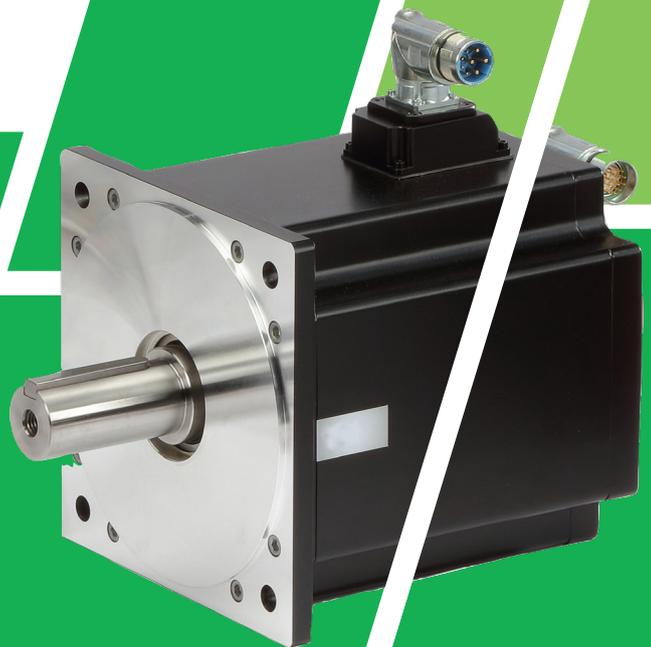


Nidec

Drives

Unimotor TC4 Servomotors

Flexible, dynamic and
interchangeable for new
and existing applications



TC4

4th generation of Control Techniques servomotors

Control Techniques offer drive and motor combinations that provide an optimised system in terms of ratings, performance, cost, and ease of use.

This new series of servomotors is designed as a direct mechanical replacement for the Unimotor FM range with direct compatibility of feedback wiring interfaces.

The new servomotor features a range of feedback options that suit different levels of accuracy and resolution to suit most applications:

- Resolver: robust for extreme applications and conditions (low accuracy, medium resolution).
- Incremental encoder: for cost sensitive applications (low accuracy, medium resolution).
- Absolute encoder supporting EnDat or Hiperface DSL (medium accuracy, high resolution).
- SIL2 or SIL3 rated encoder options (upon verification with the technical department).
- Single cable option available (upon verification with the technical department).





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Features



Motor type	Three-phase BPM synchronous servo motor
Available frame sizes	60 – 80 – 100 – 130 – 150 mm
Continuous stall torque	From 0,87 to 41,77 Nm
Rated output power	From 265 to 6580 W
Rated servomotor speed	Up to 6000 rpm
Maximum servomotor speed	Up to 8000 rpm
Insulation class	F (155 °C)
Protection class	IP 65 (with oil seal)
Ambient operating temperature	0 ÷ +40 °C
Ambient storage temperature	-40 ÷ +70 °C
Relative humidity	5 ÷ 85 %, non-condensing
Cooling type	Natural convective
Maximum operating altitude	Up to 3000 m above sea level (derating 1%/100m from 1000 onwards)
Temperature sensor	PTC
Shaft End	Smooth or keyed
Feedback	Resolver, TTL Encoder, Absolute Encoder (Hiperface, EnDat, EnDat Safe)
Bearing life	20.000 h under rated operation condition
Balancing quality grade	G 2.5 according to ISO 1940
Magnet material	NdFeB with epoxy coating
External coating	RAL 9005 black powder
Approvals	CE, Rohs, Reach, UL file: E468964

Item code identifier

Standard item codes

Standard item codes														
TC4 100 4B		17	4		1		M14		0	1				
1		2		3		4		5		6		7		
MODEL		TYPE OF WINDING		WINDING VOLTAGE		MECHANICAL ARRANGEMENT		FEEDBACK		BRAKE		RESERVED		
TC4	**+ size + torque*	size 60		0		Shaft without key and without oil seal IP54		A1	Absolute Multiturn Encoder SC.Hyperface 128 sin/cos (SKM36)		0	Without Brake	0 (only for 150.6C:15)	
	15	2	230Vac 3000rpm		1	Shaft without key and with oil seal IP65		A9	Absolute Multiturn Encoder SC.Hyperface 1024 sin/cos (SRM50) - (NO size 60)		1	With Brake	1	
		4	400Vac 6000rpm		2	Keyed shaft without oil seal IP54		A12	Absolute Multiturn Encoder EnDAT 2.2 19bit (EQI1131)					
	16	4	400Vac 3000rpm		3	Keyed shaft with oil seal IP65		A13	Absolute Multiturn Encoder EnDAT 2.2 19bit EQI1131 FS (safety)					
	size 80								A18	Absolute Singleturn Encoder EnDAT 2.2 25bit ECN1325 FS (safety) (NO size 60-80)				
	15	2	230Vac 3000rpm						A22	Absolute Singleturn Encoder EnDAT 3 19bit				
		4	400Vac 6000rpm						A23	Absolute Multiturn Encoder EnDAT 3 19bit				
	17	4	400Vac 3000rpm						A24	Absolute Singleturn Encoder EnDAT 2.2 19bit EC11319 FS (safety) (NO size 60-80)				
	size 100								M14	Encoder TTL 4096ppr				
	15	2	230Vac 3000rpm						M15	Encoder TTL 2048ppr				
		4	400Vac 5000rpm						R1	Resolver 2 poles				
	17	4	400Vac 3000rpm											
	size 130													
	15	2	230Vac 3000rpm											
		4	400Vac 4000rpm											
	17	4	400Vac 3000rpm											
	size 150													
	15	2	230Vac 3000rpm											
		4	400Vac 4000rpm											
	17	4	400Vac 3000rpm											

		CT dedicated codes									
H8		24		30		80		47		99	
8		9		10		11		12		13	
CONNECTION		THERMISTOR		FLANGE		SHAFT		HIGH INERTIA		REAR COVER	
H7*	Power connector size 1 6p and Signal connector 12p	00	No PTC (for EnDAT3)	size 60				00	Std Inertia	51	Black Cover for En-DAT3
H8*	Power connector size 1 6p and Signal connector 17p	24	PTC Thermistor 130°C (DIN44082)	00	Reg.diam. 50mm - pcd 70mm (flat flange) - (060HD)	00	14 x 30mm (d x L)	47	High Inertia	99	Green cover
H9**	Power connector size 1,5 6p and Signal connector 17p			36	Reg.diam. 60mm - pcd 75mm (ex 075FM)	63	11 x 23mm (d x L)				
H10**	Power connector size 1,5 6p and Signal connector 12p				71	14 x 30mm (d x L)					
C21*	Single cable, power size 1 & signal combined, 90° rotatable for EnDAT3			43	Reg.diam. 40mm - pcd 63mm (ex 055FM/HD)	63	11 x 23mm (d x L)				
						71	14 x 30mm (d x L)				
				size 80							
				00	Reg.diam. 70mm - pcd 90mm (flat flange)	00	19 x 40mm (d x L)				
				36	Reg.diam. 60mm - pcd 75mm (ex 075FM)	71	14 x 30mm (d x L)				
						80	19 x 40mm (d x L)				
				size 100							
				00	Reg.diam. 95mm - pcd 115mm (flat flange)	00	19 x 40mm (d x L)				
				30	Reg.diam. 80mm - pcd 100mm (ex 095FM)	71	14 x 30mm (d x L)				
						80	19 x 40mm (d x L)				
				32	Reg.diam. 95mm - pcd 115mm (ex 115FM)	80	19 x 40mm (d x L)				
				size 130							
				00	Reg.diam. 110mm - pcd 145mm (flat flange)	00	19 x 40mm (d x L)				
				34	Reg.diam. 95mm - pcd 115mm (ex 115FM)	80	19 x 40mm (d x L)				
				size 150							
				00	Reg.diam. 130mm - pcd 165mm (flat flange)	00	24 x 50mm (d x L)				
				44	Reg.diam. 130mm - pcd 165mm (ex 142FM)	90	24 x 50mm (d x L)				

* Power connector size1: <=17 ampere

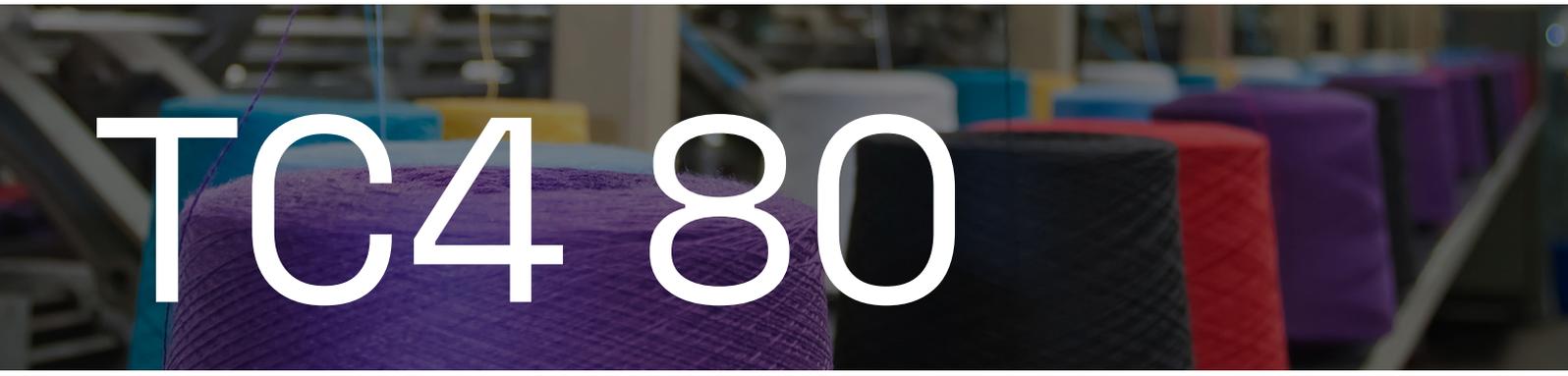
** Power connector size 1,5: da 17 a 40 ampere

Product lineup

Servomotor Type	Stall torque M ₀ [Nm]	Nominal Torque M _n @ 3000 rpm	Peak Torque M _{max}	Nominal Power @ 3000 rpm	Continuous Working Speed n _M	Maximum Working Speed n _{Max}	Moment of Inertia w/o brake	230 Vac	400 Vac
	[Nm]	[Nm]	[Nm]	[W]	[rpm]	[rpm]	[kg cm ²]		
TC4 60 2A	0.87	0.85	3.05	265	3000/6000	8000	0.223	✓	✓
TC4 60 2B	1.62	1.52	5.60	475	3000/6000	8000	0.414	✓	✓
TC4 80 3A	1.80	1.78	6.30	555	3000/6000	8000	0.79	✓	✓
TC4 80 3B	3.80	3.45	13.30	1080	3000/6000	8000	1.42	✓	✓
TC4 80 3C	4.60	3.91	16.10	1230	3000/6000	8000	2.03	✓	✓
TC4 100 4A	6.45	5.80	16.50	1820	3000/6000	6000	2.53	✓	✓
TC4 100 4B	10.16	8.36	33.00	2625	3000/6000	6000	4.61	✓	✓
TC4 130 5F	4.77	3.18	14.30	1000	3000	4000	6.70	✓	✓
TC4 130 5G	7.16	4.77	21.48	1500	3000	4000	9.72	✓	✓
TC4 130 5H	9.55	6.36	28.65	2000	3000	4000	12.77	✓	✓
TC4 150 6A	15.00	11.80	33.50	3715	3000/4000	4000	15.18	✓	✓
TC4 150 6B	29.40	20.00	68.50	6280	3000/4000	4000	27.68	✓	✓
TC4 150 6C	41.77	20.96	100.00	6580	3000/4000	4000	40.17	✓	✓



TC4 60



TC4 80



TC4 100



TC4 130



TC4 150

Frame size 60 2A

Ratings and specifications

		TYPE OF WINDING		
		15	15	16
ELECTRICAL DATA		UNIT		
Poles number	Nr	10		
Continuous stall torque ⁽¹⁾	Nm	0,87		
Peak torque	Nm	3,05		
Nominal torque	Nm	0,85	0,82	0,85
Rated Voltage	V	230 Vac	400 Vac	
Nominal power	W	265	490	265
Continuous stall current	Arms	0,96	0,96	0,73
Maximum current	Arms	4,19	4,19	3,18
Nominal current	Arms	0,93	0,90	0,71
Base speed at Cmax	rpm	1320	3020	2130
Nominal working speed	rpm	3000	5700	3000
Maximum working speed	rpm	3870	6800	5140
Torque constant ± 10%	Nm/Arms	0,91	0,91	1,20
Voltage constant ± 10%	Vrms/krpm	55,00	55,00	72,50
Winding resistance ± 10% @25°C (ph/ph)	Ohm	31,75	31,75	51,62
Winding inductance ± 10% (ph/ph)	mH	44,50	44,50	77,18
Electrical time constant	ms	1,40	1,40	1,50
Thermal resistance	°C/W	1,60		
Winding thermal constant	sec	23		
Operating temperature	°C	0 ÷ 40		
Protection degree	IP	65 (*)		
Insulation class		F		
MECHANICAL DATA		UNIT		
Rotor inertia without holding brake	kg cm ²	0,223		
Rotor inertia with holding brake	kg cm ²	0,236		
Max theoretical acceleration ⁽¹⁾	rad/s ²	100488		
Mechanical time constant ⁽¹⁾	ms	0,86	0,86	0,81
Max radial shaft load @3000/6000rpm	N	260 / 200		
Max axial shaft load @3000/6000rpm	N	42 / 32		
Mass without holding brake	kg	0,92		
Mass with holding brake	kg	1,44		

(1) Without holding brake.

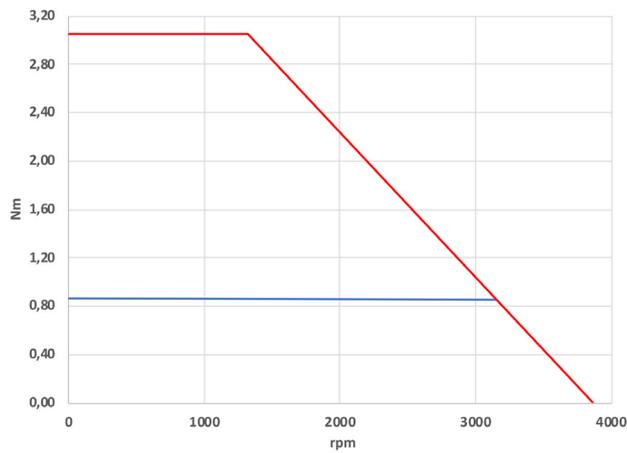
(*) With oil seal mounted on the flange.

Rated output with 250 x 250 x 12 mm metallic heat sink flange coupling
Derating must be considered if the oil seal is applied.

Torque/speed charts

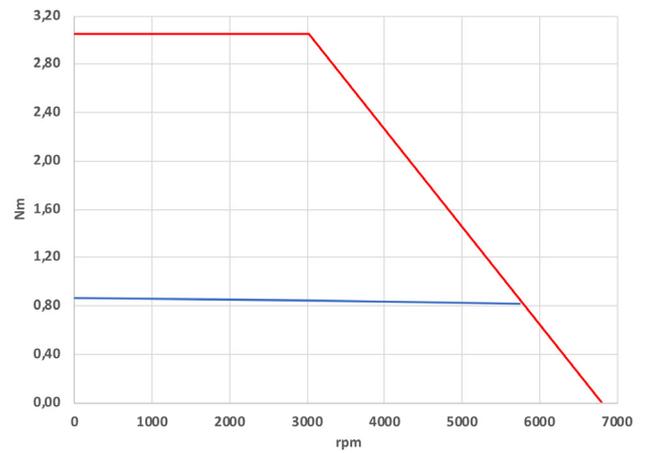
TC4 60 2A 15 2

Operative curves at 230 Vac — Cn — Cmax



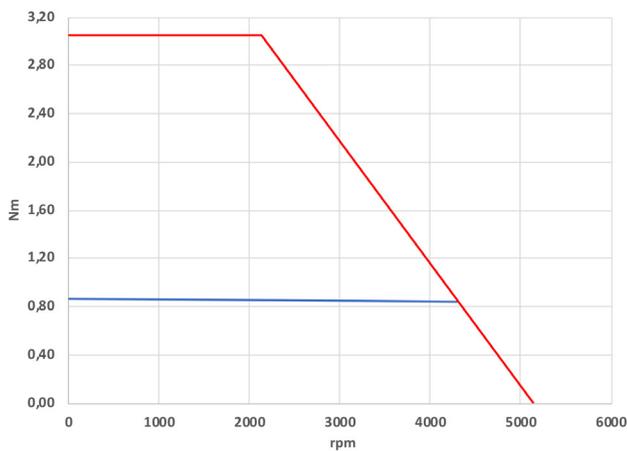
TC4 60 2A 15 4

Operative curves at 400 Vac — Cn — Cmax



TC4 60 2A 16 4

Operative curves at 400 Vac — Cn — Cmax



Frame size 60 2B

Ratings and specifications

		TYPE OF WINDING		
		15	15	16
ELECTRICAL DATA		UNIT		
Poles number	Nr	10		
Continuous stall torque ⁽¹⁾	Nm	1,62		
Peak torque	Nm	5,60		
Nominal torque	Nm	1,52	1,35	1,52
Rated Voltage	V	230 Vac	400 Vac	
Nominal power	W	475	850	475
Continuous stall current	Arms	1,78	1,78	1,35
Maximum current	Arms	7,13	7,13	5,41
Nominal current	Arms	1,67	1,48	1,27
Base speed at Cmax	rpm	1810	3600	2600
Nominal working speed	rpm	3000	6000	3000
Maximum working speed	rpm	3900	6830	5170
Torque constant ± 10%	Nm/Arms	0,91	0,91	1,20
Voltage constant ± 10%	Vrms/krpm	55,00	55,00	72,50
Winding resistance ± 10% @25°C (ph/ph)	Ohm	11,77	11,77	19,55
Winding inductance ± 10% (ph/ph)	mH	22,93	22,93	40,29
Electrical time constant	ms	1,96	1,96	1,96
Thermal resistance	°C/W	1,24		
Winding thermal constant	sec	34		
Operating temperature	°C	0 ÷ 40		
Protection degree	IP	65 (*)		
Insulation class		F		
MECHANICAL DATA		UNIT		
Rotor inertia without holding brake	kg cm ²	0,41 (0,78)**		
Rotor inertia with holding brake	kg cm ²	0,43 (0,80)**		
Max theoretical acceleration ⁽¹⁾	rad/s ²	107246		
Mechanical time constant ⁽¹⁾	ms	0,59	0,59	0,56
Max radial shaft load @3000/6000rpm	N	260/200		
Max axial shaft load @3000/6000rpm	N	42 / 32		
Mass without holding brake	kg	1,33		
Mass with holding brake	kg	1,85		

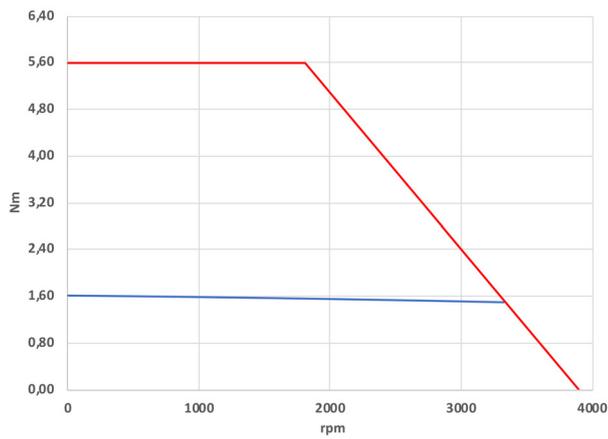
(1) Without holding brake.
 (*) With oil seal mounted on the flange.
 (**) With High Inertia Code = 47

Rated output with 250 x 250 x 12 mm metallic heat sink flange coupling
 Derating must be considered if the oil seal is applied.

Torque/speed charts

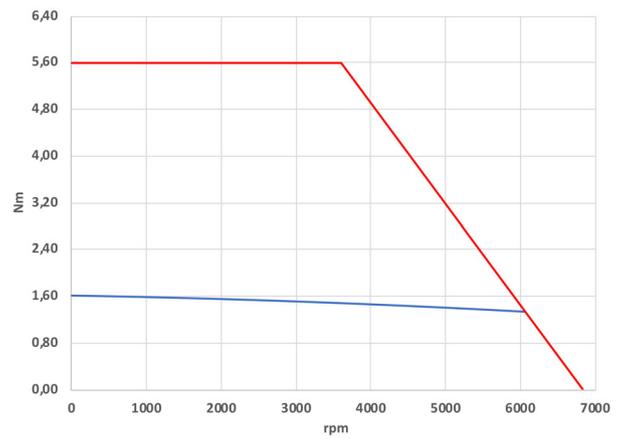
TC4 60 2B 15 2

Operative curves at 230 Vac — Cn — Cmax



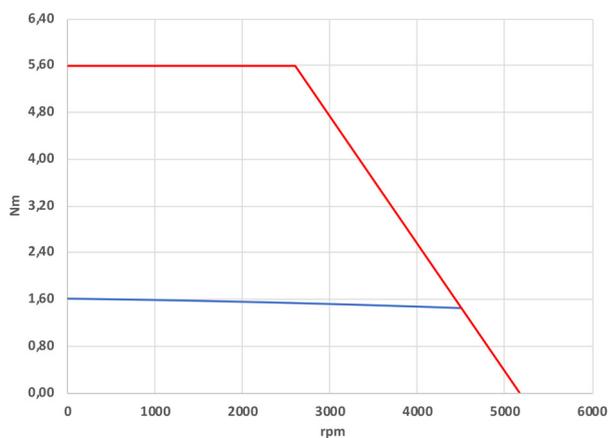
TC4 60 2B 15 4

Operative curves at 400 Vac — Cn — Cmax



TC4 60 2B 16 4

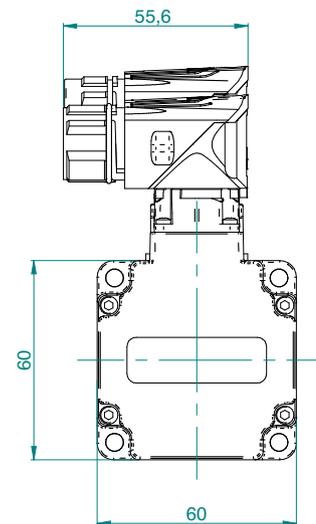
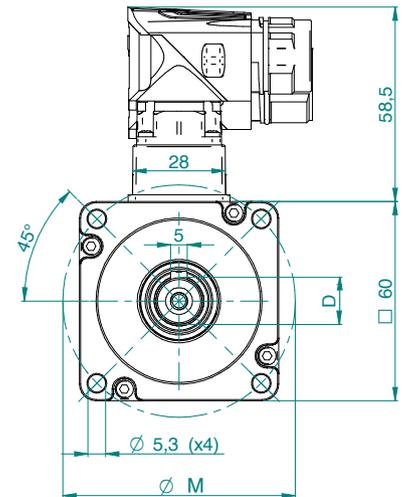
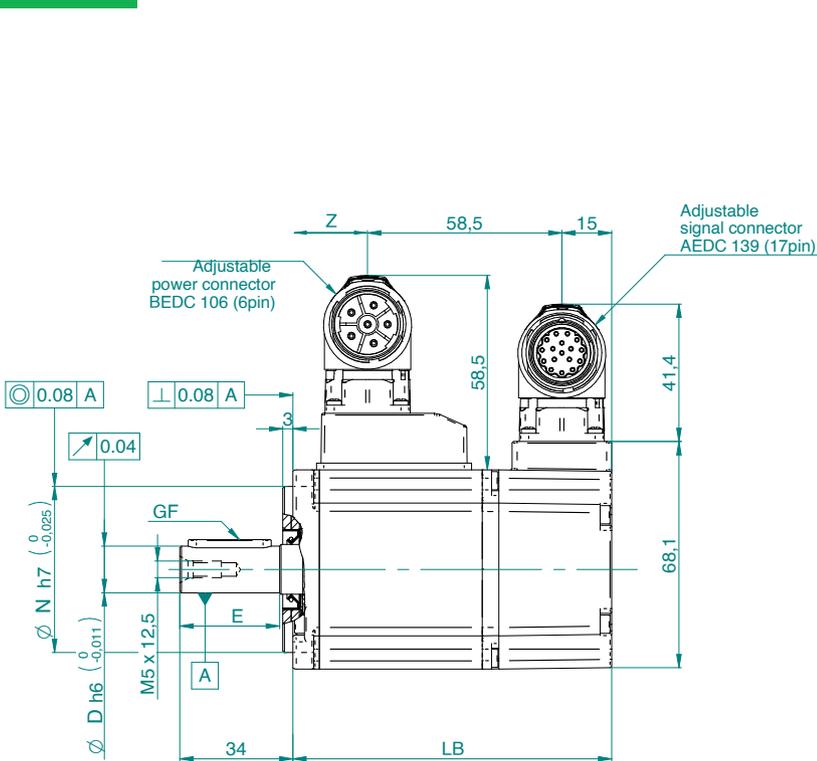
Operative curves at 400 Vac — Cn — Cmax



External dimensions

Flange
00

TC4 60 2A/2B



Model	Feedback	Flange code	Unbraked length		Braked length	
			LB (mm)*	Z (mm)	LB (mm)*	Z (mm)
2A	A12 - A13 - A22 - A23 - M14 - M15 - R1	00	96,0	22,5	126,0	22,5
2B	A12 - A13 - A22 - A23 - M14 - M15 - R1	00	119,0	45,5	149,0	45,5

* with feedback A1 LB = +10mm (Z remain unchanged)
All the above values must be increased of +20mm if high inertia code 47 is used

Flange Code	Register diameter	Fixing hole PCD
	N (mm)	M (mm)
00*	50	70

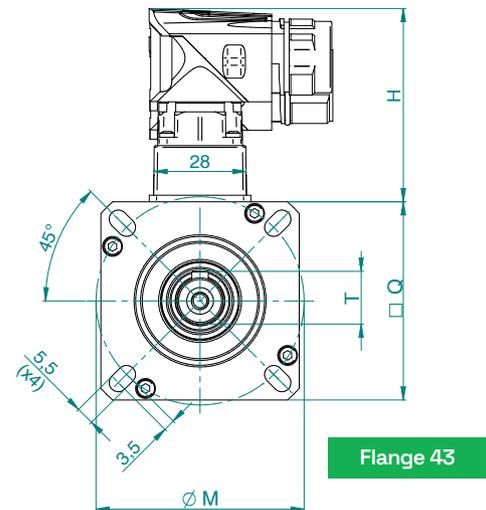
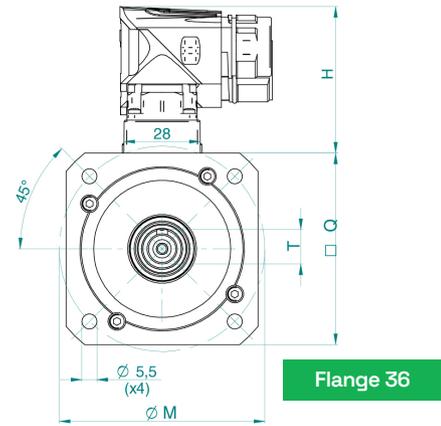
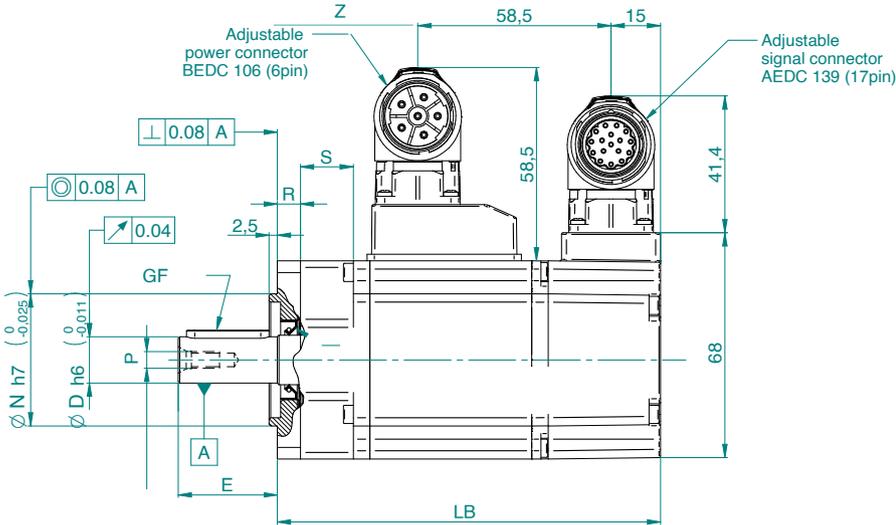
Model	Shaft Code	Shaft diameter	Shaft length	Key H x W x L
		D (mm)	E (mm)	GF (mm)
2A / 2B	00	14,0	30,0	5 x 5 x 25

* mandatory shaft code 00

External dimensions

Flange
36
43

TC4 60 2A/2B

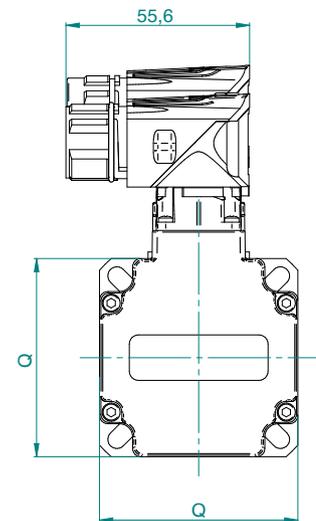


Model	Feedback	Flange code	Unbraked length		Braked length	
			LB (mm)*	Z (mm)	LB (mm)*	Z (mm)
2A	A12 - A13 - A22 - A23 - M14 - M15 - R1	36	100,0	26,5	130,0	26,5
		43	116,0	42,5	146,0	42,5
2B	A12 - A13 - A22 - A23 - M14 - M15 - R1	36	123,0	49,5	153,0	49,5
		43	139,0	65,5	169,0	65,5

* with feedback A1 LB = +10mm (Z remain unchanged)
All the above values must be increased of +20mm if high inertia code 47 is used

Flange Code	Register diameter	Fixing hole PCD				
		N (mm)	M (mm)	Q (mm)	H (mm)	R (mm)
36*	60	75	70	53,5	6	0
43*	40	63	60	58,5	7	16

Model	Shaft Code	Shaft diameter		Shaft length		Key H x W x L	
		D (mm)	E (mm)	GF (mm)	E (mm)	GF (mm)	GF (mm)
2A / 2B	63	11,0	23,0	4 x 4 x 18	M4 x 10	12,5	
	71	14,0	30,0	5 x 5 x 25	M5 x 12,5	16	



* for shaft 14x30mm, mandatory shaft code 71

Frame size 80 3A

Ratings and specifications

		TYPE OF WINDING		
		15	15	17
ELECTRICAL DATA		UNIT		
Poles number	Nr	10		
Continuous stall torque ⁽¹⁾	Nm	1,80		
Peak torque	Nm	6,30		
Nominal torque	Nm	1,78	1,59	1,78
Rated Voltage	V	230 Vac	400 Vac	
Nominal power	W	555	950	555
Continuous stall current	Arms	1,98	1,98	1,13
Maximum current	Arms	10,02	10,02	5,70
Nominal current	Arms	1,96	1,75	1,11
Base speed at Cmax	rpm	1160	2350	1140
Nominal working speed	rpm	3000	5700	3000
Maximum working speed	rpm	3880	6820	3850
Torque constant ± 10%	Nm/Arms	0,91	0,91	1,60
Voltage constant ± 10%	Vrms/krpm	55,00	55,00	96,70
Winding resistance ± 10% @25°C (ph/ph)	Ohm	10,35	10,35	33,48
Winding inductance ± 10% (ph/ph)	mH	29,00	29,00	88,97
Electrical time constant	ms	2,80	2,80	2,70
Thermal resistance	°C/W	1,09		
Winding thermal constant	sec	52		
Operating temperature	°C	0 ÷ 40		
Protection degree	IP	65 (*)		
Insulation class		F		
MECHANICAL DATA		UNIT		
Rotor inertia without holding brake	kg cm ²	0,79		
Rotor inertia with holding brake	kg cm ²	0,86		
Max theoretical acceleration ⁽¹⁾	rad/s ²	56202		
Mechanical time constant ⁽¹⁾	ms	1,01	1,01	1,03
Max radial shaft load @3000/6000rpm	N	440 / 350		
Max axial shaft load @3000/6000rpm	N	115 / 90		
Mass without holding brake	kg	1,83		
Mass with holding brake	kg	2,62		

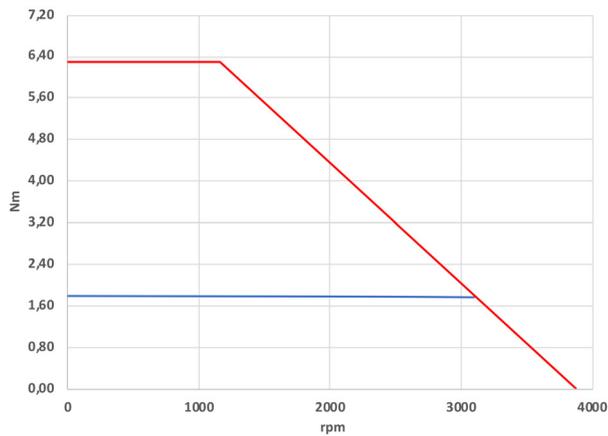
(1) Without holding brake.
(*) With oil seal mounted on the flange.

Rated output with 250 x 250 x 12 mm metallic heat sink flange coupling
Derating must be considered if the oil seal is applied.

Torque/speed charts

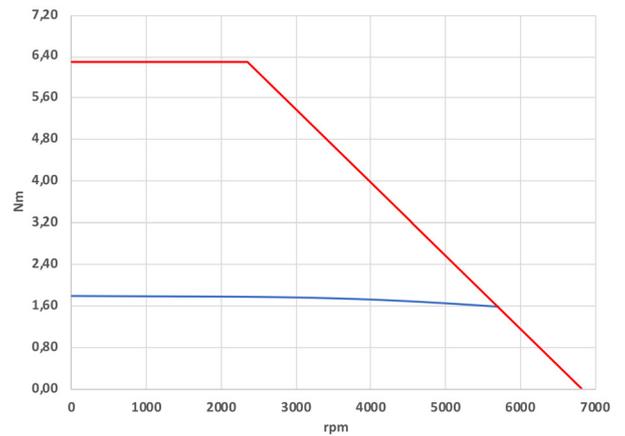
TC4 80 3A 15 2

Operative curves at 230 Vac — Cn — Cmax



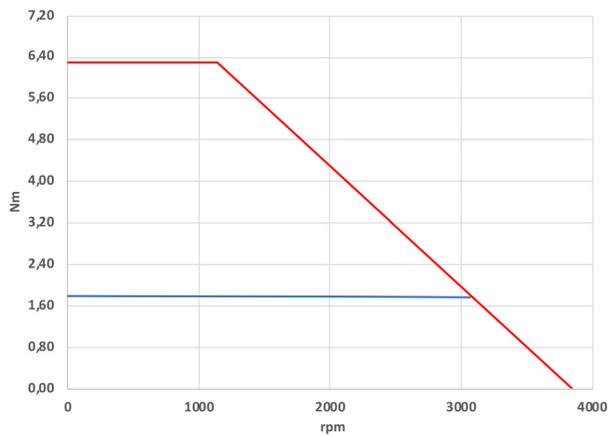
TC4 80 3A 15 4

Operative curves at 400 Vac — Cn — Cmax



TC4 80 3A 17 4

Operative curves at 400 Vac — Cn — Cmax



Frame size 80 3B

Ratings and specifications

		TYPE OF WINDING		
		15	15	17
ELECTRICAL DATA		UNIT		
Poles number	Nr	10		
Continuous stall torque ⁽¹⁾	Nm	3,80		
Peak torque	Nm	13,30		
Nominal torque	Nm	3,45	2,60	3,45
Rated Voltage	V	230 Vac	400 Vac	
Nominal power	W	1080	1630	1080
Continuous stall current	Arms	4,18	4,18	2,38
Maximum current	Arms	19,06	19,06	10,84
Nominal current	Arms	3,79	2,86	2,16
Base speed at Cmax	rpm	1600	2960	1590
Nominal working speed	rpm	3000	6000	3000
Maximum working speed	rpm	3920	6870	3880
Torque constant ± 10%	Nm/Arms	0,91	0,91	1,60
Voltage constant ± 10%	Vrms/krpm	55,00	55,00	96,70
Winding resistance ± 10% @25°C (ph/ph)	Ohm	2,60	2,60	9,21
Winding inductance ± 10% (ph/ph)	mH	12,31	12,31	37,53
Electrical time constant	ms	4,20	4,20	4,10
Thermal resistance	°C/W	0,90		
Winding thermal constant	sec	73		
Operating temperature	°C	0 ÷ 40		
Protection degree	IP	65 (*)		
Insulation class		F		
MECHANICAL DATA		UNIT		
Rotor inertia without holding brake	kg cm ²	1,42		
Rotor inertia with holding brake	kg cm ²	1,50		
Max theoretical acceleration ⁽¹⁾	rad/s ²	58661		
Mechanical time constant ⁽¹⁾	ms	0,51	0,51	0,51
Max radial shaft load @3000/6000rpm	N	440 / 350		
Max axial shaft load @3000/6000rpm	N	115 / 90		
Mass without holding brake	kg	2,76		
Mass with holding brake	kg	3,37		

(1) Without holding brake.

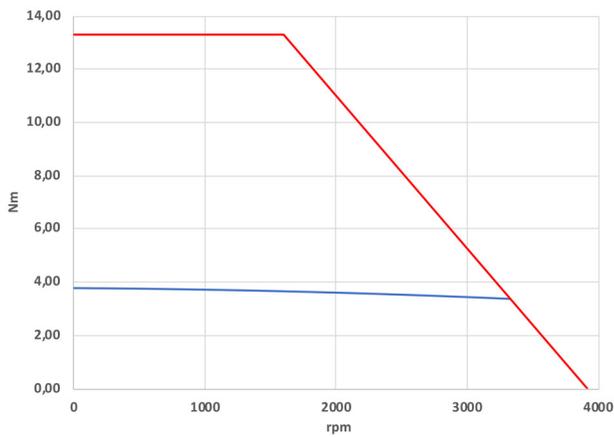
(*) With oil seal mounted on the flange.

Rated output with 250 x 250 x 12 mm metallic heat sink flange coupling
Derating must be considered if the oil seal is applied.

Torque/speed charts

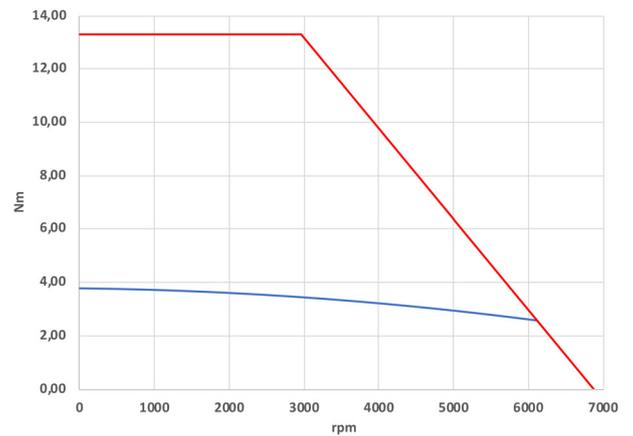
TC4 80 3B 15 2

Operative curves at 230 Vac — Cn — Cmax



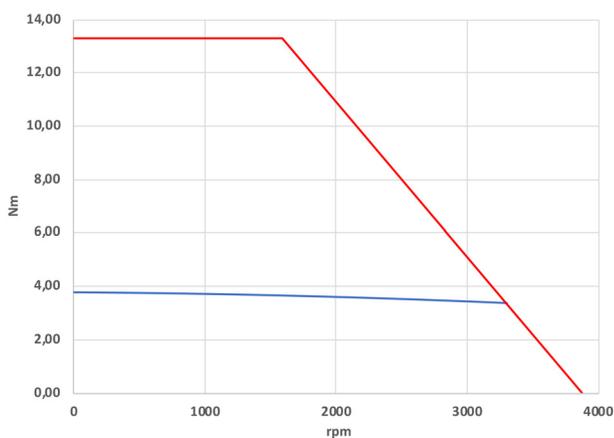
TC4 80 3B 15 4

Operative curves at 400 Vac — Cn — Cmax



TC4 80 3B 17 4

Operative curves at 400 Vac — Cn — Cmax



Frame size 80 3C

Ratings and specifications

		TYPE OF WINDING		
		15	15	17
ELECTRICAL DATA		UNIT		
Poles number	Nr	10		
Continuous stall torque ⁽¹⁾	Nm	4,60		
Peak torque	Nm	16,10		
Nominal torque	Nm	3,91	2,88	3,91
Rated Voltage	V	230 Vac	400 Vac	
Nominal power	W	1230	1800	1230
Continuous stall current	Arms	5,06	5,06	2,88
Maximum current	Arms	21,85	21,85	12,43
Nominal current	Arms	4,30	3,17	2,44
Base speed at Cmax	rpm	1800	3300	1800
Nominal working speed	rpm	3000	6000	3000
Maximum working speed	rpm	3930	6880	3890
Torque constant ± 10%	Nm/Arms	0,91	0,91	1,60
Voltage constant ± 10%	Vrms/krpm	55,00	55,00	96,70
Winding resistance ± 10% @25°C (ph/ph)	Ohm	2,05	2,05	6,36
Winding inductance ± 10% (ph/ph)	mH	9,40	9,40	28,80
Electrical time constant	ms	4,60	4,60	4,50
Thermal resistance	°C/W	0,88		
Winding thermal constant	sec	81		
Operating temperature	°C	0 ÷ 40		
Protection degree	IP	65 (*)		
Insulation class		F		
MECHANICAL DATA		UNIT		
Rotor inertia without holding brake	kg cm ²	2,03		
Rotor inertia with holding brake	kg cm ²	2,11		
Max theoretical acceleration ⁽¹⁾	rad/s ²	54679		
Mechanical time constant ⁽¹⁾	ms	0,50	0,50	0,50
Max radial shaft load @3000/6000rpm	N	440 / 350		
Max axial shaft load @3000/6000rpm	N	115 / 90		
Mass without holding brake	kg	3,25		
Mass with holding brake	kg	3,87		

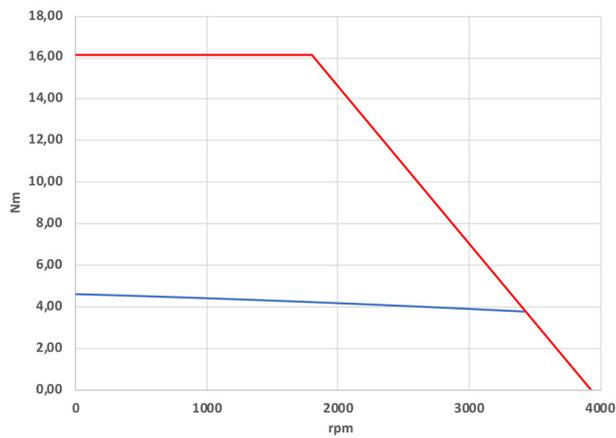
(1) Without holding brake.
(*) With oil seal mounted on the flange.

Rated output with 250 x 250 x 12 mm metallic heat sink flange coupling
Derating must be considered if the oil seal is applied.

Torque/speed charts

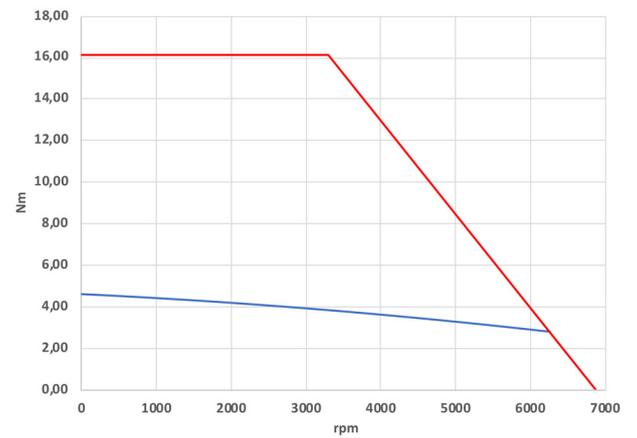
TC4 80 3C 15 2

Operative curves at 230 Vac — Cn — Cmax



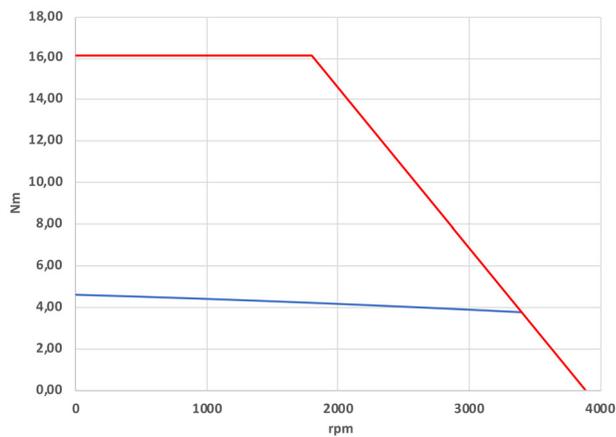
TC4 80 3C 15 4

Operative curves at 400 Vac — Cn — Cmax



TC4 80 3C 17 4

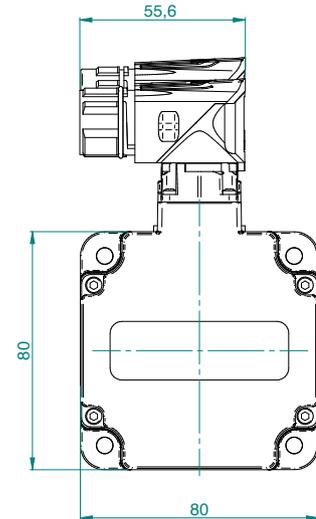
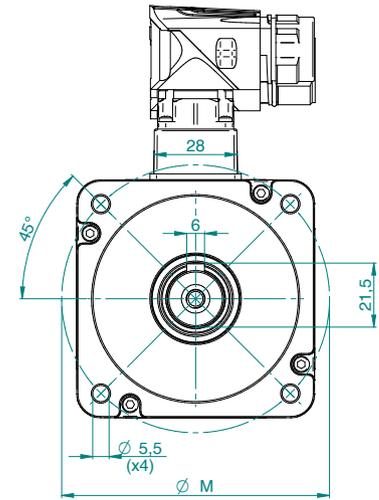
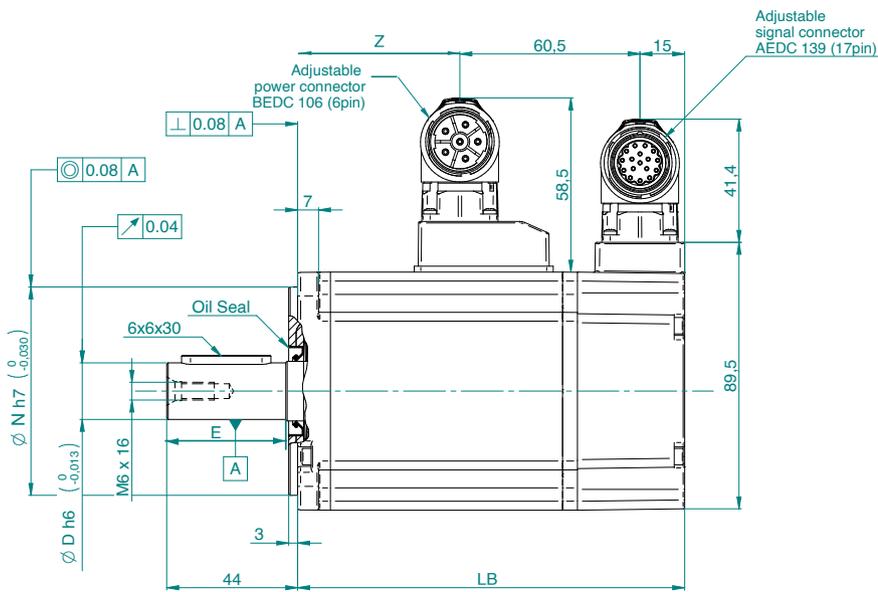
Operative curves at 400 Vac — Cn — Cmax



External Dimensions

Flange
00

TC4 80 3A/3B/3C



Model	Feedback	Flange code	Unbraked length		Braked length	
			LB (mm)*	Z (mm)	LB (mm)*	Z (mm)
3A	A12 - A13 - A22 - A23 - M14 - M15 - R1	00	108,0	32,5	140,0	32,5
3B	A12 - A13 - A22 - A23 - M14 - M15 - R1	00	130,0	54,5	162,0	54,5
3C	A12 - A13 - A22 - A23 - M14 - M15 - R1	00	162,0	86,0	194,0	86,0

* with feedback A1 LB = +10mm (Z remain unchanged)

* with feedback A9 LB = +20mm (Z remain unchanged)

Flange Code	Register diameter	Fixing hole PCD
	N (mm)	M (mm)
00*	70	90

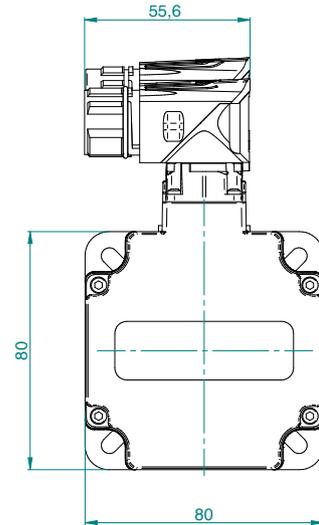
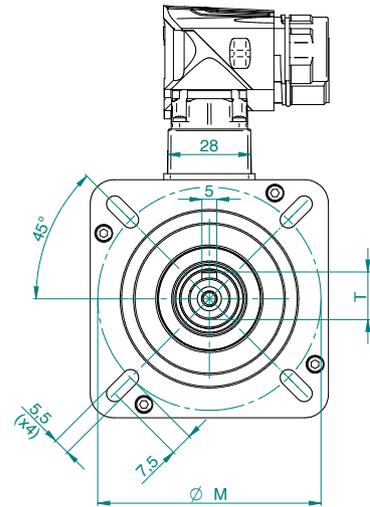
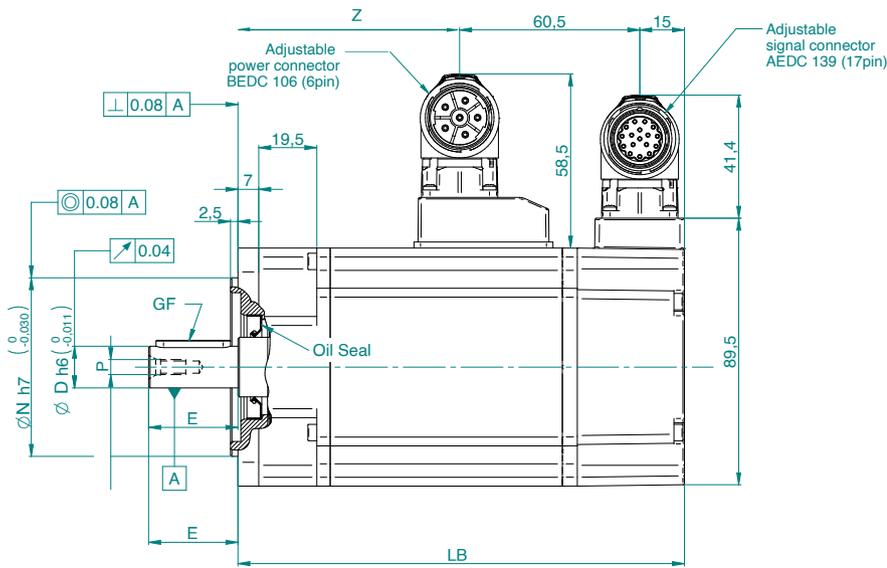
Model	Shaft Code	Shaft diameter	Shaft length	Key H x W x L
		D (mm)	E (mm)	GF (mm)
3A / 3B / 3C	00	19,0	40,0	6 x 6 x 30

* mandatory shaft code 00

External Dimensions

Flange
36

TC4 80 3A/3B/3C



Model	Feedback	Flange code	Unbraked length		Braked length	
			LB (mm)*	Z (mm)	LB (mm)*	Z (mm)
3A	A12 - A13 - A22 - A23 - M14 - M15 - R1	36	128,0	52,5	160,0	52,5
3B	A12 - A13 - A22 - A23 - M14 - M15 - R1	36	150,0	74,5	182,0	74,5
3C	A12 - A13 - A22 - A23 - M14 - M15 - R1	36	162,0	86,5	194,0	86,5

* with feedback A1 LB = +10mm (Z remain unchanged)

* with feedback A9 LB = +20mm (Z remain unchanged)

Flange Code	Register diameter	Fixing hole PCD
	N (mm)	M (mm)
36*	60	75

* for shaft 19x40mm, mandatory shaft code 80

Model	Shaft Code	Shaft diameter	Shaft length	Key H x W x L	P (mm)	T (mm)
		D (mm)	E (mm)	GF (mm)		
3A / 3B / 3C	71	14,0	30,0	5 x 5 x 25	M5 x 12,5	16
	80	19,0	40,0	6 x 6 x 30	M6 x 16	21,5

Frame size 100 4A

Ratings and specifications

		TYPE OF WINDING		
		15	15	17
ELECTRICAL DATA		UNIT		
Poles number	Nr	10		
Continuous stall torque ⁽¹⁾	Nm	6,45		
Peak torque	Nm	16,50		
Nominal torque	Nm	5,80	5,80	5,80
Rated Voltage	V	230 Vac	400 Vac	
Nominal power	W	1820	1820	1820
Continuous stall current	Arms	7,09	7,09	4,03
Maximum current	Arms	25,12	25,12	14,29
Nominal current	Arms	6,38	6,38	3,63
Base speed at Cmax	rpm	1200	2140	1200
Nominal working speed	rpm	3000	3000	3000
Maximum working speed	rpm	3880	6000	3880
Torque constant ± 10%	Nm/Arms	0,91	0,91	1,60
Voltage constant ± 10%	Vrms/krpm	55,00	55,00	96,70
Winding resistance ± 10% @25°C (ph/ph)	Ohm	1,50	1,50	4,20
Winding inductance ± 10% (ph/ph)	mH	14,28	14,28	44,43
Electrical time constant	ms	9,54	9,54	10,58
Thermal resistance	°C/W	0,63		
Winding thermal constant	sec	92		
Operating temperature	°C	0 ÷ 40		
Protection degree	IP	65 (*)		
Insulation class		F		
MECHANICAL DATA		UNIT		
Rotor inertia without holding brake	kg cm ²	2,53 (3.56)**		
Rotor inertia with holding brake	kg cm ²	2,65 (3.68)**		
Max theoretical acceleration ⁽¹⁾	rad/s ²	65217		
Mechanical time constant ⁽¹⁾	ms	0,46	0,46	0,41
Max radial shaft load @3000/6000rpm	N	690 / 580		
Max axial shaft load @3000/6000rpm	N	245 / 220		
Mass without holding brake	kg	5,55		
Mass with holding brake	kg	6,60		

⁽¹⁾ Without holding brake.

(*) With oil seal mounted on the flange.

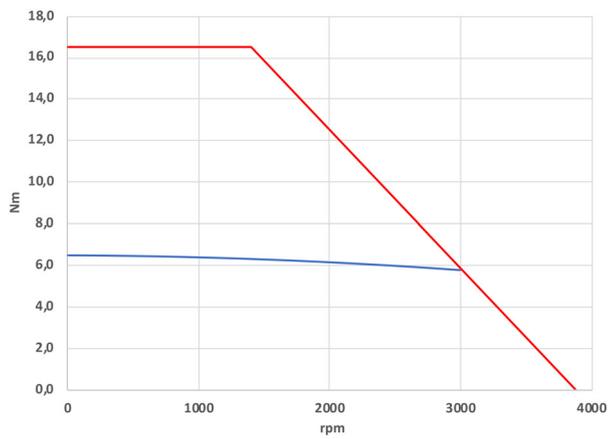
(**) With High Inertia Code = 47

Rated output with 300 x 300 x 20 mm metallic heat sink flange.
Derating must be considered if the oil seal is applied.

Torque/speed charts

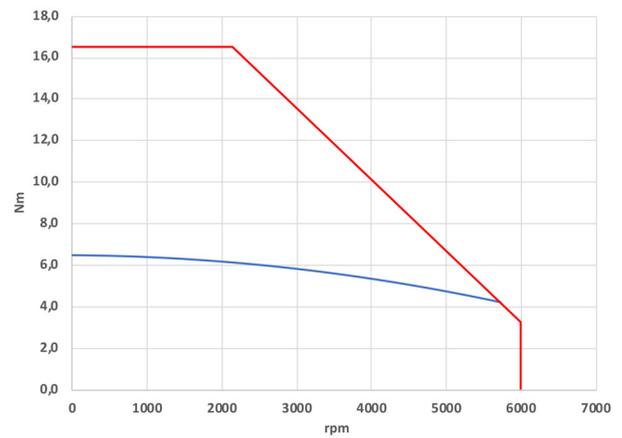
TC4 100 4A 15 2

Operative curves at 230 Vac — Cn — Cmax



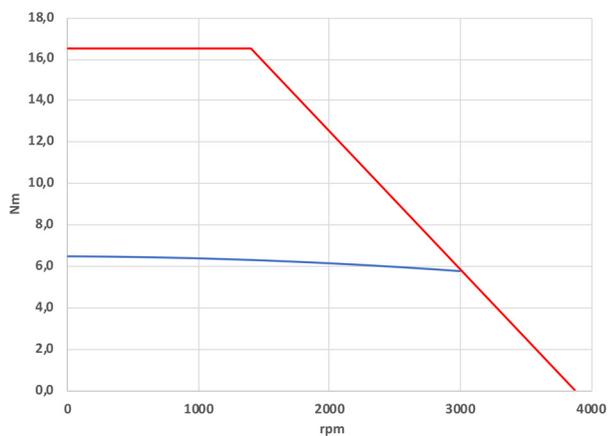
TC4 100 4A 15 4

Operative curves at 400 Vac — Cn — Cmax



TC4 100 4A 17 4

Operative curves at 400 Vac — Cn — Cmax



Frame size 100 4B

Ratings and specifications

		TYPE OF WINDING		
		15	15	17
ELECTRICAL DATA		UNIT		
Poles number	Nr	10		
Continuous stall torque ⁽¹⁾	Nm	10,16		
Peak torque	Nm	33,00		
Nominal torque	Nm	8,36	8,36	8,36
Rated Voltage	V	230 Vac	400 Vac	
Nominal power	W	2620	2620	2620
Continuous stall current	Arms	11,17	11,17	6,35
Maximum current	Arms	50,66	50,66	28,82
Nominal current	Arms	9,19	9,19	5,23
Base speed at Cmax	rpm	1200	2140	1180
Nominal working speed	rpm	3000	3000	3000
Maximum working speed	rpm	3900	6800	3860
Torque constant ± 10%	Nm/Arms	0,91	0,91	1,60
Voltage constant ± 10%	Vrms/krpm	55,00	55,00	96,70
Winding resistance ± 10% @25°C (ph/ph)	Ohm	0,61	0,61	1,94
Winding inductance ± 10% (ph/ph)	mH	7,14	7,14	22,22
Electrical time constant	ms	11,63	11,63	11,46
Thermal resistance	°C/W	0,48		
Winding thermal constant	sec	132		
Operating temperature	°C	0 ÷ 40		
Protection degree	IP	65 (*)		
Insulation class		F		
MECHANICAL DATA		UNIT		
Rotor inertia without holding brake	kg cm ²	4,61 (5.63)**		
Rotor inertia with holding brake	kg cm ²	4,73 (5.70)**		
Max theoretical acceleration ⁽¹⁾	rad/s ²	71583		
Mechanical time constant ⁽¹⁾	ms	0,34	0,34	0,35
Max radial shaft load @3000/6000rpm	N	690 / 580		
Max axial shaft load @3000/6000rpm	N	245 / 220		
Mass without holding brake	kg	8,09		
Mass with holding brake	kg	9,14		

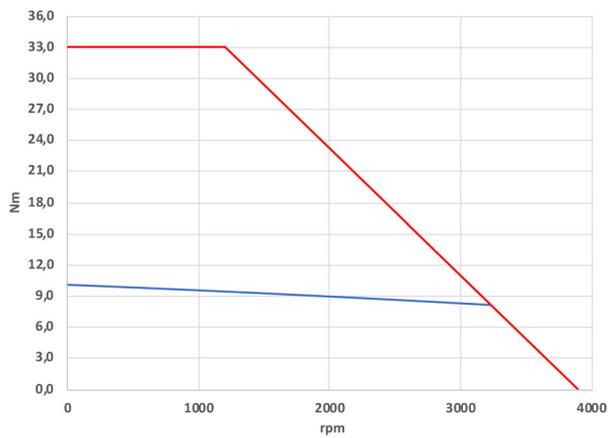
(1) Without holding brake.
 (*) With oil seal mounted on the flange.
 (**) With High Inertia Code = 47

Rated output with 300 x 300 x 20 mm metallic heat sink flange.
 Derating must be considered if the oil seal is applied.

Torque/speed charts

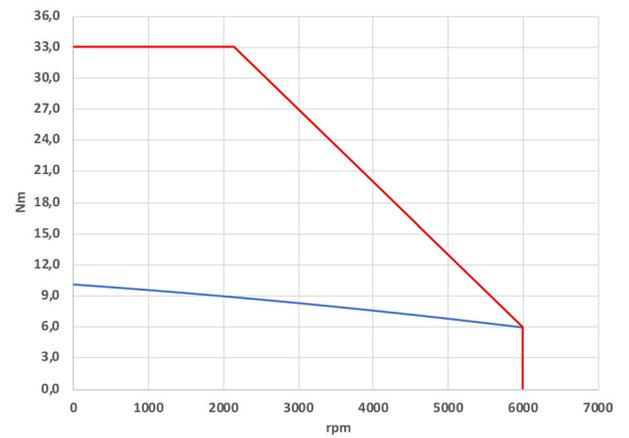
TC4 100 4B 15 2

Operative curves at 230 Vac — Cn — Cmax



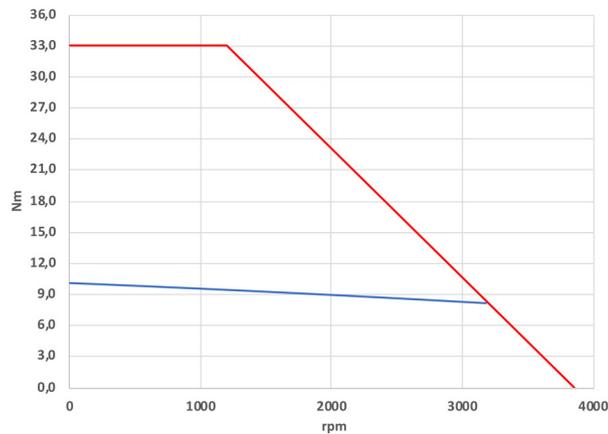
TC4 100 4B 15 4

Operative curves at 400 Vac — Cn — Cmax



TC4 100 4B 17 4

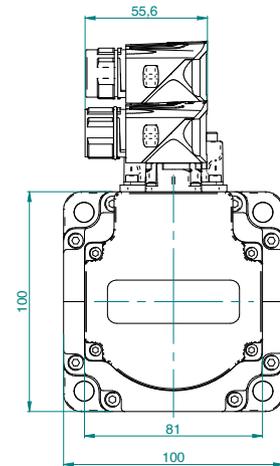
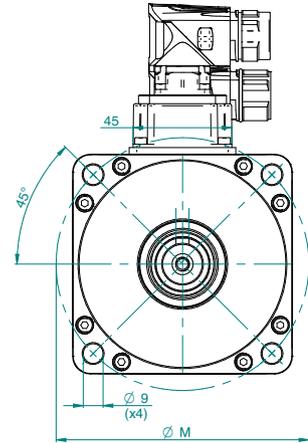
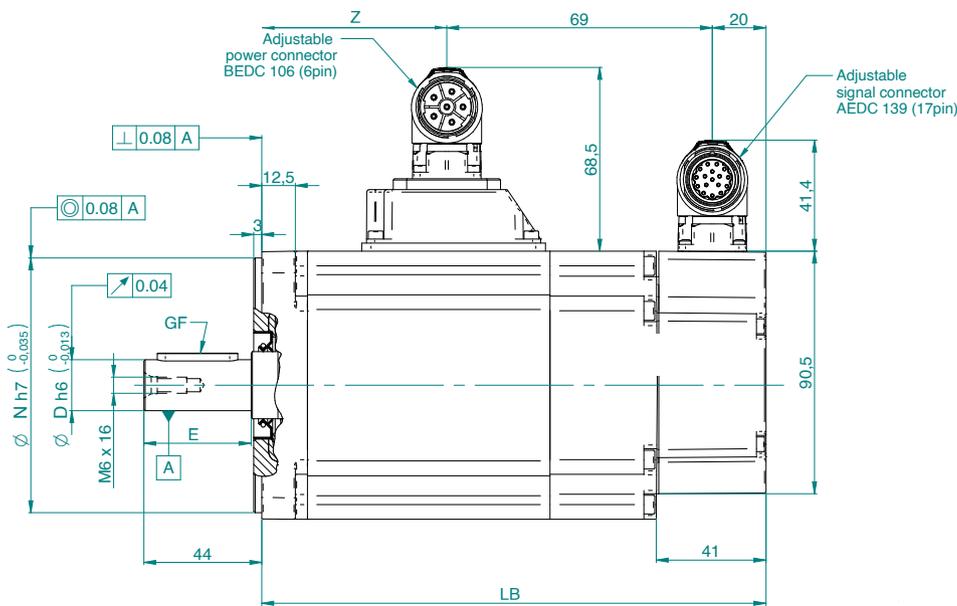
Operative curves at 400 Vac — Cn — Cmax



External Dimensions

Flange
00

TC4 100 4A/4B



Model	Feedback	Flange code	Unbraked length		Braked length	
			LB (mm)*	Z (mm)	LB (mm)*	Z (mm)
4A	A12 - A13 - A22 - A23 - M14 - M15	00	158,0	69,0	188,0	69,0
4B	A12 - A13 - A22 - A23 - M14 - M15	00	203,0	114,0	233,0	114,0

* with feedback A1, A9, A24, R1 LB = +15mm (Z remain unchanged)

* with feedback A18 LB = +30mm (Z remain unchanged)

Flange Code	Register diameter	Fixing hole PCD
00*	95	115

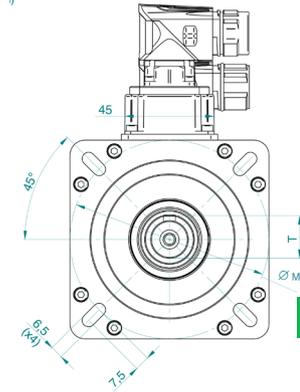
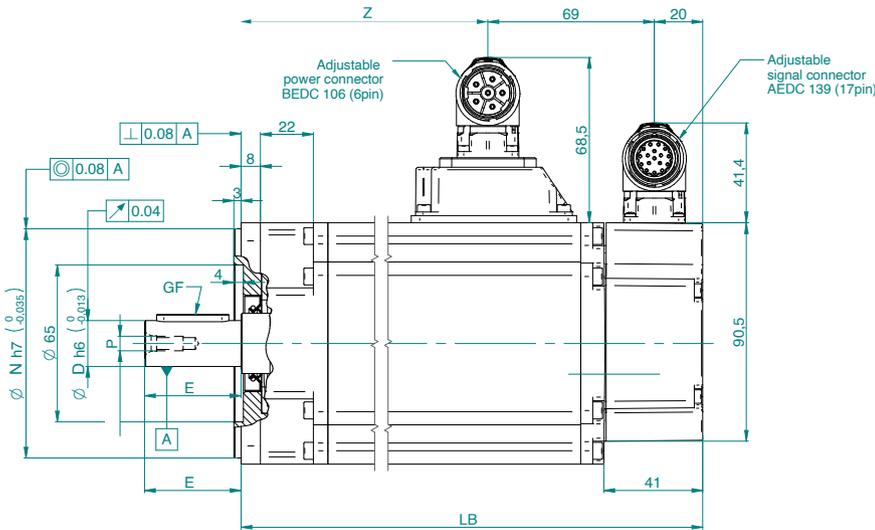
Model	Shaft Code	Shaft diameter	Shaft length	Key H x W x L
		D (mm)	E (mm)	GF (mm)
4A / 4B	00	19,0	40,0	6 x 6 x 30

* mandatory shaft code 00

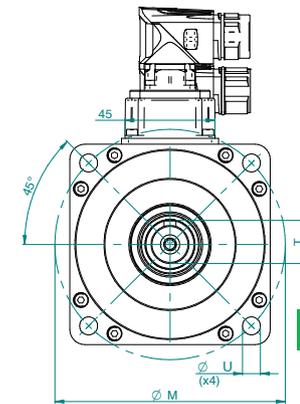
External Dimensions

Flange
30
32

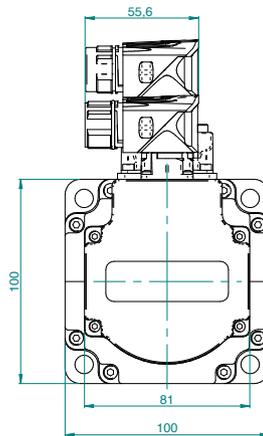
TC4 100 4A/4B



Flange 30



Flange 32



Model	Feedback	Flange code	Unbraked length		Braked length	
			LB (mm)*	Z (mm)	LB (mm)*	Z (mm)
4A	A12 - A13 - A22 - A23 - M14 - M15	30	177,0	88,0	207,0	88,0
		32	177,0	88,0	207,0	88,0
4B	A12 - A13 - A22 - A23 - M14 - M15	30	222,0	133,0	252,0	133,0
		32	222,0	133,0	252,0	133,0

* with feedback A1, A9, A24, R1 LB = +15mm (Z remain unchanged)

* with feedback A18 LB = +30mm (Z remain unchanged)

Flange Code	Register diameter	Fixing hole PCD	
	N (mm)	M (mm)	U (mm)
30*	80	100	-
32*	95	115	9,0

Model	Shaft Code	Shaft diameter	Shaft length	Key H x W x L		
		D (mm)	E (mm)	GF (mm)	P (mm)	T (mm)
4A / 4B	71	14,0	30,0	5 x 5 x 25	M5 x 12,5	16
	80	19,0	40,0	6 x 6 x 30	M6 x 16	21,5

* for shaft 19x40mm, mandatory shaft code 80

Frame size 130 5F

Ratings and specifications

		TYPE OF WINDING		
		15	15	17
ELECTRICAL DATA		UNIT		
Poles number	Nr	10		
Continuous stall torque ⁽¹⁾	Nm	4,77		
Peak torque	Nm	14,30		
Nominal torque	Nm	3,18	3,18	3,18
Rated Voltage	V	230 Vac	400 Vac	
Nominal power	W	1000	1000	1000
Continuous stall current	Arms	5,24	5,24	2,98
Maximum current	Arms	18,28	18,28	10,40
Nominal current	Arms	3,50	3,50	1,99
Base speed at Cmax	rpm	2150	3800	2150
Nominal working speed	rpm	3000	3000	3000
Maximum working speed	rpm	3700	4000	3700
Torque constant ± 10%	Nm/Arms	0,91	0,91	1,60
Voltage constant ± 10%	Vrms/krpm	55,00	55,00	96,70
Winding resistance ± 10% @25°C (ph/ph)	Ohm	0,87	0,87	2,64
Winding inductance ± 10% (ph/ph)	mH	9,37	9,37	29,20
Electrical time constant	ms	10,77	10,77	11,06
Thermal resistance	°C/W	-		
Winding thermal constant	sec	373		
Operating temperature	°C	0 ÷ 40		
Protection degree	IP	65 (*)		
Insulation class		F		
MECHANICAL DATA		UNIT		
Rotor inertia without holding brake	kg cm ²	6,70		
Rotor inertia with holding brake	kg cm ²	7,95		
Max theoretical acceleration ⁽¹⁾	rad/s ²	21343,00		
Mechanical time constant ⁽¹⁾	ms	0,70	0,70	0,69
Max radial shaft load @3000/6000rpm	N	1200		
Max axial shaft load @3000/6000rpm	N	230		
Mass without holding brake	kg	7,35		
Mass with holding brake	kg	8,87		

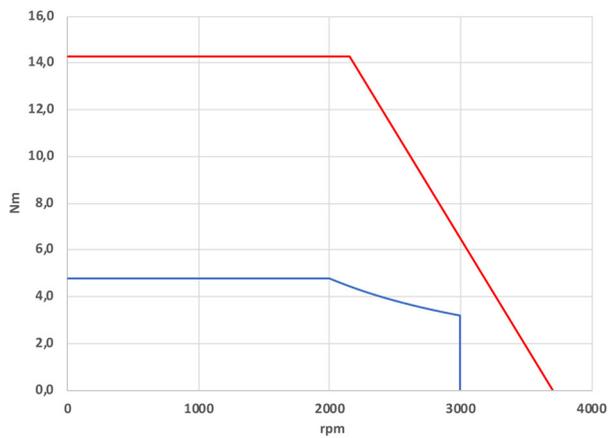
(1) Without holding brake.
(*) With oil seal mounted on the flange.

Rated output with 400 x 400 x 20 mm metallic heat sink flange.
Derating must be considered if the oil seal is applied.

Torque/speed charts

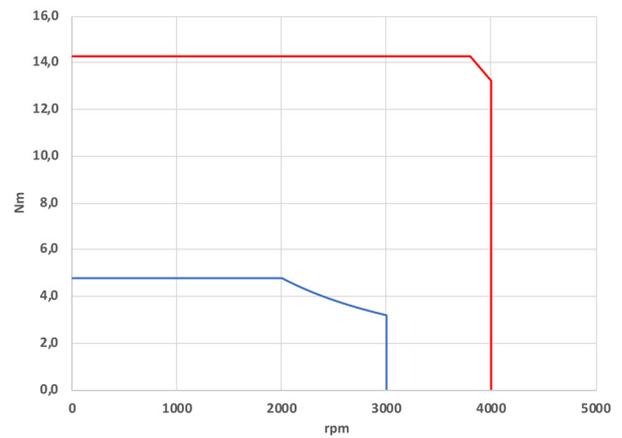
TC4 130 5F 15 2

Operative curves at 230 Vac — Cn — Cmax



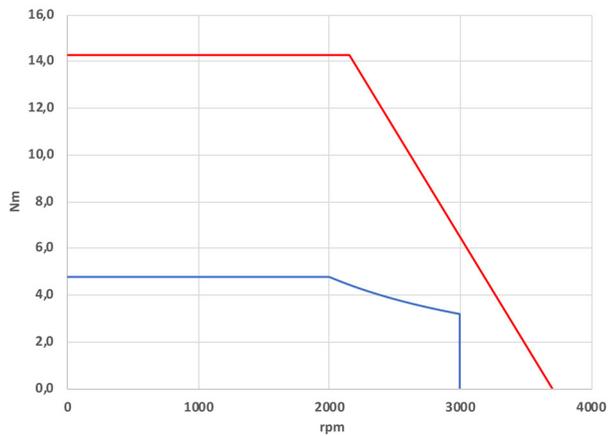
TC4 130 5F 15 4

Operative curves at 400 Vac — Cn — Cmax



TC4 130 5F 17 4

Operative curves at 400 Vac — Cn — Cmax



Frame size 130 5G

Ratings and specifications

		TYPE OF WINDING		
		15	15	17
ELECTRICAL DATA		UNIT		
Poles number	Nr	10		
Continuous stall torque ⁽¹⁾	Nm	7,16		
Peak torque	Nm	21,48		
Nominal torque	Nm	4,78	4,78	4,78
Rated Voltage	V	230 Vac	400 Vac	
Nominal power	W	1500	1500	1500
Continuous stall current	Arms	7,87	7,87	4,48
Maximum current	Arms	26,83	26,83	15,26
Nominal current	Arms	5,24	5,24	2,98
Base speed at Cmax	rpm	2350	4000	2350
Nominal working speed	rpm	3000	3000	3000
Maximum working speed	rpm	3700	4000	3700
Torque constant ± 10%	Nm/Arms	0,91	0,91	1,60
Voltage constant ± 10%	Vrms/krpm	55,00	55,00	96,70
Winding resistance ± 10% @25°C (ph/ph)	Ohm	0,47	0,47	1,64
Winding inductance ± 10% (ph/ph)	mH	5,34	5,34	20,66
Electrical time constant	ms	11,36	11,36	12,60
Thermal resistance	°C/W	-		
Winding thermal constant	sec	412		
Operating temperature	°C	0 ÷ 40		
Protection degree	IP	65 (*)		
Insulation class		F		
MECHANICAL DATA		UNIT		
Rotor inertia without holding brake	kg cm ²	9,72		
Rotor inertia with holding brake	kg cm ²	10,98		
Max theoretical acceleration ⁽¹⁾	rad/s ²	22098,00		
Mechanical time constant ⁽¹⁾	ms	0,58	0,58	0,53
Max radial shaft load @3000/6000rpm	N	1200		
Max axial shaft load @3000/6000rpm	N	230		
Mass without holding brake	kg	8,80		
Mass with holding brake	kg	10,32		

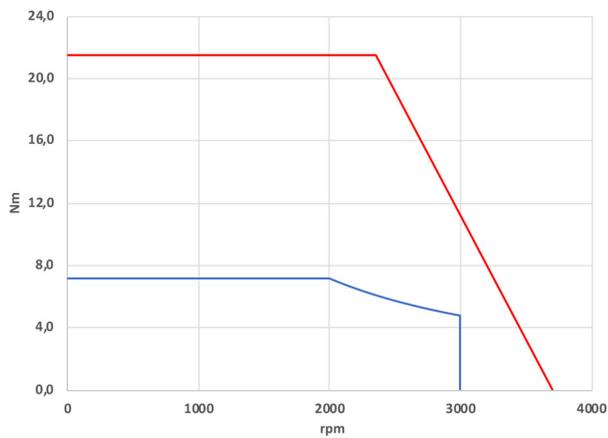
⁽¹⁾ Without holding brake.
^(*) With oil seal mounted on the flange.

Rated output with 400 x 400 x 20 mm metallic heat sink flange.
 Derating must be considered if the oil seal is applied.

Torque/speed charts

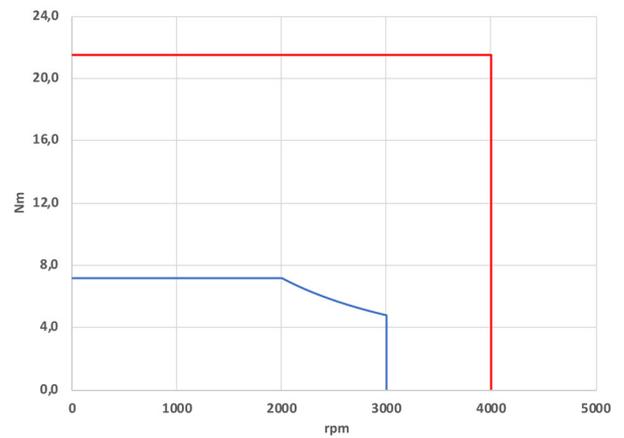
TC4 130 5G 15 2

Operative curves at 230 Vac — Cn — Cmax



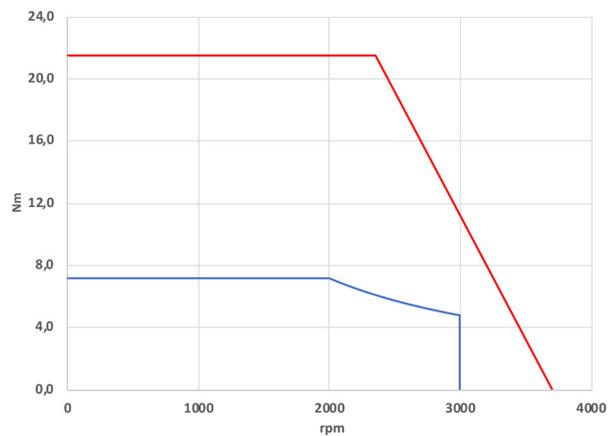
TC4 130 5G 15 4

Operative curves at 400 Vac — Cn — Cmax



TC4 130 5G 17 4

Operative curves at 400 Vac — Cn — Cmax



Frame size 130 5H

Ratings and specifications

		TYPE OF WINDING		
		15	15	17
ELECTRICAL DATA		UNIT		
Poles number	Nr	10		
Continuous stall torque ⁽¹⁾	Nm	9,55		
Peak torque	Nm	28,65		
Nominal torque	Nm	6,37	6,37	6,37
Rated Voltage	V	230 Vac	400 Vac	
Nominal power	W	2000	2000	2000
Continuous stall current	Arms	10,50	10,50	5,97
Maximum current	Arms	35,00	35,00	19,90
Nominal current	Arms	7,00	7,00	3,98
Base speed at Cmax	rpm	2050	3650	2050
Nominal working speed	rpm	3000	3000	3000
Maximum working speed	rpm	3700	4000	3700
Torque constant ± 10%	Nm/Arms	0,91	0,91	1,60
Voltage constant ± 10%	Vrms/krpm	55,00	55,00	96,70
Winding resistance ± 10% @25°C (ph/ph)	Ohm	0,38	0,38	1,06
Winding inductance ± 10% (ph/ph)	mH	5,00	5,00	15,40
Electrical time constant	ms	13,16	13,16	14,53
Thermal resistance	°C/W	-		
Winding thermal constant	sec	328		
Operating temperature	°C	0 ÷ 40		
Protection degree	IP	65 (*)		
Insulation class		F		
MECHANICAL DATA		UNIT		
Rotor inertia without holding brake	kg cm ²	12,77		
Rotor inertia with holding brake	kg cm ²	14,04		
Max theoretical acceleration ⁽¹⁾	rad/s ²	22435,00		
Mechanical time constant ⁽¹⁾	ms	0,58	0,58	0,53
Max radial shaft load @3000/6000rpm	N	1200		
Max axial shaft load @3000/6000rpm	N	230		
Mass without holding brake	kg	10,54		
Mass with holding brake	kg	12,68		

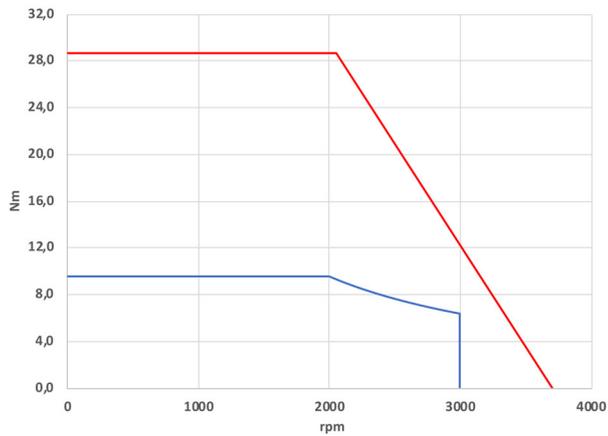
(1) Without holding brake.
(*) With oil seal mounted on the flange.

Rated output with 400 x 400 x 20 mm metallic heat sink flange.
Derating must be considered if the oil seal is applied.

Torque/speed charts

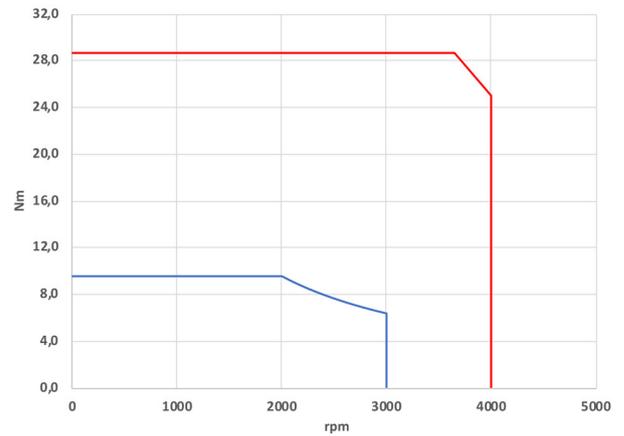
TC4 130 5H 15 2

Operative curves at 230 Vac — Cn — Cmax



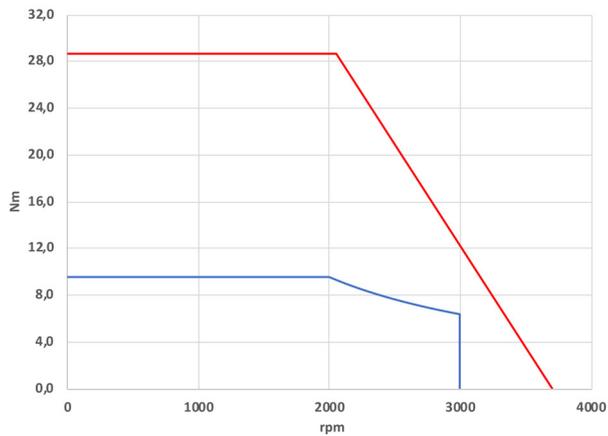
TC4 130 5H 15 4

Operative curves at 400 Vac — Cn — Cmax



TC4 130 5H 17 4

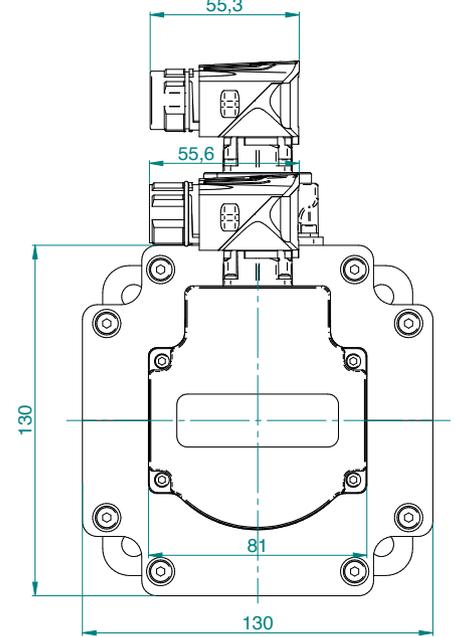
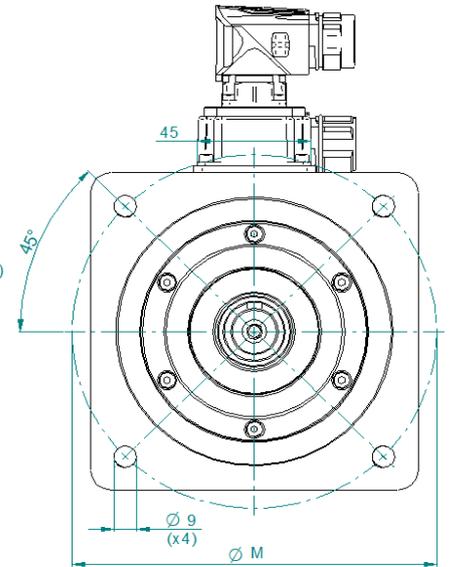
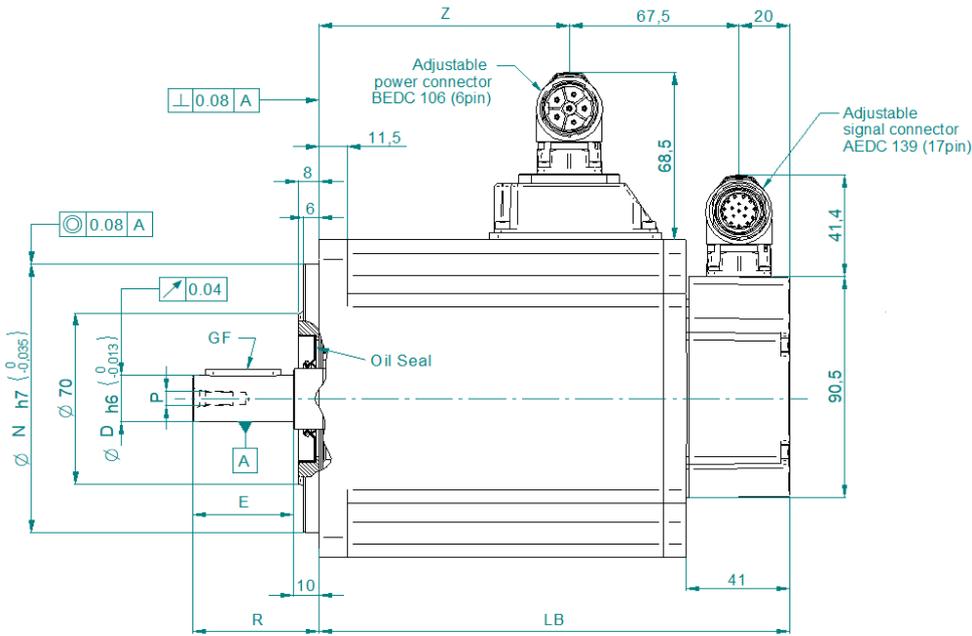
Operative curves at 400 Vac — Cn — Cmax



External Dimensions

Flange
00

TC4 130 5F/5G/5H



Model	Feedback	Flange code	Unbraked length		Braked length	
			LB (mm)*	Z (mm)	LB (mm)*	Z (mm)
5F	A12 - A13 - A22 - A23 - M14 - M15	00	147,0	59,5	176,0	59,5
5G	A12 - A13 - A22 - A23 - M14 - M15	00	163,0	75,5	192,0	75,5
5H	A12 - A13 - A22 - A23 - M14 - M15	00	187,0	99,5	216,0	99,5

* With feedback A12-A13-A22-A23-M14-M15 and connection H8-H9
 * with feedback A1, A9, A24, R1 LB = +15mm (Z remain unchanged)
 * with feedback A18 LB = +30mm (Z remain unchanged)

Flange Code	Register diameter	Fixing hole PCD
	N (mm)	M (mm)
00*	110	145

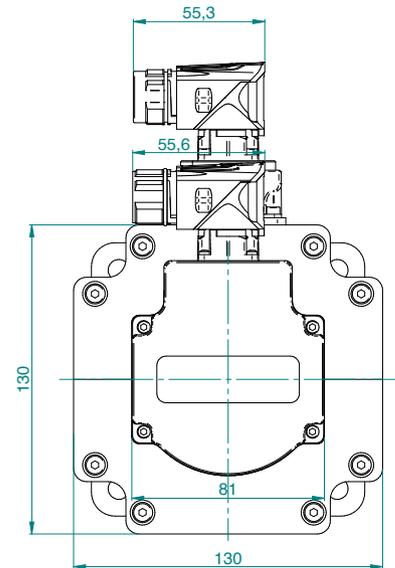
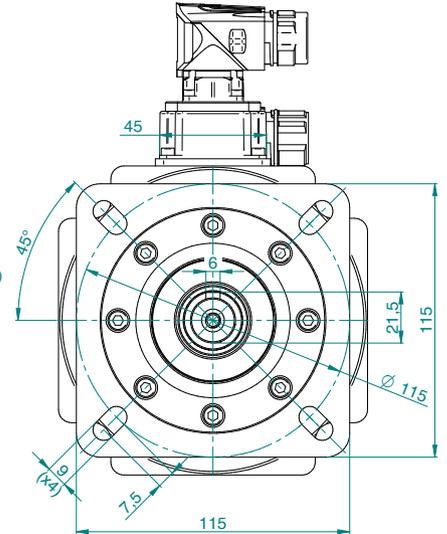
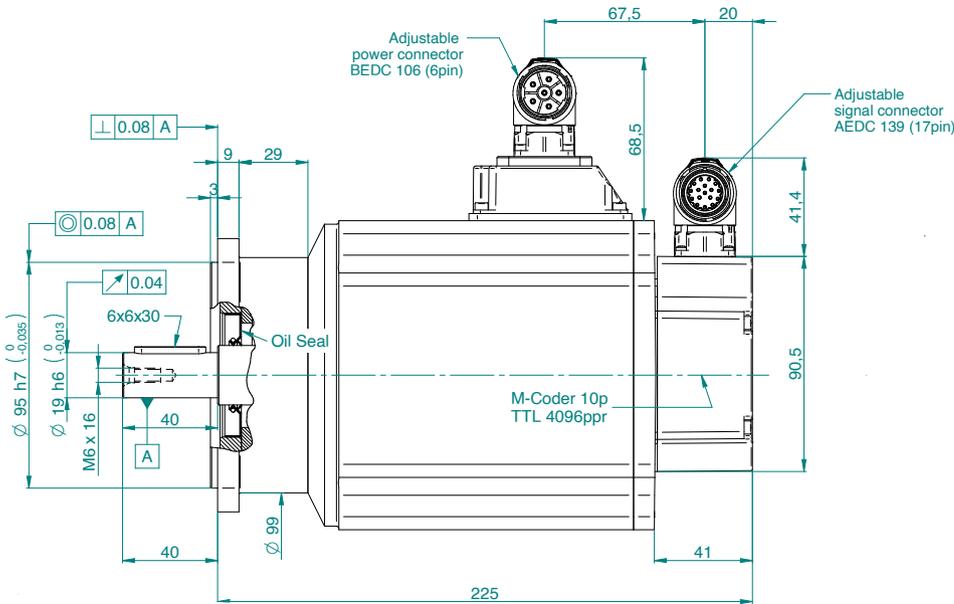
Model	Shaft Code	Shaft diameter	Shaft length	Key H x W x L
		D (mm)	E (mm)	GF (mm)
5F / 5G / 5H	00	19,0	40,0	6 x 6 x 30

* mandatory shaft code 00

External Dimensions

Flange
34

TC4 130 5F/5G/5H



Model	Feedback	Flange code	Unbraked length		Braked length	
			LB (mm)*	Z (mm)	LB (mm)*	Z (mm)
5F	A12 - A13 - A22 - A23 - M14 - M15	34	185,0	97,5	214,0	97,5
5G	A12 - A13 - A22 - A23 - M14 - M15	34	201,0	113,5	230,0	113,5
5H	A12 - A13 - A22 - A23 - M14 - M15	34	225,0	137,5	254,0	137,5

* with feedback A1, A9, A24, R1 LB = +15mm (Z remain unchanged)

* with feedback A18 LB = +30mm (Z remain unchanged)

Flange Code	Register diameter	Fixing hole PCD
	N (mm)	M (mm)
34 *	95	115

Model	Shaft Code	Shaft diameter	Shaft length	Key H x W x L
		D (mm)	E (mm)	GF (mm)
5F / 5G / 5H	80	19,0	40,0	6 x 6 x 30

* mandatory shaft code 80

Frame size 150 6A

Ratings and specifications

		TYPE OF WINDING		
		15	15	17
ELECTRICAL DATA		UNIT		
Poles number	Nr	10		
Continuous stall torque ⁽¹⁾	Nm	15,00		
Peak torque	Nm	33,5		
Nominal torque	Nm	11,80	11,80	11,80
Rated Voltage	V	230 Vac	400 Vac	
Nominal power	W	3715	3715	3715
Continuous stall current	Arms	16,49	16,49	9,38
Maximum current	Arms	44,91	44,91	25,54
Nominal current	Arms	12,97	12,97	7,38
Base speed at Cmax	rpm	2000	3500	1970
Nominal working speed	rpm	3000	3000	3000
Maximum working speed	rpm	3920	4000	3880
Torque constant ± 10%	Nm/Arms	0,91	0,91	1,60
Voltage constant ± 10%	Vrms/krpm	55,00	55,00	96,70
Winding resistance ± 10% @25°C (ph/ph)	Ohm	0,31	0,31	0,95
Winding inductance ± 10% (ph/ph)	mH	4,47	4,47	13,82
Electrical time constant	ms	14,28	14,28	14,49
Thermal resistance	°C/W	0,53		
Winding thermal constant	sec	188		
Operating temperature	°C	0 ÷ 40		
Protection degree	IP	65 (*)		
Insulation class		F		
MECHANICAL DATA		UNIT		
Rotor inertia without holding brake	kg cm ²	15,18		
Rotor inertia with holding brake	kg cm ²	16,55		
Max theoretical acceleration ⁽¹⁾	rad/s ²	22019,00		
Mechanical time constant ⁽¹⁾	ms	0,57	0,57	0,57
Max radial shaft load @3000/6000rpm	N	1850		
Max axial shaft load @3000/6000rpm	N	450		
Mass without holding brake	kg	13,68		
Mass with holding brake	kg	17,20		

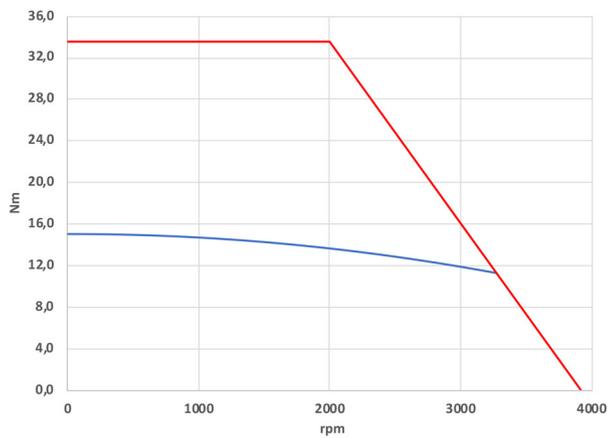
(1) Without holding brake.
(*) With oil seal mounted on the flange.

Rated output with 475x 475 x 20 mm metallic heat sink flange.
Derating must be considered if the oil seal is applied.

Torque/speed charts

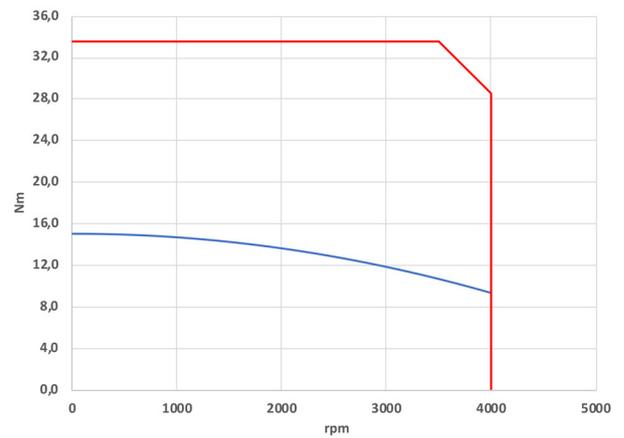
TC4 150 6A 15 2

Operative curves at 230 Vac — Cn — Cmax



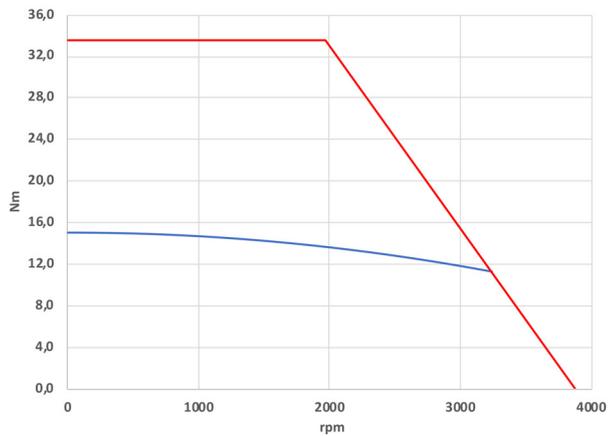
TC4 150 6A 15 4

Operative curves at 400 Vac — Cn — Cmax



TC4 150 6A 17 4

Operative curves at 400 Vac — Cn — Cmax



Frame size 150 6B

Ratings and specifications

		TYPE OF WINDING		
		15	15	17
ELECTRICAL DATA		UNIT		
Poles number	Nr	10		
Continuous stall torque ⁽¹⁾	Nm	27,30	27,30	29,40
Peak torque	Nm	68,5		
Nominal torque	Nm	20,00	20,00	20,00
Rated Voltage	V	230 Vac	400 Vac	
Nominal power	W	6280	6280	6280
Continuous stall current	Arms	30,00	30,00	18,38
Maximum current	Arms	91,94	91,94	52,29
Nominal current	Arms	21,99	21,99	12,50
Base speed at Cmax	rpm	1980	3475	1980
Nominal working speed	rpm	3000	3000	3000
Maximum working speed	rpm	3930	4000	3890
Torque constant $\pm 10\%$	Nm/Arms	0,91	0,91	1,60
Voltage constant $\pm 10\%$	Vrms/krpm	55,00	55,00	96,70
Winding resistance $\pm 10\%$ @25°C (ph/ph)	Ohm	0,11	0,11	0,36
Winding inductance $\pm 10\%$ (ph/ph)	mH	2,23	2,23	6,78
Electrical time constant	ms	20,01	20,01	18,78
Thermal resistance	°C/W	0,38		
Winding thermal constant	sec	196		
Operating temperature	°C	0 ÷ 40		
Protection degree	IP	65 (*)		
Insulation class		F		
MECHANICAL DATA		UNIT		
Rotor inertia without holding brake	kg cm ²	27,68		
Rotor inertia with holding brake	kg cm ²	28,76		
Max theoretical acceleration ⁽¹⁾	rad/s ²	21150,00		
Mechanical time constant ⁽¹⁾	ms	0,37	0,37	0,39
Max radial shaft load @3000/6000rpm	N	1850		
Max axial shaft load @3000/6000rpm	N	450		
Mass without holding brake	kg	18,00		
Mass with holding brake	kg	22,40		

⁽¹⁾ Without holding brake.

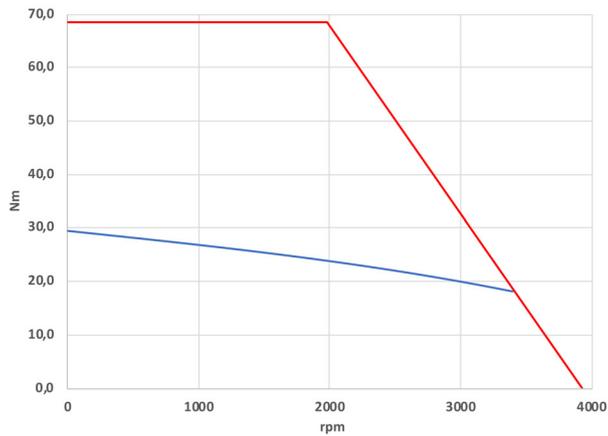
(*) With oil seal mounted on the flange.

Rated output with 475x 475 x 20 mm metallic heat sink flange.
Derating must be considered if the oil seal is applied.

Torque/speed charts

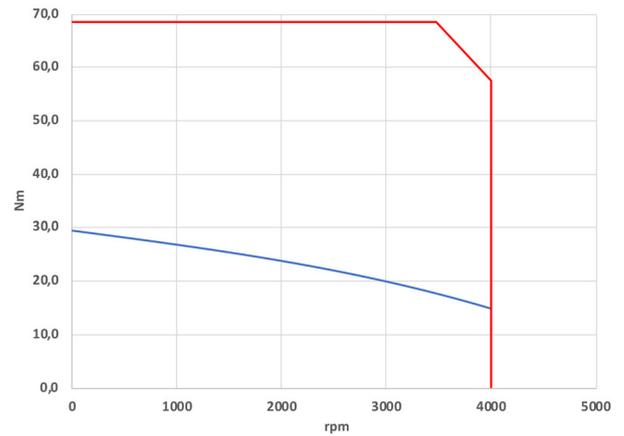
TC4 150 6B 15 2

Operative curves at 230 Vac — Cn — Cmax



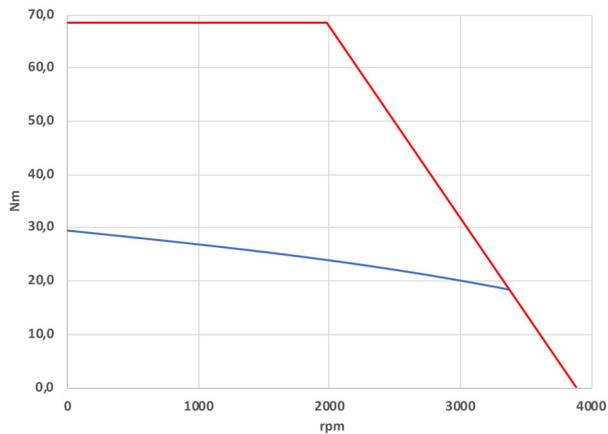
TC4 150 6B 15 4

Operative curves at 400 Vac — Cn — Cmax



TC4 150 6B 17 4

Operative curves at 400 Vac — Cn — Cmax



Frame size 150 6C

Ratings and specifications

		TYPE OF WINDING		
		15	15	17
ELECTRICAL DATA		UNIT		
Poles number	Nr	10		
Continuous stall torque ⁽¹⁾	Nm	41,77		
Peak torque	Nm	100,00		
Nominal torque	Nm	20,96	20,96	20,96
Rated Voltage	V	230 Vac	400 Vac	
Nominal power	W	6580	6580	6580
Continuous stall current	Arms	45,92	45,92	26,12
Maximum current	Arms	129,33	129,33	73,56
Nominal current	Arms	23,04	23,04	13,10
Base speed at Cmax	rpm	2000	3550	2080
Nominal working speed	rpm	3000	3000	3000
Maximum working speed	rpm	3940	4000	3900
Torque constant ± 10%	Nm/Arms	0,91	0,91	1,60
Voltage constant ± 10%	Vrms/krpm	55,00	55,00	96,70
Winding resistance ± 10% @25°C (ph/ph)	Ohm	0,072	0,072	0,19
Winding inductance ± 10% (ph/ph)	mH	1,54	1,54	4,52
Electrical time constant	ms	21,11	21,11	23,24
Thermal resistance	°C/W	0,38		
Winding thermal constant	sec	225		
Operating temperature	°C	0 ÷ 40		
Protection degree	IP	65 (*)		
Insulation class		F		
MECHANICAL DATA		UNIT		
Rotor inertia without holding brake	kg cm ²	40,17		
Rotor inertia with holding brake	kg cm ²	41,25		
Max theoretical acceleration ⁽¹⁾	rad/s ²	24962,00		
Mechanical time constant ⁽¹⁾	ms	0,35	0,35	0,31
Max radial shaft load @3000/6000rpm	N	1850		
Max axial shaft load @3000/6000rpm	N	450		
Mass without holding brake	kg	23,26		
Mass with holding brake	kg	27,67		

⁽¹⁾ Without holding brake.

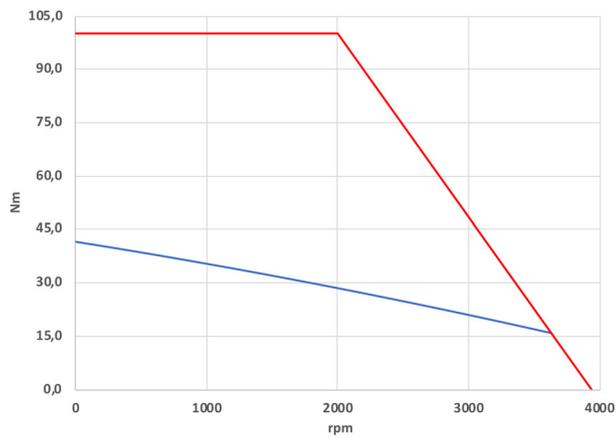
(*) With oil seal mounted on the flange.

Rated output with 475x 475 x 20 mm metallic heat sink flange.
Derating must be considered if the oil seal is applied.

Torque/speed charts

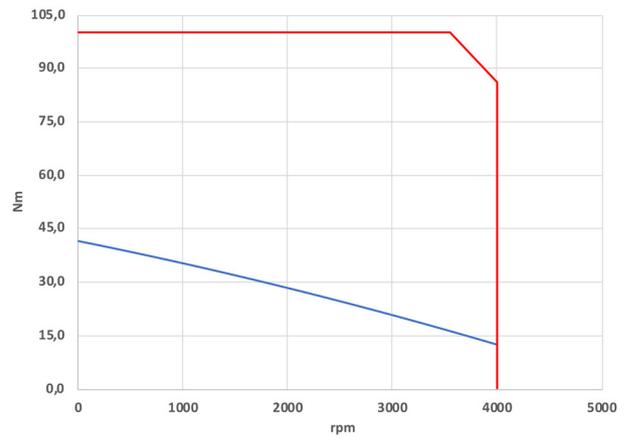
TC4 150 6C 15 2

Operative curves at 230 Vac — Cn — Cmax



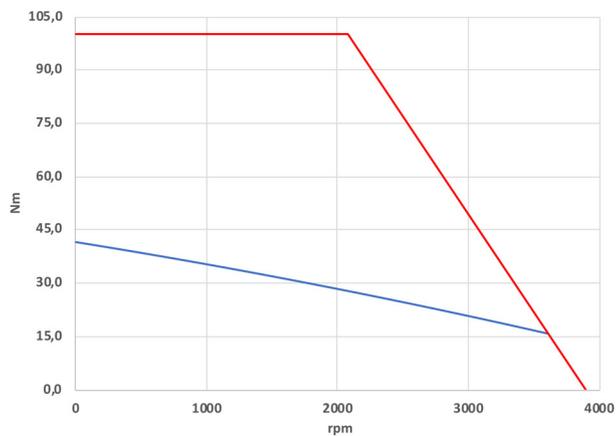
TC4 150 6C 15 4

Operative curves at 400 Vac — Cn — Cmax



TC4 150 6C 17 4

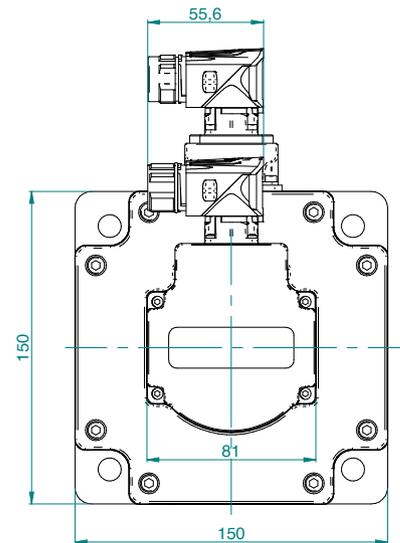
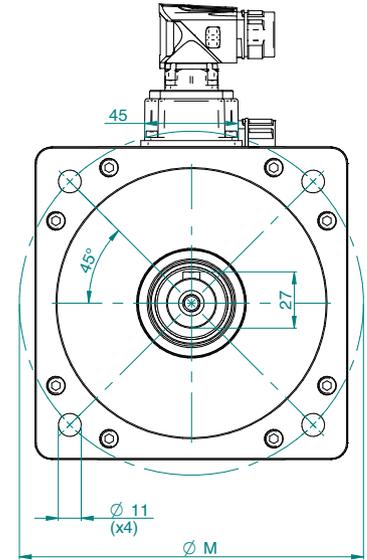
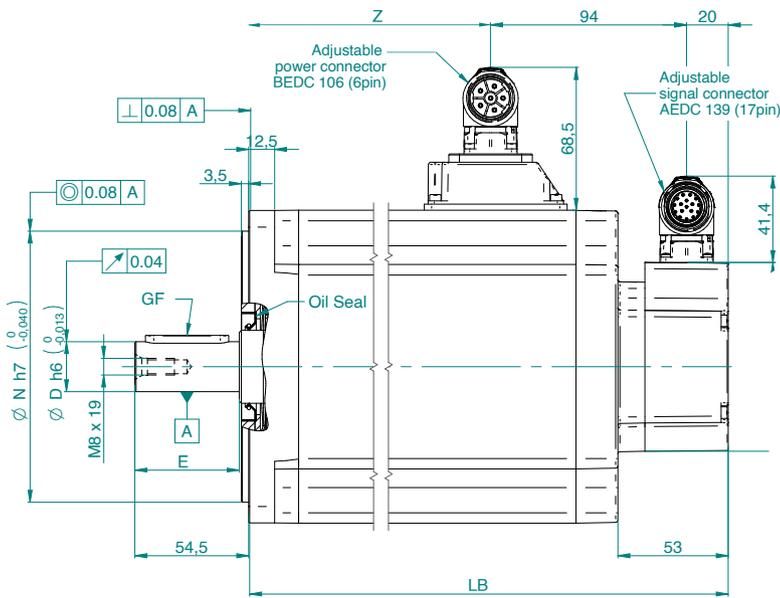
Operative curves at 400 Vac — Cn — Cmax



External Dimensions

Flange
00

TC4 150 6A/6B/6C



Model	Feedback	Flange code	Unbraked length		Braked length	
			LB (mm)*	Z (mm)	LB (mm)*	Z (mm)
6A	A1 - A12 - A13 A24 - M14 M15 - R1	00	205,0	91,5	250,0	91,5
6B	A1 - A12 - A13 A24 - M14 M15 - R1	00	250,0	136,0	295,0	136,0
6C	A1 - A12 - A13 A24 - M14 M15 - R1	00	295,0	181,5	340,0	181,5

* with feedback A9, A18 LB = +15mm (Z remain unchanged)

Flange Code	Register diameter	Fixing hole PCD
	N (mm)	M (mm)
00*	130	165

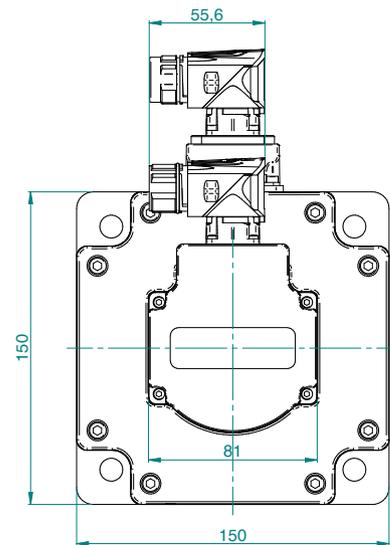
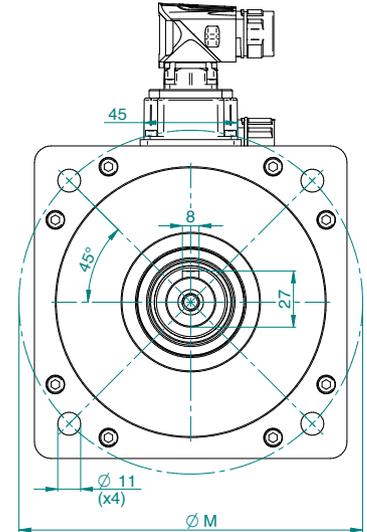
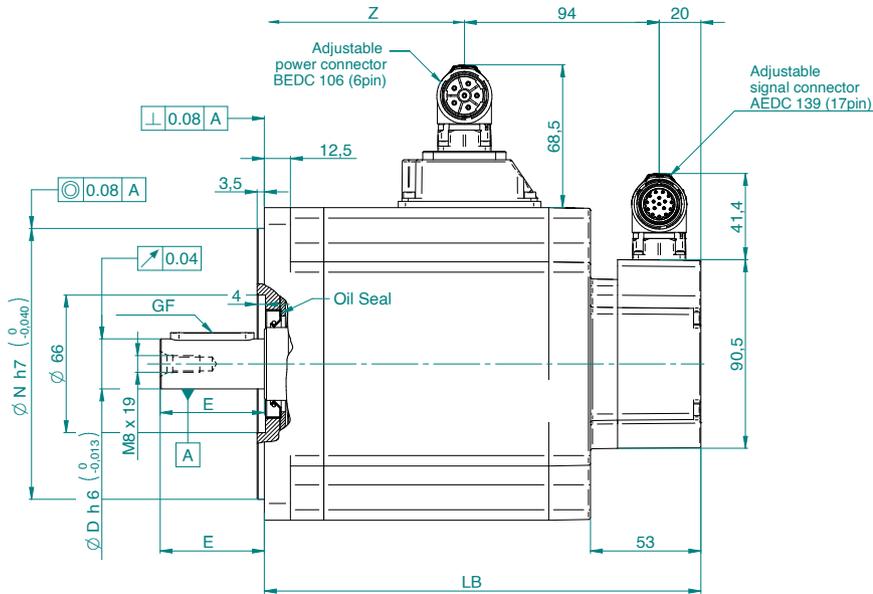
Model	Shaft Code	Shaft diameter	Shaft length	Key H x W x L
		D (mm)	E (mm)	GF (mm)
6A / 6B 6C	00	24,0	50,0	8 x 7 x 40

* mandatory shaft code 00

External Dimensions

Flange
44

TC4 150 6A/6B/6C



Model	Feedback	Flange code	Unbraked length		Braked length	
			LB (mm)*	Z (mm)	LB (mm)*	Z (mm)
6A	A1 - A12 - A13 - A22 - A23 - A24 - M14 - M15 - R1	44	209,5	96,0	254,5	96,0
6B	A1 - A12 - A13 - A22 - A23 - A24 - M14 - M15 - R1	44	254,5	140,5	299,5	140,5
6C	A1 - A12 - A13 - A22 - A23 - A24 - M14 - M15 - R1	44	299,5	186,0	344,5	186,0

* with feedback A9, A18 LB = +15mm (Z remain unchanged)

Flange Code	Register diameter	Fixing hole PCD
	N (mm)	M (mm)
44*	130	165

Model	Shaft Code	Shaft diameter	Shaft length	Key H x W x L
		D (mm)	E (mm)	GF (mm)
6A / 6B 6C	90	24,0	50,0	8 x 7 x 40

* mandatory shaft code 90

Feedback

TC4 Resolver

Motor size		R1	
		TC4 60 - TC4 80	TC4 100 - TC4 130 TC4 150
Nominal Voltage	Vrms	7±5%	7±5%
Nominal current	mA	50	50
Phase shift		+3°	-5°
Minimum sin amplitude	mVrms	20	20
Frequency	kHz	10	10
Poles number		2	2
Trasformer ratio		0.5 ± 5%	0.5 ± 5%
Input impedance	Ohm	130 + j280	110+j140
Output impedance	Ohm	425 + j755	130+j240
System accuracy		± 10'	± 10'
Rotor inertia	kg cm2	0.03	0.1

TC4 Encoder

	A1	A9
Type	GEAR ABSOLUTE MULTITURN	GEAR ABSOLUTE MULTITURN
Model	SKM 36	SRM 50
Protocol/Interface	HIPERFACE®	HIPERFACE
Resolution	128 line	1024 sin/cos
N° absolute multiturn steps	4096	4096
Accuracy	+/- 120''	+/- 52''
Working temperature	-20 °C ... +100 °C	-30°C .. +115°C
Working speed	<9000 rpm	<12.000 rpm
Max Acceleration	500.000 rad/s ²	200.000 rad/s ²
Inertia	4,5 gcm ²	0,01 kg.cm2
Weigth	70 g	200 gr
Main supply voltage	7 - 12 V	5 - 12 V
Current consumption	60 mA (withoul Load)	80 mA

	A12	A13
Type	GEAR ABSOLUTE MULTITURN	GEAR ABSOLUTE MULTITURN
Model	EQI 1131	EQI 1131 FS
Protocol/Interface	Endat 2.2	Endat 2.2
Resolution	19 bit	19 bit
N° absolute multiturn steps	4096	4096
Accuracy	+/- 120''	+/- 120''
Working temperature	-30°C .. +110°C	-40°C .. +110°C
Working speed	<12.000 rpm	<12.000 rpm
Max Acceleration	100.000 rad/s ²	100.000 rad/s ²
Inertia	0,2 x10 ⁻⁶ Kg m ²	0,2 x10 ⁻⁶ Kg m ²
Weigth	40 gr	40 gr
Main supply voltage	3.6 - 14 V	3.6 - 14 V
Current consumption	115 mA @ 5V	115 mA @ 5V

Feedback

TC4 Encoder

	A18	A24
Type	GEAR ABSOLUTE SINGLETURN	ABSOLUTE SINGLETURN
Model	ECN 1325	ECI 1319 FS
Protocol/Interface	Endat 2.2	Endat 2.2
Resolution	25 bit	19 bit
N° absolute multiturn steps	4096	---
Accuracy	+/- 20"	+/- 65"
Working temperature	-40°C .. +115°C	-40°C .. +115°C
Working speed	<12.000 rpm	<15.000 rpm
Max Acceleration	100.000 rad/s ²	100.000 rad/s ²
Inertia	0,26 x10 ⁻⁶ Kg m ²	0,245 x10 ⁻⁶ Kg m ²
Weigth	250 gr	130 gr
Main supply voltage	3.6 - 14 V	3.6 - 14 V
Current consumption	95 mA @ 5V	95 mA @ 5V
External battery voltage	-	-
External battery current consumption	-	-

	A22	A23
Type	ENCODER SAFETY ENDAT 3 SINGLETURN	ENCODER SAFETY ENDAT 3 MULTITURN
Model		
Protocol/Interface	ENDAT 3®	ENDAT 3®
Resolution	19 bit	19 bit
N° absolute multiturn steps	-	4096 (12 bit)
Accuracy	+/- 120''	+/- 120''
Working temperature	-40 °C ... +110 °C	-40 °C ... +110 °C
Working speed	<15000 rpm	<12000 rpm
Max Acceleration	$\leq 1 \cdot 10^5 \text{ rad/s}^2$	$\leq 1 \cdot 10^5 \text{ rad/s}^2$
Inertia	$0.2 \cdot 10^{-6} \text{ kg m}^2$	$0.2 \cdot 10^{-6} \text{ kg m}^2$
Weigth	40 gr	40 g
Main supply voltage	3,6 - 14 V	3,6 - 14 V
Current consumption	95 mA @5V (without load)	115 mA @5V (without load)
External battery voltage	-	-
External battery current consumption	-	-

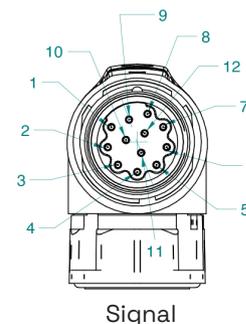
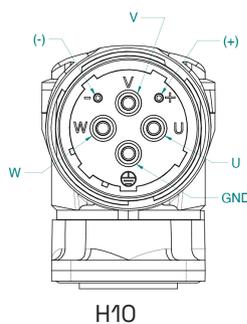
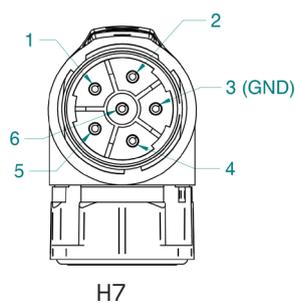
	M14	M15
Type	M-CODER INCREMENTAL WITH HALL SENSOR ENCODER	M-CODER INCREMENTAL WITH HALL SENSOR ENCODER
Model	M-CODER	M-CODER
Protocol/Interface	Line Driver A/B/Z U/V/W	Line Driver A/B/Z U/V/W
Resolution	4096 ppr	2048 ppr
N° absolute multiturn steps		
Accuracy	+/- 120''	+/- 120''
Working temperature	-40 °C ... +125 °C	-40 °C ... +125 °C
Working speed	<9000 rpm	<9000 rpm
Max Acceleration	100.000 rad/s ²	100.000 rad/s ²
Inertia	$5.6 \times 10^{-5} \text{ kg cm}^2$	$5.6 \times 10^{-5} \text{ kg cm}^2$
Weigth	20 g	20 g
Main supply voltage	5 - 12 V	5 - 12 V
Current consumption	100mA (Max)	100mA (Max)
External battery voltage	-	-
External battery current consumption	-	-

Specifications

TC4 Wiring motor connection

Connectors type H7 size1 (17Amax) - H10 size1,5 (40Amax)

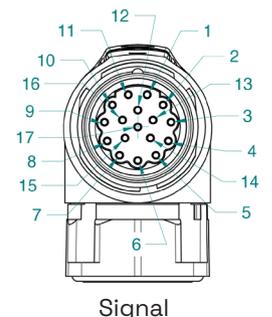
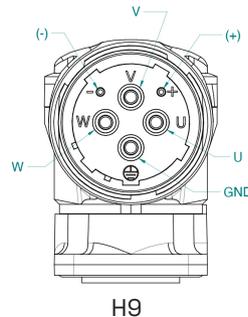
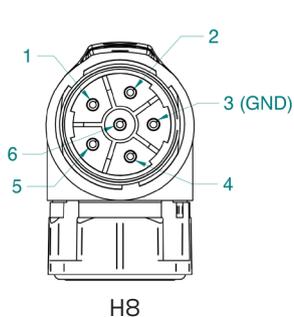
Power connector 6 PIN			Signal Connector 12 PIN			
Pin H7	Pin H10	Function	Pin	R1 Resolver - 2poles Ratio 0,5 - 10Khz	A1 - Encoder Type Sc.HiperFace SKM36 Multiturn - 17bit	A9 - Encoder Type Sc.HiperFace SRM50 Multiturn - 20bit
1	U	Phase - U	1	Excitation +	Cos -	Cos -
2	V	Phase - V	2	Excitation -	Data +	Data +
3	GND	Ground	3	Cos +	Data -	Data -
4	W	Phase - W	4	Cos -	Cos +	Cos +
5	+	Brake +	5	Sin +	Sin +	Sin +
6	-	Brake -	6	Sin -	Sin -	Sin -
			7	Thermistor	Thermistor	Thermistor
			8	Thermistor	Thermistor	Thermistor
			9		Screen	Screen
			10		0 Volts	0 Volts
			11			
			12		Vdc +	Vdc +
			Body		Screen	



TC4 Wiring motor connection

Connectors type H8 size1 (17Amax) - H9 size1,5 (40Amax)

Power connector 6 PIN			Signal Connector 17 PIN							
Pin H8	Pin H9	Function	Pin	A12 - Encoder Type EnDat2.2 EQM131 Multiturn 19bit	A13 - Encoder Type EnDat2.2 EQM131FS Multiturn 19bit (safety)	A18 - Encoder Type EnDat2.2 ECN1325 Singleturn 25bit	A24 - Encoder Type EnDat2.2 EC1319FS Singleturn 19bit (safety)	M14 - Encoder Type TTL + Sonde Hall 4096ppr 12bit	M15 - Encoder Type TTL + Sonde Hall 2048ppr 11bit	
1	U	Phase - U	1	Thermistor	Thermistor	Thermistor	Thermistor	Thermistor	Thermistor	
2	V	Phase - V	2	Thermistor	Thermistor	Thermistor	Thermistor	Thermistor	Thermistor	
3	GND	Ground	3			Screen	Screen			
4	W	Phase - W	4					S1 - U	S1 - U	
5	+	Brake +	5					S1 inverse - /U	S1 inverse - /U	
6	-	Brake -	6					S2 - V	S2 - V	
			7					S2 inverse - /V	S2 inverse - /V	
			8	Clock +	Clock +	Clock +	Clock +	S3 - W	S3 - W	
			9	Clock -	Clock -	Clock -	Clock -	S3 inverse- /W	S3 inverse- /W	
			10					Channel - A	Channel - A	
			11	Data +	Data +	Data +	Data +	Index - Z	Index - Z	
			12	Data -	Data -	Data -	Data -	Index inverse - /Z	Index inverse - /Z	
			13					Channel - /A inverse	Channel - /A inverse	
			14					Channel - B	Channel - B	
			15					Channel - /B inverse	Channel - /B inverse	
			16	Vdc +	Vdc +	Vdc +	Vdc +	Vdc +	Vdc +	
			17	0 Volts	0 Volts	0 Volts	0 Volts	0 Volts	0 Volts	
			Body	Screen						

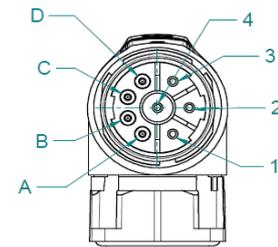


Specifications

TC4 Wiring motor connection

Connector type C21 size1 (17Amax)

Power & Signal Connector		
Pin	A22 - Encoder Type Endat 3 Singleturn 19bit	A23 - Encoder Type Endat 3 Multiturn 19bit
1		Phase U
2		PE
3		Phase W
4		Phase V
A		Data +
B		Data -
C		Brake +
D		Brake -
Body		Screen



C21

TC4 Brake features

MOTOR SIZE		60	80	100	130	150
Operating motor temperature	[°C]				-20 ÷ 120	
External ambient temperature	[°C]				-20 ÷ 40	
Standard brake duty	-				Stationary	
Minimum dry static torque (-20 ÷ 120 °C)	[Nm]	1.3	2.5	6.5	9.6	32
Nominal operating voltage (± 10 %)	[Vdc]			24		
Power consumption at 20 °C (± 7 %)	[W]	11.2	10.2	10.4	19.7	30
Release time	[ms]	58	46	49	71	185
Brake release time (pull-in)	[ms]	25	58	30	39	66
Maximum backlash	[deg]			1.2		



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\$20.9B
Market Capitalisation

\$17.1B
FY2024 revenue

101k
Employees



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