	-	-
US. 4	Load configuration. Select LoAd and press ENTER to load the configuration selected in US.10.	-	LoAd	-	-
US.10	Select Configuration. User selection of drive mode. I CLSd = Induction motor (closed loop) I 9LSS = Induction motor (closed loop) gearless P CLSd = Synchronous motor (closed loop) P 9LSS = Synchronous motor (closed loop)gearless **Loaded using parameter US.04**.	-	ICLSd I 9LSS P CLSd P 9LSS	-	*

* Parameters are motor/machine/job dependent.
** Recommended but field adjustable.
*** The value is automatically calculated from the motor data or other parameter values.
****Parameters apply to Drive Software Version 1.71 or greater)

Parameters for Drive Software Version (LF.80 = 1.61 or greater), Software date (LF.81 = 2801.9 or later)

Job #:	Drive Serial #:
Prod. Order #:	Test technician:
Drive Model #:	Date:



Appendix CT Quick Start Guide

In this Section

This section contains:

- Control Techniques E300 AC Drive Quick Start Guide on page A-2
- CT E300 AC Drive Parameter Table on page A-26

Control Techniques E300 AC Drive Quick Start Guide

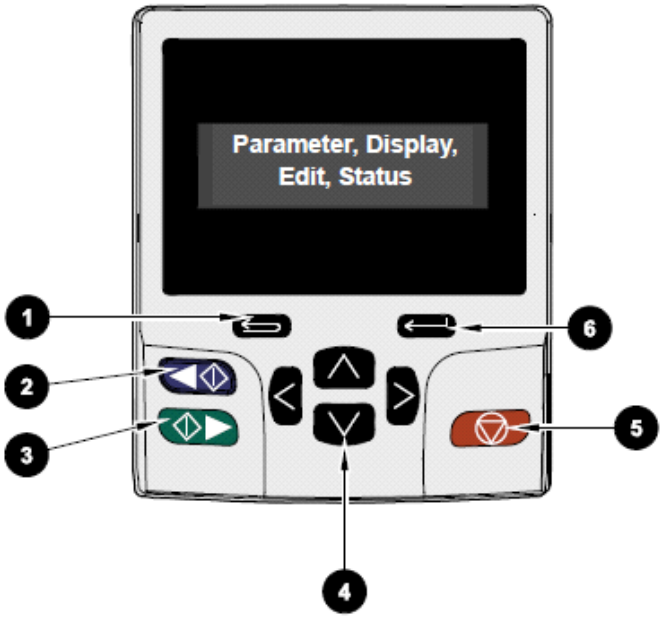
Introduction

This guide addresses parameters and adjustments that require unique attention for the Control Techniques E300 AC Drive. The drive is shipped with an SI-I/O module in option slot 2 and an SI-Apps Compact module in option slot 3.

Refer to the E300 Closed Loop RFC-A Mode Setup Guide for details on the setup and commissioning of the drive for closed loop vector RFC-A mode operation with an induction motor or the E300 Closed Loop RFC-S Mode Setup Guide for details on the setup and commissioning of the drive for closed loop vector RFC-S mode operation with a PM synchronous motor. For a detailed parameter listing and full descriptions, refer to the Installation and System Design Guide.

CT Keypad

Figure A.1 CT Keypad



1. **Escape button** - Used to exit from parameter edit or view mode. In parameter edit mode, if parameter values are edited and the exit button pressed, the parameter value will be restored to the value it had on entry to edit mode.
2. **Start reverse (Auxiliary) button** - Not used.
3. **Start forward button** - Not used.
4. **Navigation keys** (x4) - Used to navigate through the menu and parameter structure and edit parameter values.
5. **Reset button** - Used to reset the drive.
6. **Enter / Mode button** - Used to toggle between parameter edit and view mode.

Figure A.2 Keypad Navigation

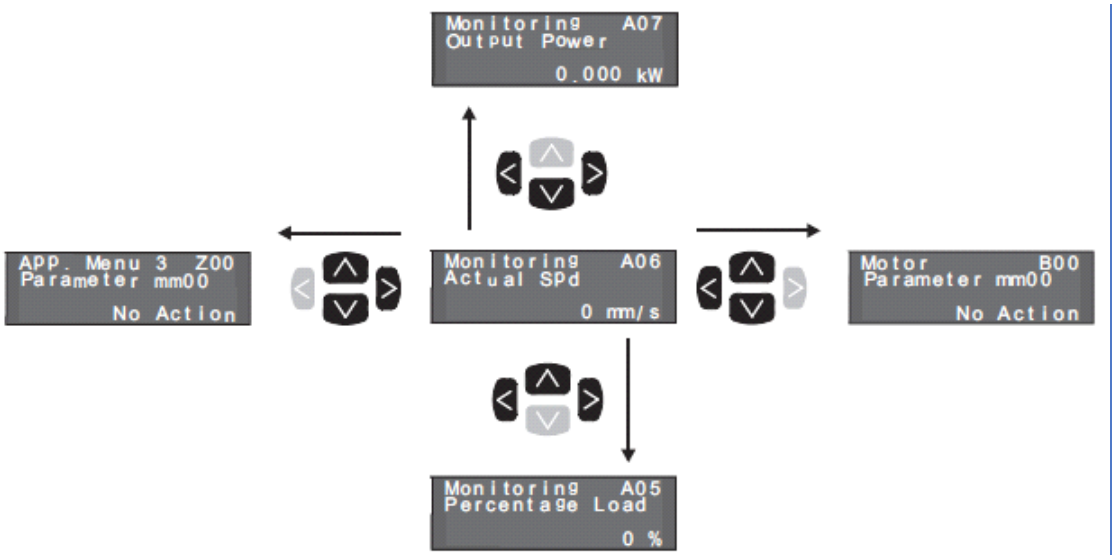


Figure A.3 Keypad Display Modes

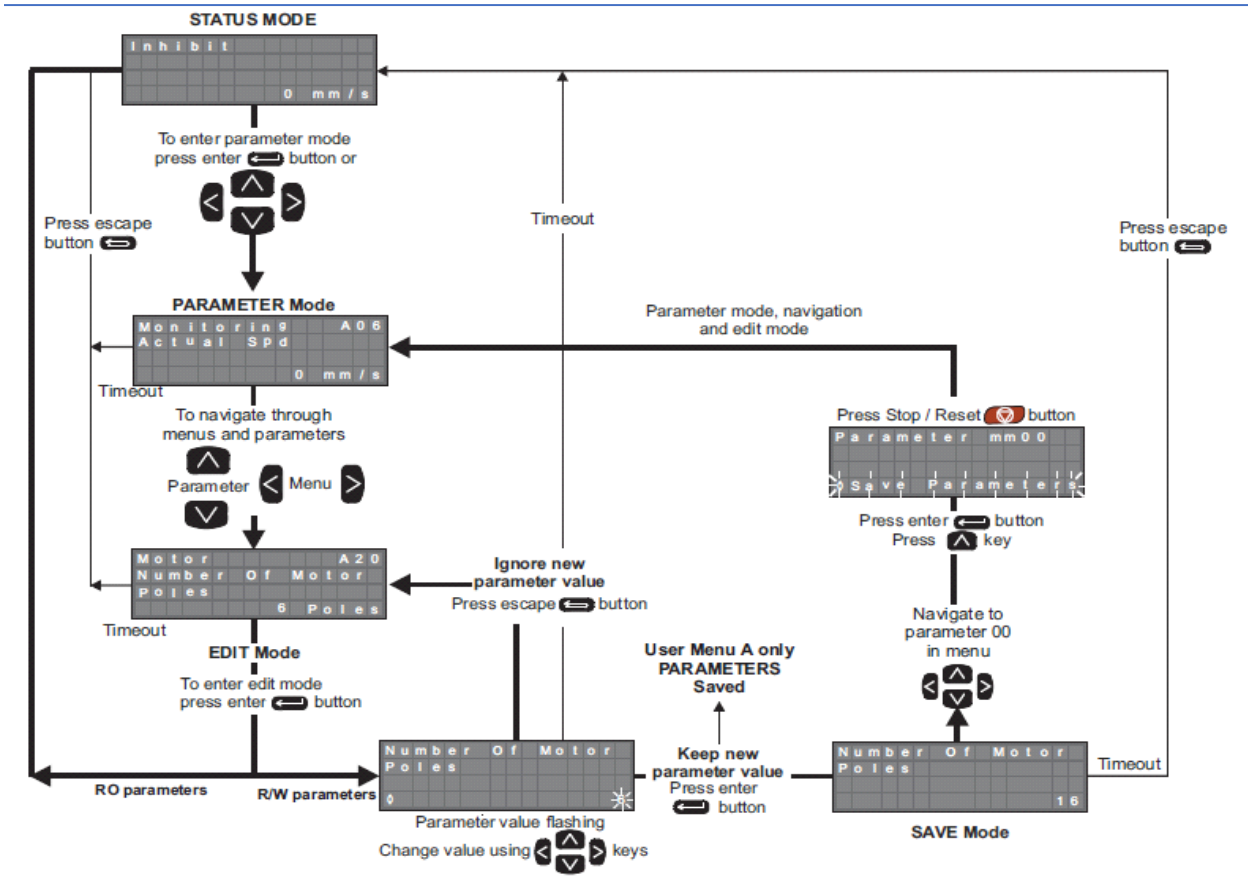


Figure A.4 Drive Features and Options

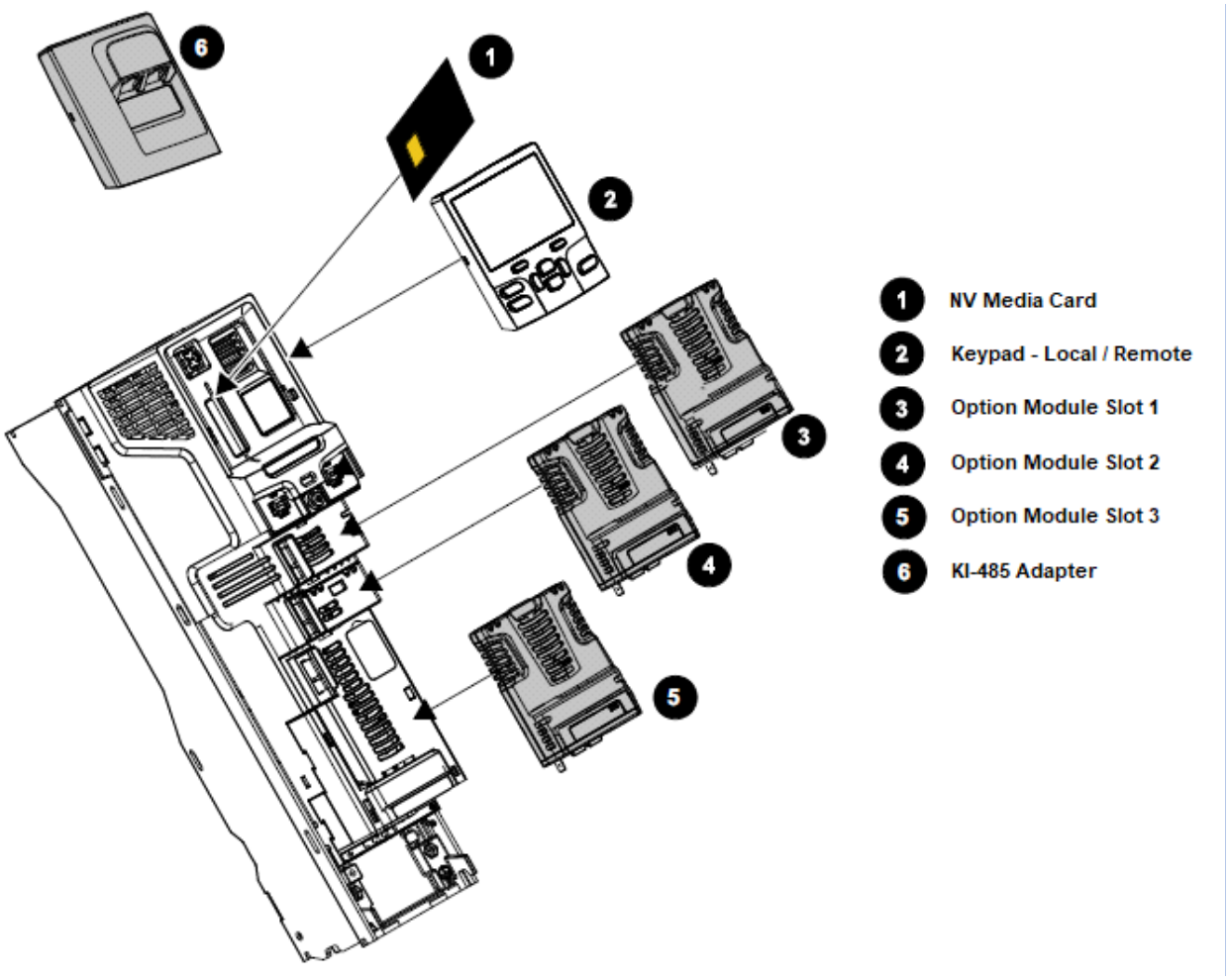
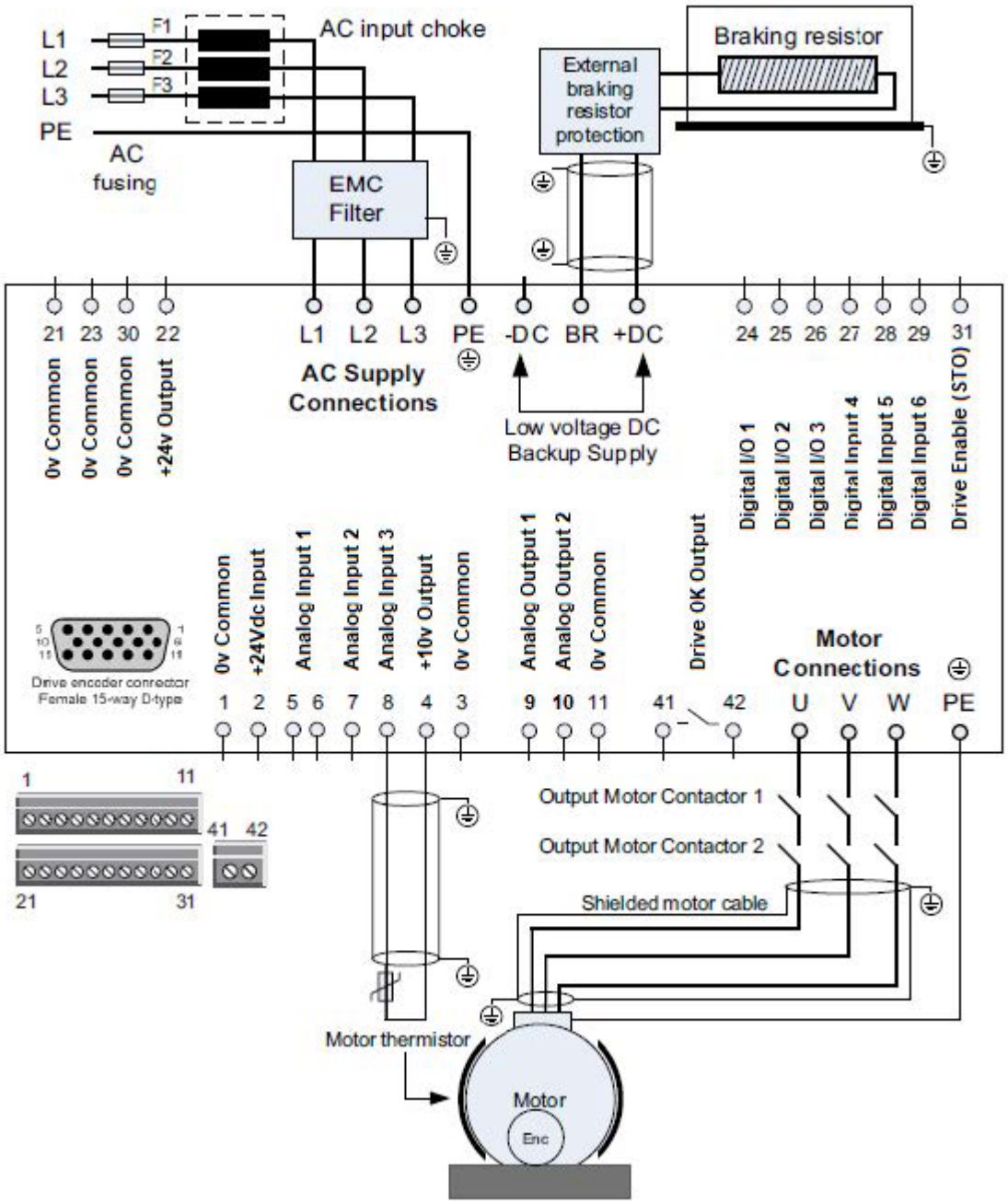


Figure A.5 Position Feedback Connections

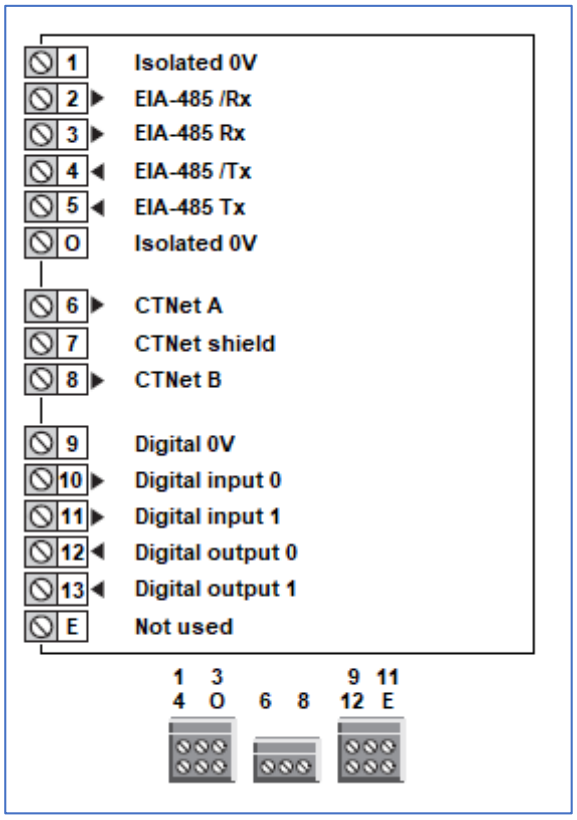
Drive Encoder Type (C01)	Position Feedback Connections														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
AB (0)	A	A\	B	B\	Z	Z\									
SC (6)	A (Cos)	A\ (Cos\)	B (Sin)	B\ (Sin\)	Z	Z\									
SC Hiperface (7)	Cos	Cosref	Sin	Sinref	DATA	DATA\									
EnDat (8)	DATA	DATA\	CLK	CLK\									+V	0V	Th
SC EnDat (9)	A	A\	B	B\	DATA	DATA\					CLK	CLK\			
SSI (10)	DATA	DATA\	CLK	CLK\											
SC SSI (11)	A (Cos)	A\ (Cos\)	B (Sin)	B\ (Sin\)	DATA	DATA\					CLK	CLK\			

Figure A.6 Drive System Connections

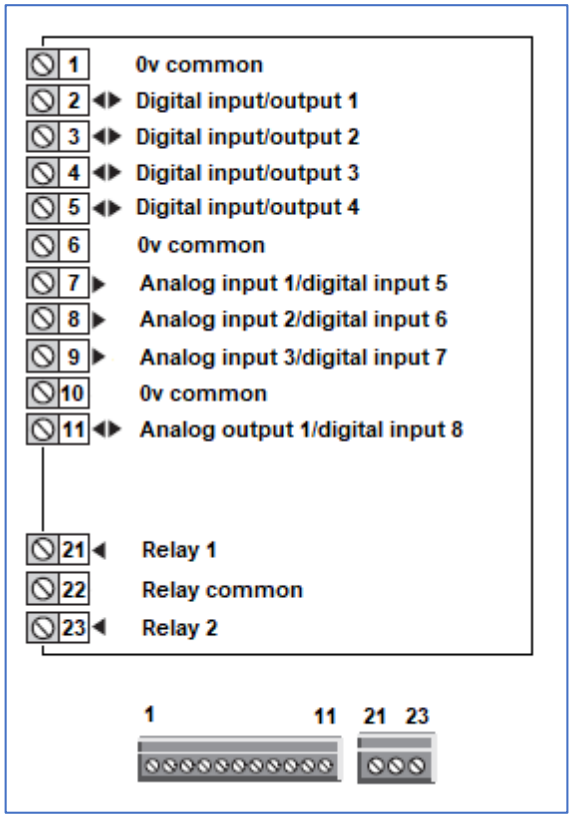


A

Module Connections



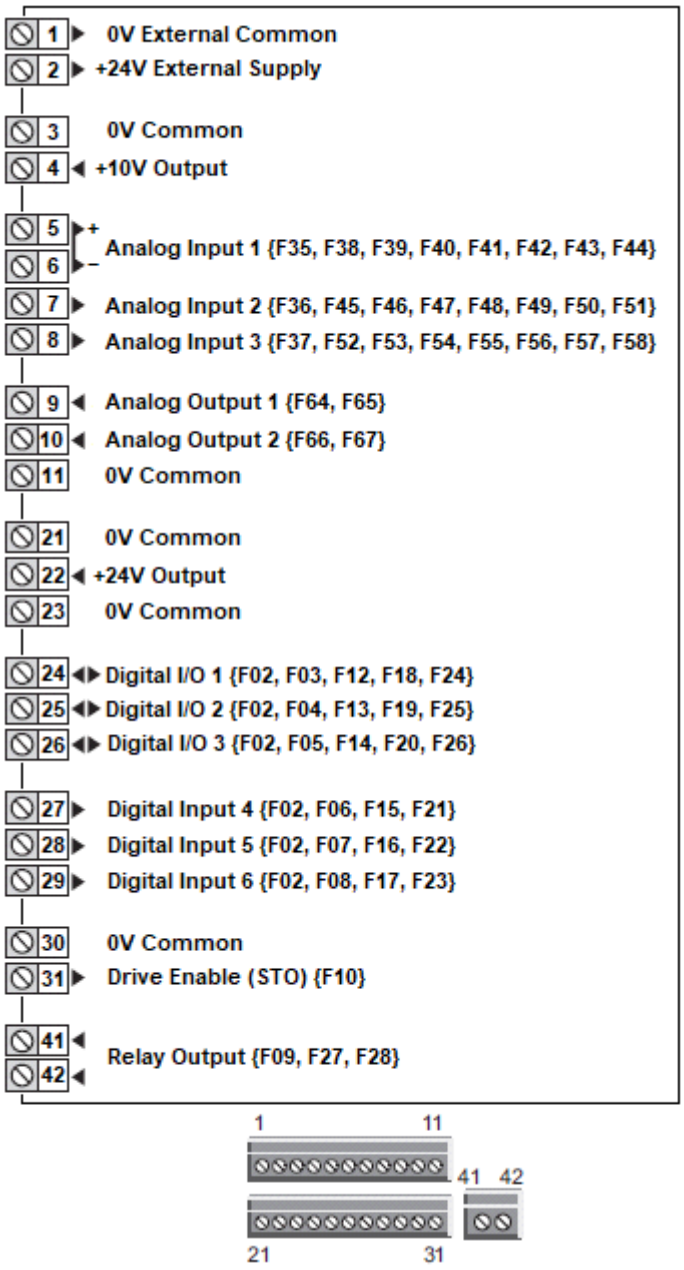
SI-Apps Compact Module Terminals



SI-I/O Module Terminals

Contents Index MCE Web

Figure A.7 Drive Terminals



A

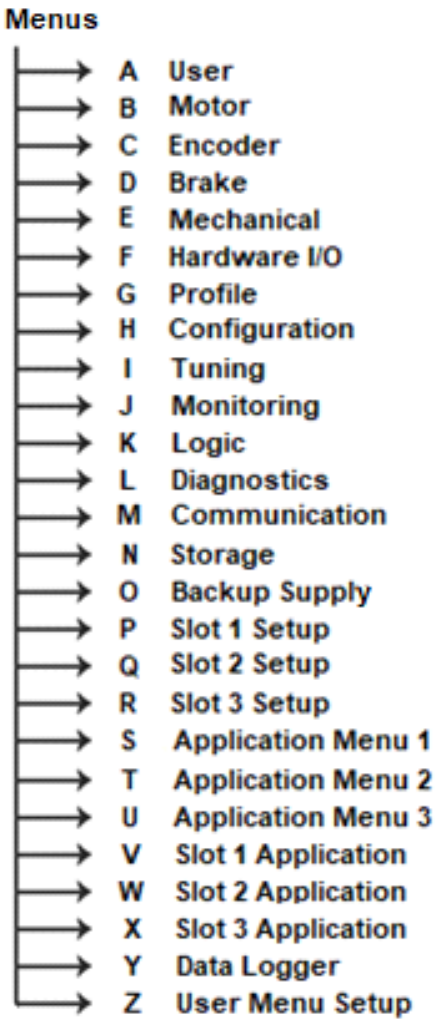
Parameters iControl Controller

Table A.1 Parameters

Drive Type	Control Technique E300
Drive Interface	Serial
Reference Type	Serial
Profile Advance	[drive tuning specific]
Note:	*Initially set to 75 milliseconds*

Control Techniques E300 AC Drive

Figure A.8 Drive Menu



Preparation

Saving Parameters

When changing a parameter in User Menu A, the new value is saved when pressing the Enter button to return to parameter view mode from parameter edit mode.

If parameters have been changed in the advanced menus (B - Z), then the change will not be saved automatically. A save function must be carried out via Parameter mm00 which is the first parameter in all menus (A - Z):

1. Modify desired parameters.
2. Select Save Parameters in Parameter mm00 and press Enter.
3. Press the red Reset button to confirm change.
4. When the display shows No Action, the operation has successfully completed.

Initializing Mode / Parameters

If the A02 {B01} operating mode for the drive is not appropriate, the following steps will change the operating mode and default the parameters:

1. Select RFC-A (induction motor) or RFC-S (PM synchronous motor) in A02{B01} and press Enter. The operating mode selected must be different from what is currently active.
2. Enter 1253 (load 50 Hz defaults) or 1254 (load 60 Hz defaults) in Parameter mm00 and press Enter.
3. Press the red Reset button to confirm change.
4. When the display shows No Action, the operation has successfully completed.

If the A02{B01} operating mode for the drive is appropriate, the following steps can be used to default the parameters if necessary:

1. Select Reset 50 Hz Defs (alternatively, enter 1233) or Reset 60 Hz Defs (alternatively, enter 1244) in Parameter mm00 and press Enter.
2. Press the red Reset button to confirm change.
3. When the display shows No Action, the operation has successfully completed.

Displaying Non-Default Parameters

The keypad has an option to display all parameters which have been changed from their default values. This function does not require a drive reset to become active, and only parameters containing non-default values will be visible to the user.

1. Select Show non-default (alternatively, enter 12000) in Parameter mm00 and press Enter.
2. The display shows Show non-default.

To deactivate this function:

1. Select No action (alternatively, enter a value of 0) in Parameter mm00 and press Enter.
2. The display shows No Action.

Accessing Diagnostics

The drive has a status LED present on the front of the drive just below the keypad. The status LED will remain solidly on if no fault has occurred and will flash if the drive has tripped.

Trip Numbers:

1. Parameter L29 through L38 store the 10 most recent trips that have occurred where L29 is the most recent and L38 is the oldest.

Sub-Trip Numbers:

1. Some trips have sub-trip numbers which provide more detail on the possible cause for a trip. If a trip has a sub trip number, its value is stored in parameter L61 through L70 where L61 correlates to L29 while L70 correlates with L38. If the trip does not have a sub-trip number, zero will be stored in the sub-trip log.

Enter Drive Parameters

1. Follow steps described in the Preparation section above to become familiar with saving parameters, defaulting parameters if required, observing only parameters with non-default values, and the unique procedure utilized to change the drive's mode of operation.
2. Enter parameters from the Configuration section.

Configuration

Table A.2 Menu A: User Menu

A01{H02} – User Security Status	1=All Menus
A02{B01} – Drive Control Mode	[job specific]
Note (see Preparation above):	2=RFC-A (induction motor) 3=RFC-S (PM synchronous motor)
A10{H11} – Control input Mode	0=Analog Run Prmit
Incremental Encoder	
A12{C01} – Encoder Type	0=AB
A13{C02} – Encoder Auto Configuration	0=Disabled
A14{C03} – Encoder Pulses / Revolution	[encoder specific]
A15{C04} – Encoder Voltage	[encoder specific]
EnDat Encoder	
A12{C01} – Encoder Type	9=SC EnDat
A13{C02} – Encoder Auto Configuration	1=Enabled
A14{C03} – Encoder Pulses / Revolution	2048
A15{C04} – Encoder Voltage	[encoder specific]
Note (nominal value):	*0=5V*
A16{C13} – Position Feedback Phase Angle	[encoder specific]
Note:	*Only used for PM synchronous motor*
A18{B02} – Motor Rated Current	[motor specific]
A19{B03} – Motor Rated Voltage	[motor specific]
A20{B05} – Number of Motor Poles	[motor specific]
Note (nominal value):	*6 poles for induction motor* *Poles=120*Frequency in Hz/Synchronous RPM*
A21{B06} – Motor Rated Frequency	[motor specific]
Note (induction motor):	*50 Hz or 60 Hz (USA)*
A22{B07} – Motor Rated Speed	[motor specific]
A24{B16} – Symmetrical Current Limit	[job specific]

Table A.2 Menu A: User Menu

A26{B11} – Motor Autotune	1=Stationary (induction motor) 5=Full Stationary (PM synchronous motor)
Note:	*Set to Full Stationary (5) if Stationary unsuccessful*
A28{E01} – Nominal Elevator Speed mm/s	[job specific]
Note:	*Set to contract speed*
A29{E02} – Sheave Diameter	[job specific]
A30{E03} – Roping	[job specific]
Note:	*1=1:1, 2=2:1*
A31{E04} – Gear Ratio Numerator	[motor specific]
Note:	*1=gearless application* *n=geared application (n>10)*
A32{E05} – Gear Ratio Denominator	[job specific]
Note:	*1=gearless application, 10=geared application*
A33{E07} – Nominal Elevator Speed rpm	[job specific]
Note:	*Adjust A29{E02} for gearless applications and A31{E04} for geared applications to affect this value*
A35{G13} – Run Jerk 1	10,000
A36{G14} – Run Jerk 2	10,000
A37{G15} – Run Jerk 3	10,000
A38{G16} – Run Jerk 4	10,000
A39{G18} – Creep Stop Jerk	10,000
A40{G11} – Acceleration Rate	5,000
A41{G12} – Deceleration Rate	5,000
A42{G17} – Creep Stop Deceleration Rate	5,000
A47{D04} – Brake Control Release Delay	5
A48{D05} – Brake Control Apply Delay	5
A49{I01} – Start Speed Loop P Gain	[job specific]
Note:	*Set initially to 0.2 (RFC-S) or 0.02 (RFC-A). Commonly between 0.01 and 2.0. Must be greater than or equal to A52{I06}*

Table A.2 Menu A: User Menu

A50{I02} – Start Speed Loop I Gain	[job specific]
Note:	*Set initially to 2.0 (RFC-S) or 0.2 (RFC-A). Commonly between 0.1 and 20.0.* *Must be greater than or equal to A53{I07}*
A51{I05} – Start Current Loop Filter	[job specific]
Note:	*Set initially to 2.0. Commonly between 2.0 and 10.0*
A52{I06} – Run Speed Loop P Gain	[job specific]
Note:	*Set initially to 0.2 (RFC-S) or 0.02 (RFC-A).* *Commonly between 0.01 and 2.0*
A53{I07} – Run Speed Loop I Gain	[job specific]
Note:	*Set initially to 2.0 (RFC-S) or 0.2 (RFC-A).* *Commonly between 0.1 and 20.0*
A54{I10} – Run Current Loop Filter	[job specific]
Note:	*Set initially to 2.0. Commonly between 2.0 and 10.0*

Table A.3 B Menu: Motor

B20 – Motor Thermal Time Constant 1	[job specific]
Note:	*Set initially to 89.0*
B54 – Minimal Movement Phasing Test Angle	[job specific]
Note:	*Set initially to 0.00. If A26{B11} is unsuccessful initially and with two motor leads swapped, set to 0.01 and repeat 26{B11}*

Table A.4 E Menu: Mechanical

E10 – Load Cell Compensation Enable	[On]
Note:	*Pretorque is enabled, disabled, and adjusted on controller*
E12 – Load Cell Compensation Filter	[50 ms]
E14 – Inertia Compensation Mode	[job specific]
Note:	*Perform preliminary adjustment before enabling (Torque)*
E15 – Inertia Compensation Total Inertia	[job specific]

Table A.4 E Menu: Mechanical

Note:	*Set initially to 0.05. Commonly between 0.05 and 0.2*
E19 – Load Cell Compensation Offset	[0.0%]
E20 – Load Cell Compensation Scaling	[1.0]
E33 – Alternative Torque Feedforward Select	On
E34 – Alternative Torque Feedforward Value	[read only]

Table A.5 F Menu: I/O Hardware

F18 – T24 Digital I/O 1 Source/Destination	A00
F19 – T25 Digital I/O 2 Source/Destination	A00
F20 – T26 Digital I/O 3 Source/Destination	A00
F21 – T27 Digital Input 4 Source	A00
F22 – T28 Digital Input 5 Source	A00
F23 – T29 Digital Input 6 Source	A00
F24 – T24 Digital I/O 1 Output Select	Off
F25 – T25 Digital I/O 2 Output Select	Off
F26 – T26 Digital I/O 3 Output Select	Off
F27 – T41 T42 Relay Output Source	S33
F28 – T41 T42 Relay Output Invert	On
F41 – Analog Input 1 Destination	G49 (Analog Speed Reference)
F48 – T7 Analog Input 2 Destination	A00
F74 – Motor Thermistor Input Select	No Thermistor

Table A.6 H Menu: Configuration

H15 – Maximum Speed Error Threshold	[job specific]
Note:	*Set initially to 100*
H16 – Maximum Distance Error Threshold	0
H40 – Drive Name Characters 1-4	[job number characters 1-4]
H41 – Drive Name Characters 5-8	[job number characters 5-8]
H42 – Drive Name Characters 9-12	[job number characters 9-12]
Note:	*Append car number as letter*

Table A.6 H Menu: Configuration

H43 – Drive Name Characters 13-16	[leave blank]
H54 – Digital Override Analog Input Mode	4 (Velocity)

Table A.7 I Menu: Tuning

I19 – Variable Gains Mode	0=Start Only

Table A.8 O Menu: Backup Power

O05 – UPS Controller Enable	[read only]
O06 – UPS Maximum Power Setpoint	[job specific]
Note:	*If TAPS (Traction Auxiliary Power Supply) is used, enter rating of unit (3kw or 6kw); otherwise ignore setpoint value*
O07 – UPS evacuation current full load limit	150%
O08 – UPS evacuation current no load limit	150%
Note:	*The UPS load limit values may need to be increased if insufficient. If TAPS (Traction Auxiliary Power Supply) is not used, ignore load limit values*

Table A.9 R Menu: Slot 3 SI-Apps Compact Setup

R06 – EIA-RS485 Mode	6
R07 – EIA-RS485 Baud Rate	57600
R11 – Clock Task Scheduling	0 ms
R12 –POS Task Scheduling Rate	3=1 ms
R15 – Disable Reset on Trip Cleared	On

Table A.10 S Menu: Application Menu 1

S30 – Controller Control Word	[read only]
Note:	*Bit 0=enable* *Bit 1=reset* *Bit 2=run* *Bit 3=direction* *Bit 4-6=zone* *Bit 10=battery* *Bit 11=generator* *Bit 12=inspection*

Table A.11 T Menu: Application Menu 2

T11 – Inverter Node	1
T13 – Number of Good Messages Received	[read only]
T14 – Received Message Duration	[read only]
Note:	*Nominally 6 to 10 ms*
T15 – Received Message Periodicity	[read only]
Note:	*Nominally 20 ms*
T16 – Max Received Message Periodicity	[read only]
Note:	*Message lost if greater than 40 ms*
T17 – Error Messages Received	[read only]
Note:	*Since power up*
T18 – Last Error Message Code	[read only]
Note:	*1=no STX* *2=service ID not supported* *3=message ID invalid* *4=no ETX* *5=BCC does not match* *6=wrong inverter address.*
T20 – Velocity Command Inertia Filter	5 Hz
T21 – Inertia Compensation Filter	5 Hz
T22 – Inertia Acceleration Option	0
Note:	*0=controller acceleration (default)* *1=estimated acceleration* *2=controller acceleration when direction active; otherwise, estimated acceleration*
T31 – Speed Inversion	[job specific]
Note:	*OFF=no inversion (default)* *ON=inversion*
T32 – Controller	*0n=iControl*
T51 – SI Application Version	[format=xx.yy.zz]

Table A.12 U Menu: Application 3

U22 – Estimated Acceleration	[read only: mm/s2]
U23 – Controller Acceleration	[read only: mm/s2]
U24 – Inertia Compensation Acceleration	[read only: mm/s2]
U25 – G54 Velocity Command	[read only: mm/s]
U26 – Filtered Velocity Command	[read only: mm/s]
U27 – E13+E34	[read only: %]
U28 – Estimated Inertia Compensation for E15	[read only]
Note:	*10,000=scale (7500 correlates to 0.07500)*

Table A.13 Slot 2 Menu: SI-I/O

2.02.019 – Relay 1 Invert	Off
2.02.020 – Relay 2 Invert	Off
2.02.029 – Relay 1 Source	0. S33
Note:	*There is a space between the period and letter S*
2.02.030 – Relay 2 Source	0. S32
Note:	*There is a space between the period and letter S*

Adjustment

Enter Drive Parameters

1. Review the steps in the **Preparation** section on page A-9 to become familiar with saving parameters, defaulting the parameters, displaying parameters with non-default values, and the procedure for changing the drive's mode of operation.
2. Enter/verify parameters described in the **Configuration** section beginning on page A-11.

Auto Tune Motor Data

Review Section 4.2.6 of the E300 Closed Loop RFC-A Mode Setup Guide for induction motors or E300 Closed Loop RFC-S Mode Setup Guide for PM synchronous motors. The steps below implement the Motor Learn and Encoder Synchronization procedure:

1. Place controller on Machine Room Inspection.
2. Set the Fault/Function Bypass to On.
3. Activate the following bypasses on the controller's View > Diagnostics > Fault Bypass screen:
   - Brake Voltage Not Off.

- Brake Voltage Not On.

4. On the Control tab of the controller's View > Configuration > Brake > Control screen, set the following parameters as indicated while taking note of their value:
   - Pattern Scaling = 0%.
   - Brake Pick Voltage = 5 V.
   - Brake Partial Pick Voltage = 5 V.
   - Brake Hold Voltage = 5 V.
   - Brake Relevel Voltage = 5 V.
   - Brake Weakening Voltage = 5 V.
5. On the Configuration tab of the controller's View > Configuration > Brake screen, set the following parameters as indicated while taking note of their value:
   - 10% Current Reference value = 0.0.
   - 20% Current Reference value = 0.0.
6. On the drive, set Maximum Switching Frequency parameter A25{B13} to 0 (2 kHz).
7. On the drive, select 1 (Stationary) for induction motor (RFC-A) or 5 (Full Stationary) for PM synchronous motor (RFC-S) to begin the motor tuning procedure using Motor Auto-tune parameter A26{B11}.
8. Press the escape button on the drive's keypad to display the status screen. Fault messages are not displayed on the drive's parameter screen.
9. On the controller, pick and hold up or down direction until the drive's display indicates that the procedure has been completed. This will be indicated by None for parameter A26{B11}.
10. Once the tuning procedure has completed, drop direction on the controller.
11. On the Control tab of the controller's View > Configuration > Brake screen, restore parameters from (4 above to their original values.
12. On the Configuration tab of the controller's View > Configuration > Brake screen, restore parameters from (5) above to their original values.
13. Set the Fault/Function Bypass to Off.
14. On the drive, restore Maximum Switching Frequency parameter A25{B13} to 4 (8 kHz).

Verify Communication

Verify no drive comm fault on controller or fault indicator on drive.

Verify Motor Rotation

1. Move the elevator on Inspection and verify that the motor is under control and rotating in the proper direction. Verify output current at A4.
2. If the motor is rotating under control in the proper direction while drawing nominal current, skip the remaining steps.
   - If the motor draws normal current and rotates in the opposite direction, change the commanded speed polarity by setting parameter T31 from Off to On or On to Off.
   - If the motor runs away or draws excessive current while not moving at all, swap any two motor leads. Then, repeat Auto Tune Motor Data section.
   - For PM synchronous motors only. If the motor draws excessive current after an auto-tune was performed initially and with two motor leads swapped, change Minimal

Movement Phasing Test Angle parameter B54 to 0.01 and repeat Auto Tune Motor Data section.



If the motor still draws excessive current and does not rotate, swap the two motor leads again and perform the motor auto tune again. If a PM synchronous motor still draws excessive current and doesn't turn, the auto tune process is unable to align the encoder. In this case, change Minimum Movement Phasing Test Angle parameter B54 to 0.01. Then repeat steps from Auto Tune Motor Data section.

Verify Motor Speed

Preliminary

While moving on Inspection, the default speed loop gains may not be set at the optimum value. Even though the values will be system dependent, reasonable initial values should be within the following range:

1. A49{I01} - 0.1 to 0.5 s/rad (RFC-S) or 0.01 to 0.05 s/rad (RFC-A)
2. A50{I02} - 1.0 to 5.0 s2/rad (RFC-S) or 0.1 to 0.5 s2/rad (RFC-A)
3. A51{I05} - 2.0 to 10.0 ms
4. A52{I06} - Set to A49{I01} value
5. A53{I07} - Set to A50{I02} value
6. A54{I10} - Set to A51{I05} value

Geared Application

1. While moving on Inspection, verify that the displayed speed on the controller's screen is virtually the same as the requested inspection speed via the controller's View > Configuration > Pattern > Modes > Inspection (High Speed) parameter. If these values do not match, adjust the Gear Ratio Numerator parameter A31{E04}. Increase this value to increase the elevator's speed.
2. The Nominal Elevator Speed RPM parameter A33{E07} will be automatically adjusted as A31{E04} is altered. The parameters A28{E01}, A29{E02}, A30{E03}, and A32{E05} should already have been set appropriately.

Gearless Application

1. While moving on Inspection, verify that the displayed speed on the controller's screen is virtually the same as the requested inspection speed via the View > Configuration > Pattern > Modes > Inspection (High Speed) parameter. If these values do not match, adjust the Sheave Diameter parameter A29{E02}. Decrease this value to increase the elevator's speed.
2. The Nominal Elevator Speed RPM parameter A33{E07} will be automatically adjusted as A29{E02} is altered. The parameters A28{E01}, A30{E03}, A31{E04}, and A32{E05} should already have been set appropriately.

Verify One-Floor-Run Operation

1. Move the elevator on inspection between landings and verify that it moves properly. After taking the elevator out of inspection mode, verify that the elevator corrects to a landing and stops properly. Make a one-floor-run and observe the elevator as it moves between floors and stops at landings.
2. Follow procedure in Adjust for Response if necessary.
3. Follow procedure in Adjust Control Gains, Adjust Load Cell Compensation, and Adjust Inertia Compensation as required.

Verify Contract Speed Operation

1. Run the elevator between landings and verify that it moves properly. Observe the elevator as it starts from landings, moves between landings, and stops at landings. Progressively increase the number of landings traveled until contract speed is reached. When the elevator reaches contract speed, verify proper speed.
2. If required, adjust the Gear Ratio Numerator parameter A31{E04} if a geared application, or the Sheave Diameter parameter A29{E02} if a gearless application, to fine tune the speed of the elevator as described in Verify Motor Speed above.
3. Follow procedure in Adjust Control Gains, Adjust Load Cell Compensation, and Adjust Inertia Compensation as required.

Adjust Control Gains

The control gains are comprised of the speed loop gains, the current loop gains, and the current loop filter. The current loop gains are set during the motor auto tune procedure, while the speed loop gains and current loop filter are tuned manually. The control is divided into three groups: start, run, and stop. The active groups are determined by drive parameter I19: Start Only, Start+Run, and Start+Run+Stop.

Initially, only the start gains and the start filter should be enabled to tune the speed loop. Load cell and inertia compensation should be adjusted and enabled once the speed loop has been coarsely tuned to optimize the control.

1. Set drive parameter I19 to Start Only.
2. Begin adjusting drive parameters Start Speed Loop P Gain (I01), Start Speed Loop I Gain (I02), and Start Current Filter (I05). Refer to Section 4.3.1 of the E300 Closed Loop RFC-A Mode Setup Guide for an induction motor, or the E300 Closed Loop RFC-S Mode Setup Guide for a PM synchronous motor.
3. Follow procedure in Adjust Load Cell Compensation if available.
4. Follow procedure in Adjust Inertia Compensation.

Adjust Load Cell Compensation

If a load cell with an analog output is provided, it can be used to prevent rollback or movement at the start of motion.

1. On the drive, verify that parameter E10 is On, E19 is 0.0%, E20 is 1.0, F45 is Volt, F46 is 1.0, F47 is Off, F49 is 0.0%, F50 is -100.0%, and F51 is 100.0%.
2. Set controller parameter Speed Pick Delay 1 to 3 seconds on the View > Configuration > Brake > Control tab while taking note of the original value.
3. Set controller parameters Pretorque Option to Load Weigher Pretorque, Pretorque Position Compensation to 0.0, and Pretorque Gain to 0.0 on the View > Configuration > Drive > Pretorque tab.
4. On controller, select Load Weigher Balanced for Test Point 1 and Load Weigher (Raw) for Test Point 2 on the View > Diagnostics > Virtual Oscilloscope screen.
5. Follow the load cell's installation manual to configure and adjust the load cell.
6. With a fully loaded car, verify Test Point 2 is between 5.5 and 8.0. If necessary, adjust trimpot LW ADJ on the CTP (cartop) board in the iLink enclosure to achieve the correct reading. If the Load Weigher readings seem 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.

7. Place a balanced load in the car and adjust controller parameter Pretorque Balance Adjustment on the View > Configuration > Drive > Pretorque tab until Test Point 1 is equal to 0.0.
8. With an empty car at the top landing, adjust controller parameter Pretorque Gain on the View > Configuration > Drive > Pretorque tab until no rollback is detected during one-floor run movement near the top terminal landing.
9. With an empty car at the bottom landing, adjust controller parameter Pretorque Position Compensation on the View > Configuration > Drive > Pretorque tab until no rollback is detected during one-floor-run movement near the bottom terminal landing.
10. With a fully loaded car, verify no rollback at the top and bottom terminal landing.
11. Restore controller's Speed Pick Delay 1 parameter.
12. The load cell is now adjusted to provide motor pretorque at the start of elevator movement.

Adjust Inertia Compensation

Inertia compensation can improve system performance and ride quality by providing optimum control of the elevator. It reduces the dependence on the speed feedback from the motor by predicting what the system will do and providing the required torque command based on that prediction. It will be able to reduce or eliminate speed overshoot into contract speed and leveling speed. It will also allow a reduction in control gains to improve ride quality without adversely affecting system performance.

1. On the drive, set parameter E14 to None and E15 to 0.05. After adjustment, E15 will generally be between 0.05 and 0.1.
2. With an empty cab, run the car between terminal landings while monitoring drive parameter U28. After the car stops and the motor contactor drops at both terminal landings, take the average of the U28 values at the top and bottom terminal landings. To calculate the average decimal value, divide that U28 average value by 100,000.



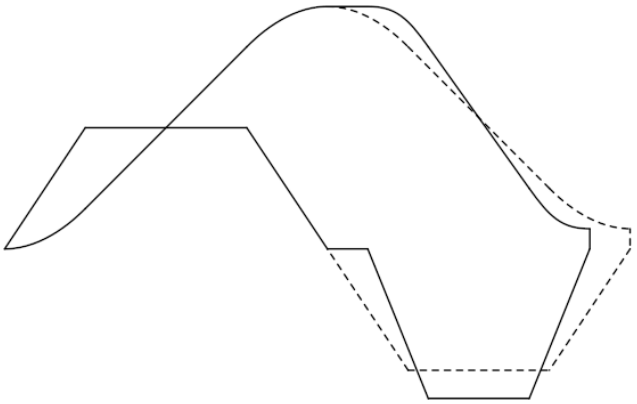
There is a fixed decimal point between the fifth and sixth digit from the right, so a U28 average value of 7500 would be equal to 0.07500 average decimal value.

3. Set drive parameter E15 to the calculated U28 average decimal value. If the U28 value observed is zero, verify that the car is traveling between terminal landings correctly. The car must spend an appreciable amount of time accelerating to contract speed, running at contract speed, and decelerating to leveling speed for the system to determine the appropriate value.
4. Enable inertia compensation by setting drive parameter E14 to Torque.
5. Run the car to both terminal landings and observe the system performance. Increase and decrease E15 to determine the optimum value. A single change in the value of E15 should be small. Note that E15 will generally be between 0.05 and 0.1.
6. With inertia compensation enabled and adjusted, lower values for the speed loop P gain, speed loop I gain, and current loop filter may be possible without adversely affecting system performance.

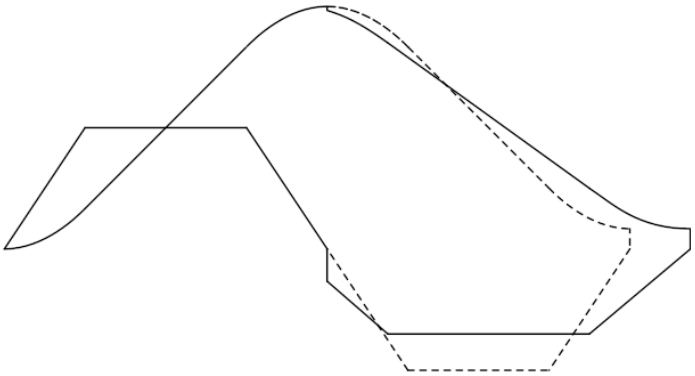
Adjust for Response

Depending on how the drive is tuned, the amount of lag between the commanded speed and drive response can vary. As a result, as the drive is adjusted, the Lag Delay parameter in the controller's VIEW > CONFIGURATION > PATTERN > Common menu will need to be changed as well. Use the information below to make these adjustments. Observe the Pattern Command and Acceleration Command on the controller's VIEW > DIAGNOSTICS > VIRTUL OSCILLOSCOPE. Generally, the lag will be between 50 and 150 milliseconds.

1. 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.
2. If 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 for movement between floors where a stabilized speed (contract speed) is not reached (short runs).



Insufficient lag delay. The dashed line shows expected velocity and acceleration that is possible with optimum delay. The solid line shows velocity and acceleration with insufficient delay.



Excessive lag delay. The dashed line shows expected velocity and acceleration that is possible with optimum delay. The solid line shows velocity and acceleration with excessive delay.

Safety Tests

If performing a Car/Counterweight Safety Test, Electrical Governor Test, or Contract Overspeed Test, a single drive parameter facilitates moving the elevator at a speed greater than contract speed.

1. Run the elevator to the appropriate location to initiate the test.
2. On the controller, activate the test.
3. On the drive, set the Nominal Elevator Speed mm/s parameter A28{E01} to the speed selected on the controller for the test.
4. Run the elevator to perform the test.
5. When the run completes, restore the drive's Nominal Elevator Speed mm/s parameter A28{E01} to the contract speed.

If performing a Car/Counterweight Buffer Test, Inspection Overspeed Test, Emergency Brake Test - Unintended Motion, Normal Terminal Switch Overspeed Tests - Level 1, Normal Terminal Switch Overspeed Tests - Level 2, Normal Terminal Switch Position Tests, or Emergency Terminal Switch Overspeed Test, no drive adjustments are required to facilitate the tests.

1. Move the elevator to the appropriate location to initiate the test.
2. On the controller, activate the test.
3. Run the elevator to perform the test.

Diagnostics

Control Techniques E300

The serial diagnostics are displayed in the following menus:

1. S Menu
   - S30 – Controller Control Word
2. T Menu
   - T13 – Number of Good Messages Received
   - T14 – Received Message Duration
   - T15 – Received Message Periodicity
   - T16 – Max Received Message Periodicity
   - T17 – Error Messages Received
   - T18 – Last Error message Code

iControl

On iView, the controller's serial diagnostics are located on the View > Diagnostics > Diagnostic Outputs screen.

The available monitors are as follows:

1. Serial Device Break Errors
2. Serial Device Config Errors
3. Serial Device Framing Errors
4. Serial Device Noise Errors
5. Serial Device Parity Errors
6. Serial Device Rx Overflows
7. Serial Device Tx Errors
8. Serial Ioctl Rx Errors
9. Serial Ioctl Tx Errors
10. Serial Control Techniques Rx Code
11. Serial Control Techniques Rx Communication
12. Serial Control Techniques Rx Errors[1]
13. Serial Control Techniques Rx Errors[2]
14. Serial Control Techniques Rx Errors[3]
15. Serial Control Techniques Rx Errors[4]
16. Serial Control Techniques Rx Errors[5]
17. Serial Control Techniques Rx Errors[6]
18. Serial Control Techniques Rx Errors[7]
19. Serial Control Techniques Rx Errors[8]
20. Serial Control Techniques Rx Messages
21. Serial Control Techniques Rx Payloads
22. Serial Control Techniques Tx Communication
23. Serial Control Techniques Tx Errors
24. Serial Control Techniques Tx Messages
25. Serial Control Techniques Tx Payloads

CT E300 AC Drive Parameter Table

Enter any settings adjustments you make into the MCE Values column of the following tables.

Table A.14 Menu A User Menu

Parameter Description		Range	Default	MCE Values
A01	User Security Status {H02}	User Menu A (0) All Menus (1) Read-only User Menu A (2) Read-only (3) Status Only (4) No Access (5)		1=All Menus
A02	Drive Control Mode {B01}	Open loop (1) RFC-A (2) RFC-S (3)	Open loop (1) RFC-A (2) RFC-S (3)	[job specific] 2=RFC-A (induction motor) 3=RFC-S (PM synchronous motor)
A10	Control Input Mode {H11}	Analog Run Prmt (0) Analog 2 Dir. (1) Priority 1 Dir (2) Binary 1 Dir (3) Priority 2 Dir (4) Binary 2 Dir (5) Control Word (6) DCP3 (7), DCP4 (8)	Priority 1 Dir (2)	0=Analog Run Prmit
A12	Drive Encoder Type {C01}	AB (0), FD (1), FD (2), AB Servo (3), FD Servo (4), FR Servo (5), SC (6), CSC Hyperface (7), EnDat (8), SC EnDat (9), SSI (10), SC SSI (11), SC Serco (12), SC Sc (15)	AB (0) AB Servo (3)	0=AB (Incremental encoder) 9=SC EnDat (EnDat encoder)
A13	Drive Encoder Auto Configuration Select {C02}	Disabled (0) or Enabled (1)	Enabled (1)	0=Disabled (AB) 1=Enabled (SC EnDat)
A14	Drive Encoder Rotary Pulses Per Revolution {C03}	1 to 100,000 ppr	1024 ppr 4096 ppr	[encoder specific] (AB) 2048 (SC EnDat)
A15	Drive Encoder Voltage Selection{C04}	5V (0), 8V (1), 15V (2)	5V (0)	[encoder specific]
A16	Position Feedback Phase Angle {C13}	0.0 to 359°	0.0°	[encoder specific] Only used for PM synchronous motor
A18	Motor Rated Current {B02}	+VM_RATED_CURRENT A	Maximum Heavy Duty Rating (J05)	[motor specific]
A19	Motor Rated Voltage {B03}	+VM_AC_VOLTAGE_SET V	200V drive: 300V 50Hz-400V drive: 400V 60Hz-400V drive: 460V 575V drive: 575V 690V drive: 690V	[motor specific]
A20	Number of Motor Poles{B05}	Automatic (0) to 480 Poles (240)	Automatic (0) 16 Poles (3)	[motor specific] Commonly 6 poles for induction motor
A21	Motor Rated Frequency{B06}	0.0 to 550.0 Hz	50 Hz: 50.0 60 Hz: 60.0	[motor specific] Only used for induction motor (60 Hz USA)
A22	Motor Rated Speed {B07}	0 to 33000 RPM	50Hz: 1500.0 RPM 60 Hz: 1800.0 RPM 3000.00 RPM 3000.00 RPM	[motor specific]
A24	Symmetrical Current Limit {B16}	± VM_MOTOR1_CUR-RENT_LIMIT %	OL: 165.0% RFC: 175.0%	[motor specific] Only used for PM synchronous motor
A25	Maximum Switching Frequency {B13}	2 kHz (0), 3 kHz (1), 4 kHz (2), 6 kHz (3), 8 kHz (4) 12 kHz (5), 16 kHz (6)	8 kHz (4)	8 kHz (4)

Table A.14 Menu A User Menu

Parameter Description		Range	Default	MCE Values
A26	Motor Autotune {B11}	**OL:** None (0), Static (1) Rotating (2) **RFC-A:** None (0), Static (1) Rotating (2), Inertia 1 (3) Inertia 2 (4) **RFC-S:** None (0), Static (1) Rotating (2), Inertia 1 (3) Inertia 2 (4) Full Stationary (5)	None (0)	1=Stationary (Induction motor) 5= Full Stationary (PM synchronous motor)
A28	Nominal Elevator Speed mm/s {E01}	OL: 0 to 1000 mm/s RFC: 0 to 10000	1000 mm/s	[job specific] Set to contract speed
A29	Sheave Diameter {E02}	1 to 32,767 mm	400 mm 480 mm	[job specific]
A30	Roping {E03}	1:1 (1), 2:1 (2), 3:1 (3), 4:1 (4)	1:1 (1)	[job specific] 1=1:1, 2=2:1
A31	Gear Ratio Numerator {E04}	1 to 32767	31 1	[motor specific] 1=gearless application n=geared application (n>10)
A32	Gear Ratio Denominator {E05}	1 to 32767	1	[job specific] 1=gearless application 10=geared application
A33	Nominal Elevator Speed RPM {E07}	1.00 to 4000.00 RPM	1480.14 RPM 39.48 RPM	[job specific] Adjust A29{E02} for gearless applications and A31{E04} for geared applications to affect this value
A35	Run Jerk 1 {G13}	1 to 65535 mm/s³ x10	50 mm/s³ x10	10,000
A36	Run Jerk 2 {G14}	1 to 65535 mm/s³ x10	100 mm/s³ x10	10,000
A37	Run Jerk 3 {G15}	1 to 65535 mm/s³ x10	100 mm/s³ x10	10,000
A38	Run Jerk 4 {G16}	1 to 65535 mm/s³ x10	50 mm/s³ x10	10,000
A39	Creep Stop Jerk {G18}	1 to 65535 mm/s³ x10	100 mm/s³ x10	10,000
A40	Acceleration Rate {G11}	0 to 10000 mm/s²	800 mm/s²	5,000
A41	Deceleration Rate {G12}	0 to 10000 mm/s²	800 mm/s²	5,000
A42	Creep Stop Deceleration Rate {G17}	0 to 10000 mm/s²	800 mm/s²	5,000
A47	Brake Control Release Delay {D04}	0 to 10000 ms	500 ms	5
A48	Brake Control Apply Delay {D05}	0 to 10000 ms	500 ms	5
A49	Start Speed Loop P Gain {I01}	0.0 to 200.0 s/rad	0.35 s/rad	[job specific] Set initially to 0.2 (RFC-S) or 0.02 (RFC-A). Commonly between 0.01 and 2.0. Must be greater than or equal to A52{I06}
A50	Start Speed Loop I Gain{I02}	0.0 to 655.35 s²/rad	15.0 s²/rad	[job specific] Set initially to 2.0 (RFC-S) or 0.2 (RFC-A). Commonly between 0.1 and 20.0. Must be greater than or equal to A53{I07}
A51	Start Current Loop Filter {I05}	0.0 to 25.0 ms	2.0 ms	[job specific] Set initially to 2.0. Commonly between 2.0 and 10.0
A52	Run Speed Loop P Gain {I06}	0.01 to 2.0	0.2 (RFC-S) or 0.02 (RFC-A)	[job specific] Set initially to 0.2 (RFC-S) or 0.02 (RFC-A). Commonly between 0.01 and 2.0
A53	Run Speed Loop I Gain {I07}	0.1 to 20.0	2.0 (RFC-S) or 0.2 (RFC-A)	[job specific] Set initially to 2.0. Commonly between 2.0 and 10.0
A54	Run Current Loop Filter {I10}	2.0 to 10.0	2.0	[job specific] Set initially to 2.0. Commonly between 2.0 and 10.0

Table A.15 Menu B Motor Table

Parameter		Range	Default	MCE Values
B20	Motor Thermal Time Constant 1		89.0	[job specific] Set initially to 89.0

Table A.15 Menu B Motor Table

Parameter		Range	Default	MCE Values
B54	Minimal Movement Phasing Test Angle		0.00 Degrees	[job specific] Set initially to 0.00. If A26{B11} is unsuccessful initially and with two motor leads swapped, set to 0.01 and repeat 26{B11}

Table A.16 Menu E Mechanical

Parameter Description		Range	Default	MCE Values
E10	Load Cell Compensation Enable	Off (0) or On (1)	Off (0)	[job specific] On (0)
E12	Load Cell Compensation Filter	0 to 32767 ms	50 ms	50 ms
E14	Inertia Compensation Mode	None (0), Torque (2)	None (0)	[job specific]
E15	Inertia Compensation Total Inertia	0.05 to 0.20.	0.05	[job specific]
E19	Load Cell Compensation Offset		0.0%	0.0%
E20	Load Cell Compensation Scaling		1.0	1.0
E33	Alternative Torque Feed Forward Select	Off (0) or On (1)	Off	On
E34	Alternative Torque Feed Forward Value	-1000.0 to 1000.0	0.0	Read-Only

Table A.17 Menu F I/O Hardware

Parameter Description		Range	Default	MCE Values
F18	T24 Digital I/O 01 Source/ Destination	A00 to AN99		A00
F19	T25 Digital I/O 02 Source / Destination	A00 to AN99		A00
F20	T26 Digital I/O 03 Source / Destination	A00 to AN99		A00
F21	T27 Digital Input 04 Destination	A00 to AN99		A00
F22	T28 Digital Input 05 Destination	A00 to AN99		A00
F23	T29 Digital Input 06 Destination	A00 to AN99		A00
F24	T24 Digital I/O 01 Output Select	Off (0) or On (1)	On (1)	Off
F25	T25 Digital I/O 02 Output Select	Off (0) or On (1)	On (1)	Off
F26	T26 Digital I/O 03 Output Select	Off (0) or On (1)	Off (0)	Off
F27	T41 T42 Relay Output Source	A00 to AN99		S33
F28	T41 T42 Relay Output Invert	Not Invert (0), Invert (1)	Not Invert (0)	On
F41	Analog Input 1 Destination	A00 to AN99	G35	G49 (Analog Speed Reference)
F48	T7 Analog Input 2 Destination	A00 to AN99		A00
F74	Motor Thermistor Input Select	No Thermistor (0), T8 Analog IP 3 (1), Encoder D Type (2)	T8 Analog IP 3 (1)	No Thermistor (0)

Table A.18 Menu H Configuration

Parameter Description		Range	Default	MCE Values
H15	Maximum Speed Error Threshold	0 to 10000 mm/s	300 mm/s	[job specific] Set initially to 100
H16	Maximum Distance Error Threshold	0 to 10000 mm/s	100 mm/s	0 mm
H40	Drive Name Characters 1-4			[job number characters 1-4]
H41	Drive Name Characters 5-8			[job number characters 5-8]
H42	Drive Name Characters 9-12			[job number characters 9-12] Append car number as letter
H43	Drive Name Characters 13-16			[leave blank]
H54	Digital Override Analog Input Mode			4 (Velocity)

Table A.19 Menu I Tuning

Parameter Description		Range	Default	MCE Values
I19	Variable Gains Mode	0=Start Only 1=Start+Run 2=Start+Run+Stop	1=Start+Run	0= Start Only Select 1=Start+Run or 2=Start+Run+Stop if necessary after initial adjustment

Table A.20 Menu O Backup Power

	Parameter Description	Range	Default	MCE Values
005	UPS Controller Enable			Read-Only
006	UPS Maximum Power Setpoint			[job specific] If TAPS is used, enter rating of unit (3kw or 6kw); otherwise ignore setpoint value
007	UPS evacuation current full load limit			150% The UPS load limit value may need to be increased if insufficient. If TAPS is not used, ignore load limit values
008	UPS evacuation current no load limit			150% The UPS load limit value may need to be increased if insufficient. If TAPS is not used, ignore load limit values

Table A.21 Menu R Application Setup

Parameter Description		Range	Default	MCE Values
R06	EIA-RS485 Mode	0 to 255	1	6
R07	EIA-RS485 Baud Rate	300bps (0), 600bps (1), 1200bps (2), 2400bps (3), 4800bps(4), 9600bps (5), 19200bps (6), 38400bps (7), 57600bps (8), 115200bps (9)	4	57600 bps
R11	Clock Task Scheduling	0 to 200 ms	10 ms	0 ms
R12	POS Task Scheduling Rate	0=Disable, 1=25us, 2=500us, 3=1 ms, 4=2 ms, 5=4 ms, 6=8 ms	0=Disable	3=1 ms
R15	Disable Reset on Trip Cleared	Off (0) or On (1)	Off (0)	On

Table A.22 Menu S Application Menu 1

Parameter Description		Range	Default	MCE Values
S30	Controller Control Word	Bit 0=enable Bit 1=reset Bit 2= run Bit 3= direction Bit 4-6=zone Bit 10=battery Bit 11=generator Bit 12=inspection	Read-Only	Read-Only

Table A.23 Menu T Application Menu 2

Parameter Description		Range	Default	MCE Values
T11	Inverter Address	1 to 32767	0	1
T13	Number of Good Messages Received		Read-Only	Read-Only
T14	Received Message Duration		Read-Only	Read-Only Nominally 6 to 10 ms
T15	Received Message Periodicity		Read-Only	Read-Only Nominally 20 ms
T16	Max Received Message Periodicity		Read-Only	Read-Only Message lost if greater than 40 ms
T17	Error Messages Received		Read-Only	Read-Only Since power up

Table A.23 Menu T Application Menu 2

Parameter Description		Range	Default	MCE Values
T18	Last Error Message Code	1=no STX 2=service ID not supported 3=message ID invalid 4=no ETX 5=BCC does not match 6=wrong inverter address.	Read-Only	Read-Only
T20	Velocity Command Inertia Filter	1 to 50 Hz	50 Hz	5 Hz
T21	Inertia Compensation Filter	1 to 50 Hz	10 Hz	5 Hz
T22	Inertia Acceleration Option	Controller Acceleration (0), Estimated Acceleration (1), Controller Acceleration when direction-active; otherwise, Estimated Acceleration (2)	0=Controller Acceleration	0=Controller Acceleration
T31	Speed Inversion	0= Off, 1=On	0=Off	ON=iControl
T32	Controller			ON=iControl
T51	SI Application Version		Read-Only	Read-Only [format=xxyyzz]

Table A.24 Menu U Application Menu 3

Parameter Description		Range	Default	MCE Values
U22	Estimated Acceleration		Read-Only	Read-Only: mm/s2
U23	Controller Acceleration		Read-Only	Read-Only: mm/s2
U24	Inertia Compensation Acceleration		Read-Only	Read-Only: mm/s2
U25	G54 Velocity Command		Read-Only	Read-Only: mm/s
U26	Filtered Velocity Command		Read-Only	Read-Only: mm/s
U27	E13 + E34		Read-Only	Read-Only: %
U28	Estimated Inertia Compensation for E15		Read-Only	Read-Only 10,000=scale (7500 correlates to 0.07500)

Table A.25 Menu Slot 2.02 SI-IO Digital I/O

Parameter Description		Range	Default	MCE Values
2.02.019	Relay 1 Invert	Off (0), On (1)	0=Off	0=Off
2.02.020	Relay 2 Invert	Off (0), On (1)	0=Off	0=Off
2.02.029	Relay 1 Source	A00 to AN99	A00	0. S33 (There is a space between the period and letter S)
2.02.030	Relay 2 Source	A00 to AN99	A00	0. S32 (There is a space between the period and letter S)

Customer Notations

Table A.26 Customer Notation Area

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