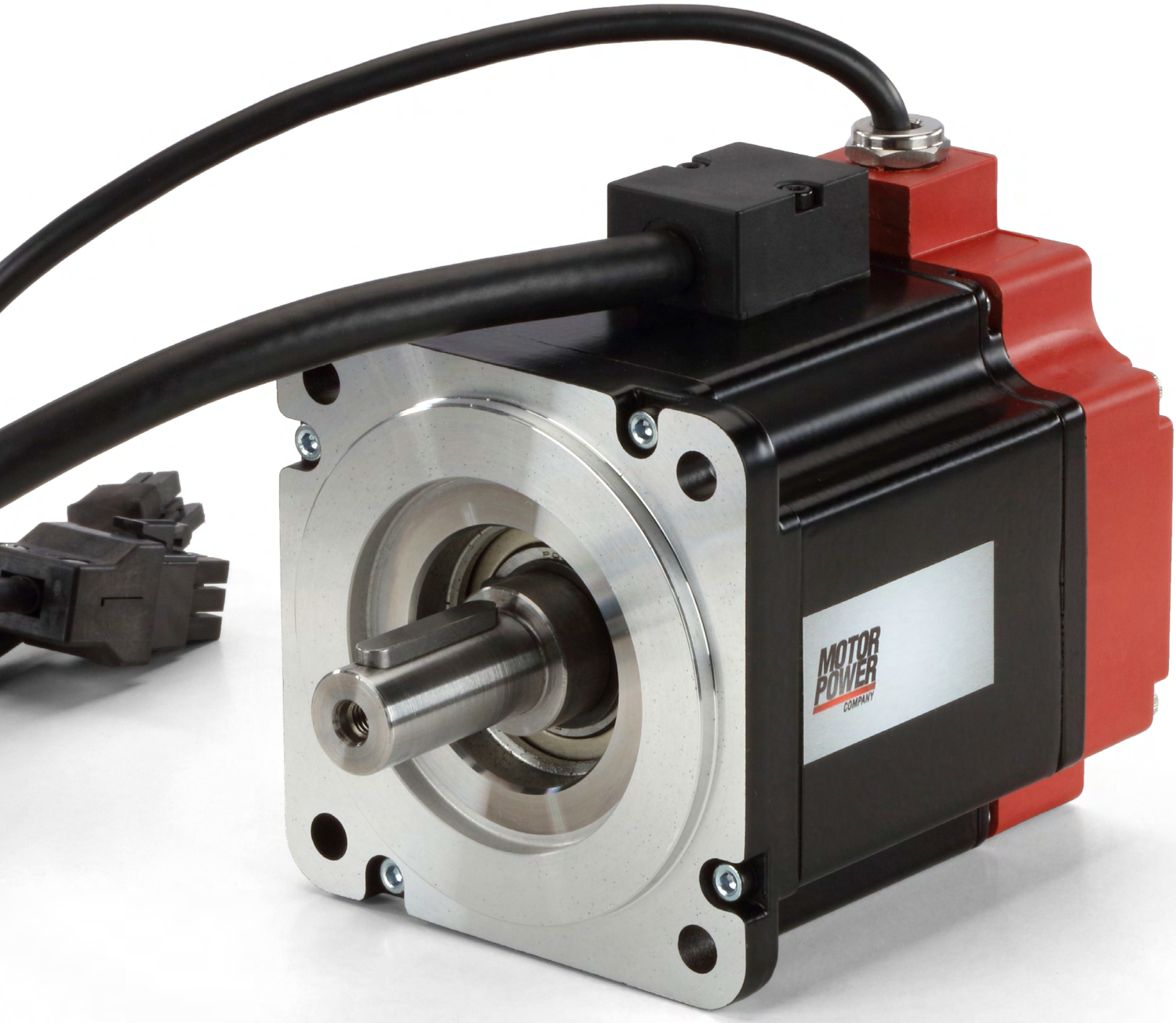
TC4

TETRA COMPACT 4



SEE IT BEFORE IT HAPPENS

MOTOR POWER COMPANY

TETRA COMPACT 4

NEXT-LEVEL SERVO MOTORS

Introducing the TETRA COMPACT 4 series from Motor Power Company a breakthrough in high-performance brushless servo motors. Born from years of hands-on experience, these motors redefine the standards in the brushless servomotors category.

With a unique design that is 30% shorter than its predecessors, the TETRA COMPACT 4 series maintains exceptional power density, efficiency, and speed, setting a new benchmark for AC synchronous motors.
This series features 10-pole servomotors with a variety of feedback options, offering unmatched quality and a broad range of power ratings. Perfectly suited for modern machine performance requirements, Motor Power Company doesn't just provide individual components but complete motion solutions. Pairing these high-performance servomotors with versatile drives of the series BL servo, the TETRA COMPACT 4 series excels across a diverse array of applications. Welcome to a new era of innovation and efficiency in motion technology.

MOTOR POWER COMPANY

CONTENTS

TC4

UL file: E216686 - MPC IF 155

FEATURES

Motor type	Three-phase BPM synchronous servo motor
Available frame sizes	40 – 60 – 80 – 100 – 130 – 150 – 180 mm
Rated output torque	From 0.16 to 47.75 Nm
Rated output power	From 50 to 7500 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	-20 ÷ +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	PT1000 (no sensor for size 40)
Shaft end	Smooth or keyed
Feedback	Resolver, TTL Encoder, Absolute Encoder (Hiperface, EnDat, BiSS Line, RS-485)*
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: E216686 - MPC IF 155

*Available also in single cable configuration

SERVOMOTOR TYPE DESIGNATION

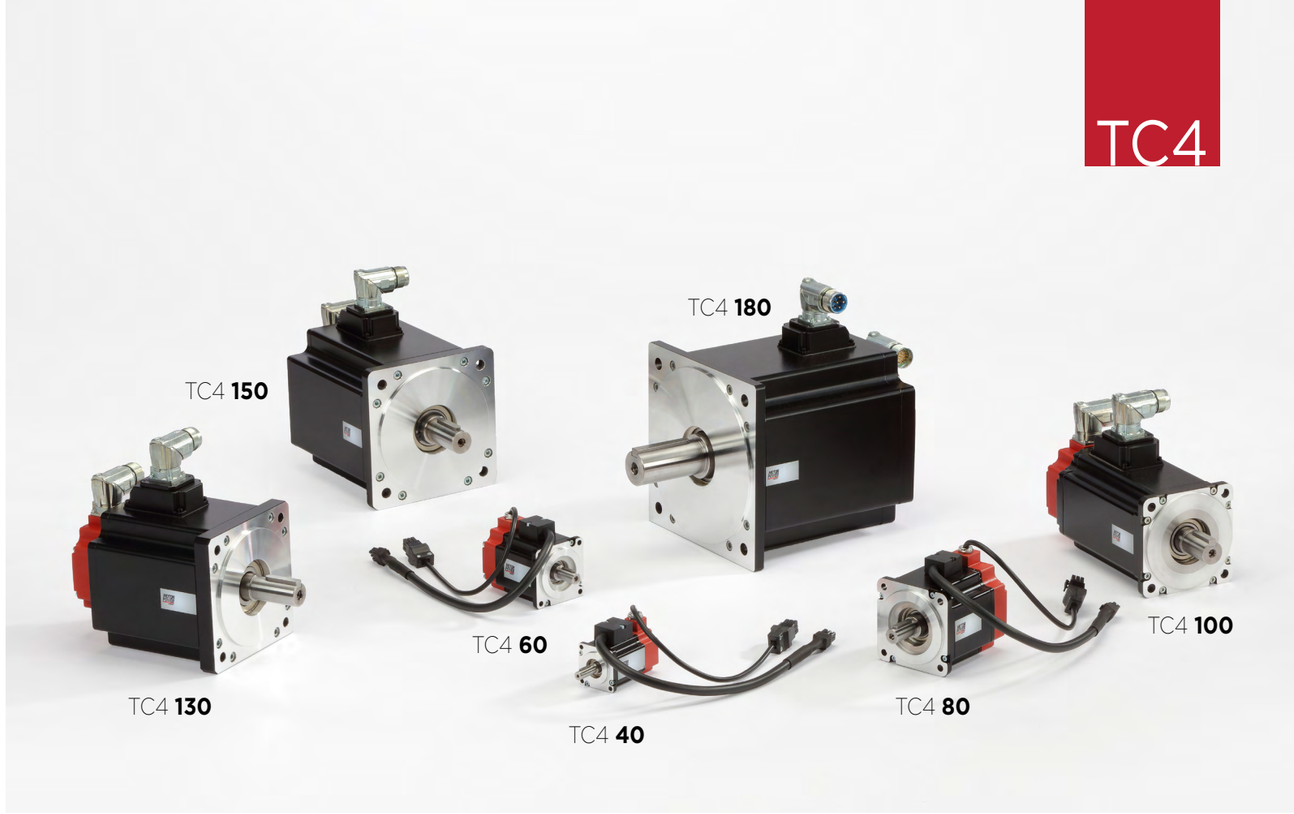
	1		2	3	4	5	6	7	8
Example:	TC4	60 2A	15	4	3	N1	0	D0	XXXX
	MODEL (see product lineup)		Type of winding	Winding voltage	Mechanical Arrangement	Feedback	Brake	Connection	Optional

1	**MODEL**	See PRODUCT LINEUP (p.8)
2	**TYPE OF WINDING**	See WINDING TABLE CODE (p.7)
3	**WINDING VOLTAGE**	**0** → 24 Vdc **1** → 48 Vdc **6** → 60 Vdc **2** → 230 Vac **4** → 400 Vac
4	**MECHANICAL ARRANGEMENT**	**0** Smooth shaft **1** Smooth shaft + oil seal **2** Keyed shaft **3** Keyed shaft + oil seal
5	**FEEDBACK**	**A1*** Hiperface absolute multi-turn encoder **A3*** Hiperface DSL absolute single-turn 20 bit encoder **A4*** Hiperface DSL absolute multi-turn 20 bit encoder **A5*** Hiperface safety DSL single-turn 20 bit encoder **A6*** Hiperface safety DSL multi-turn 20 bit encoder **A15*** Hiperface safety DSL single-turn 24 bit encoder **A16*** Hiperface safety DSL multi-turn 24 bit encoder **A22*** Safety EnDat 3 single-turn 19 bit encoder **A23*** Safety EnDat 3 multi-turn 19 bit encoder **M1** TTL 2000 ppr encoder **M2** Absolute single-turn 23 bit RS-485 encoder **M3** Absolute single-turn 23 bit BiSS Line encoder **N1** A-format 24-bit absolute multi-turn (for models 40-60-80) encoder **R1*** Resolver

*Not available for TC4 40 models

6	**BRAKE**	**0** Without brake **1** With brake
7	**CONNECTION**	**D0** 300mm cable lenght with AMP connectors, (for 40-60-80 only) **G2** 90° M23 turnable connectors - PT 1000 on power connector **H2** 90° M23 turnable connectors - PT 1000 on signal connector

TC4



WINDING TABLE CODE

SERVOMOTOR TYPE	TYPE OF WINDING																										
	9	13	15	15A	16	20	21	22	26	33	41	69	70	77	78	D1	D5	D6	F1	F2	G1	G5	H1	H3	L1	17
TC4 40 1A	2									1	0			0	1											
TC4 40 1B		2								1	0			0	1											
TC4 60 2A			4		4	2	2																			
TC4 60 2B			4		4	2	2																			
TC4 80 3A			4		4	2	2																			
TC4 80 3B			4		4	2	2																			
TC4 80 3C			4		4	2	2																			
TC4 100 4A			2													2		4								4
TC4 100 4B			2														2							4		4
TC4 130 5F																			2/4							
TC4 130 5G																							2/4			
TC4 130 5H								2/4																		
TC4 150 6A			2			2							4													4
TC4 150 6B			2																2		4					4
TC4 150 6C			2																2		4					4
TC4 180 7A									2/4																	
TC4 180 7C				2/4																						
TC4 180 7D																					2/4					
TC4 180 7E																						2/4				
TC4 180 7F												2/4														

PRODUCT LINEUP

Servomotor Type	Nominal Power P_n (ref. to 3000 rpm) [W]	Nominal Power P_n (ref. to 6000 rpm) [W]	Nominal Torque M_n (ref. to 3000 rpm) [Nm]	Peak Torque M_{max} [Nm]	Continuous Working Speed n_M [rpm]	Maximum Working Speed n_{Max} [rpm]	Moment of Inertia [kg cm^2]	24 Vdc	48 Vdc	230 Vac	400 Vac
TC4 40 1A	50	85	0.16	0.56	3000/6000	8000	0.0305	√	√	√	√
TC4 40 1B	100	175	0.32	1.12	3000/6000	8000	0.0561	√	√	√	√
TC4 60 2A	200	350	0.64	2.24	3000/6000	8000	0.223			√	√
TC4 60 2B	400	600	1.27	4.44	3000/6000	8000	0.414			√	√
TC4 80 3A	400	700	1.27	4.44	3000/6000	8000	0.79			√	√
TC4 80 3B	750	1100	2.38	8.33	3000/6000	8000	1.42			√	√
TC4 80 3C	1000	1300	3.18	11.10	3000/6000	8000	2.03			√	√
TC4 100 4A	1000	-	3.18	16.50	3000	6000	2.53			√	√
TC4 100 4B	2000	-	6.37	33.00	3000	6000	4.61			√	√
TC4 130 5F	1000	-	3.18	14.30	3000	4000	6.70			√	√
TC4 130 5G	1500	-	4.77	21.48	3000	4000	9.72			√	√
TC4 130 5H	2000	-	6.36	28.65	3000	4000	12.77			√	√
TC4 150 6A	2500	-	7.95	33.42	3000	4000	15.18			√	√
TC4 150 6B	4000	-	12.73	66.85	3000	4000	27.68			√	√
TC4 150 6C	6000	-	19.10	100.27	3000	4000	40.17			√	√
TC4 180 7A	2000	-	6.37	28.65	3000	4000	25.22			√	√
TC4 180 7C	3500	-	11.14	50.30	3000	4000	-			√	√
TC4 180 7D	4500	-	28.65	71.62	1500	4000	-			√	√
TC4 180 7E	5500	-	35.00	87.53	1500	4000	-			√	√
TC4 180 7F	7500	-	47.75	119.37	1500	4000	-			√	√

TETRA
COMPACT 4

401A RATINGS and SPECIFICATION

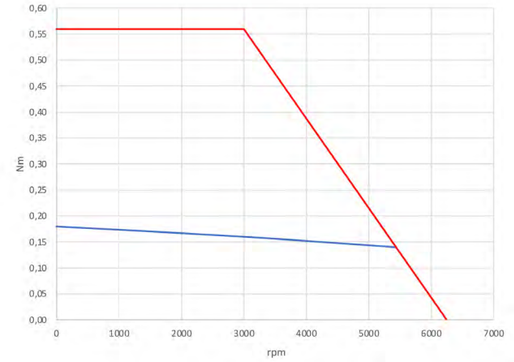
			24 Vdc		48 Vdc		230 Vac	
	TYPE OF WINDING		77	41	78	33	09	09
ELECTRICAL DATA								
Continuous stall torque (*)	M_0	[Nm]	0.18					
Peak torque	M_{Max}	[Nm]	0.56					
Nominal torque	M_n	[Nm]	0.16	0.135	0.16	0.135	0.16	0.135
Nominal power	P_n	[W]	50	85	50	85	50	85
Continuous stall current	I_0	[Arms]	4.35	7.26	2.18	2.72	0.60	0.6
Maximum current	I_{Max}	[Arms]	15.05	25.08	7.52	9.40	2.09	2.09
Nominal current	I_n	[Arms]	3.99	5.61	1.99	2.10	0.55	0.47
Nominal working speed	n_N	[rpm]	3000	6000	3000	6000	3000	6000
Maximum working speed	n_{Max}	[rpm]	6250	8000	6250	8000	8000	8000
Torque constant	K_t	[Nm/Arms]	0.041	0.025	0.083	0.066	0.298	0.298
Voltage constant	$K_{e\ u-v}$	[Vrms/krpm]	2.5	1.5	5.0	4.0	18.0	18.0
Winding resistance @ 20 °C	R_{u-v}	[Ohm]	0.556	0.183	2.235	1.408	27.712	27.712
Winding inductance	$L_{q\ u-v}$	[mH]	0.310	0.104	1.240	0.773	15.889	15.889
Electrical time constant	Te	[ms]	0.56	0.57	0.55	0.55	0.57	0.57
Thermal resistance	Rth	[°C/W]	4.07					
Mechanical time constant (a)	Tm	[ms]	1.01	0.92	1.01	1.00	0.97	0.97
Rotor inertia without holding brake	J	[kg·cm²]	0.0305					
Rotor inertia with holding brake	J	[kg·cm²]	0.0326					
Mass without holding brake	m	[kg]	0.40					
Mass with holding brake	m	[kg]	0.56					
Max. axial shaft load 3000 / 6000 rpm	SL_a	[N]	45 / 35					
Max. radial shaft load 3000 / 6000 rpm	SL_r	[N]	120 / 95					

Rated output with 185 x 185 x 8 mm aluminium heat sink flange coupling. Derating must be considered if the oil seal is applied - IP 54 standard shaft bushing.
(*) without brake.
(a) without brake and without feedback.

TORQUE/SPEED CHARTS

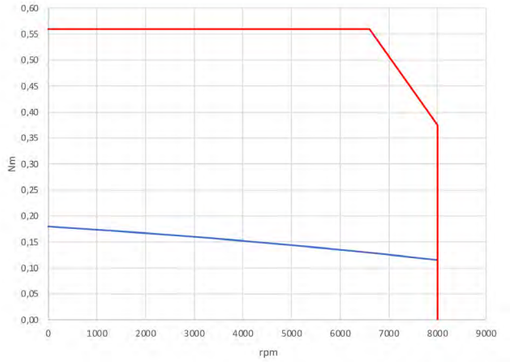
401A 77

Operative curves at 24 Vdc — Cn — Cmax



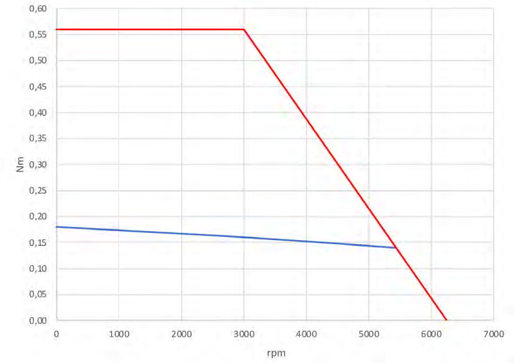
401A 41

Operative curves at 24 Vdc — Cn — Cmax



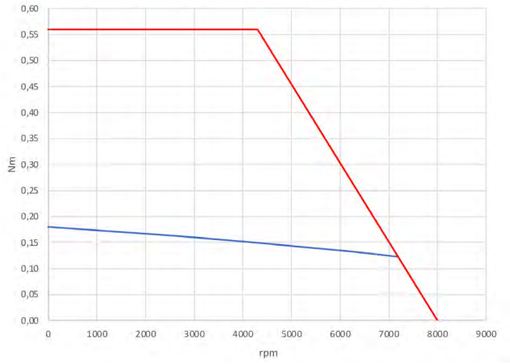
401A 78

Operative curves at 48 Vdc — Cn — Cmax



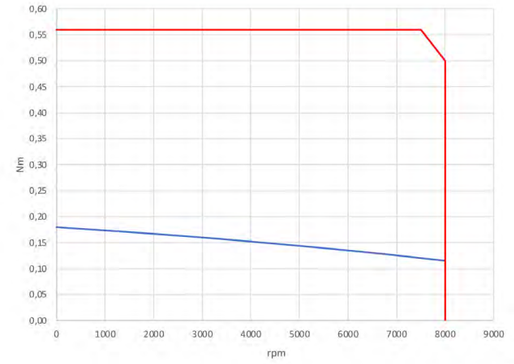
401A 33

Operative curves at 48 Vdc — Cn — Cmax



401A 09

Operative curves at 230 Vac — Cn — Cmax



Operative temperature -20 ÷ +40 °C

401B RATINGS and SPECIFICATION

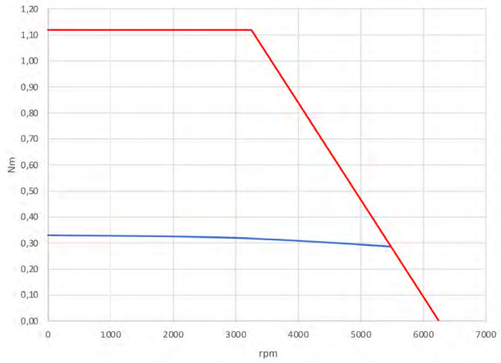
			24 Vdc		48 Vdc		230 Vac	
	TYPE OF WINDING		77	41	78	33	09	09
ELECTRICAL DATA								
Continuous stall torque (*)	M_0	[Nm]	0.33					
Peak torque	M_{Max}	[Nm]	1.12					
Nominal torque	M_n	[Nm]	0.32	0.28	0.32	0.28	0.32	0.28
Nominal power	P_n	[W]	100	175	100	175	100	175
Continuous stall current	I_0	[Arms]	7.98	13.30	3.99	4.99	0.73	0.73
Maximum current	I_{Max}	[Arms]	30.10	50.16	15.05	18.81	2.74	2.74
Nominal current	I_n	[Arms]	8.15	11.88	4.07	4.45	0.74	0.65
Nominal working speed	n_N	[rpm]	3000	6000	3000	6000	3000	6000
Maximum working speed	n_{Max}	[rpm]	6250	8000	6250	8000	7800	7800
Torque constant	K_t	[Nm/Arms]	0.041	0.025	0.083	0.066	0.455	0.455
Voltage constant	$K_{e\ u-v}$	[Vrms/krpm]	2.5	1.5	5.0	4.0	27.5	27.5
Winding resistance @ 20 °C	R_{u-v}	[Ohm]	0.253	0.087	1.019	0.632	30.848	30.848
Winding inductance	$L_{q\ u-v}$	[mH]	0.149	0.046	0.596	0.361	17.679	17.679
Electrical time constant	Te	[ms]	0.59	0.53	0.59	0.57	0.57	0.57
Thermal resistance	Rth	[°C/W]	2.44					
Mechanical time constant (a)	Tm	[ms]	0.83	0.79	0.83	0.81	0.83	0.83
Rotor inertia without holding brake	J	[kg·cm²]	0.0561					
Rotor inertia with holding brake	J	[kg·cm²]	0.0580					
Mass without holding brake	m	[kg]	0.49					
Mass with holding brake	m	[kg]	0.68					
Max. axial shaft load 3000 / 6000 rpm	SL_a	[N]	45 / 35					
Max. radial shaft load 3000 / 6000 rpm	SL_r	[N]	120 / 95					

Rated output with 185 x 185 x 8 mm aluminium heat sink flange coupling. Derating must be considered if the oil seal is applied - IP 54 standard shaft bushing.
(*) without brake.
(a) without brake and without feedback.

TORQUE/SPEED CHARTS

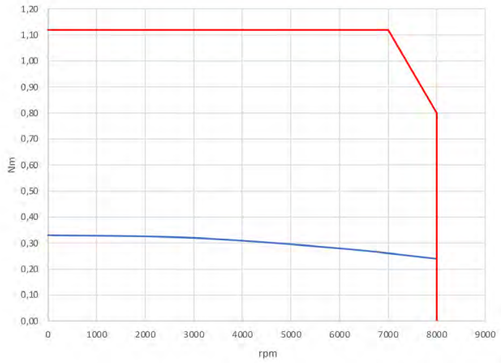
401B 77

Operative curves at 24 Vdc — Cn — Cmax



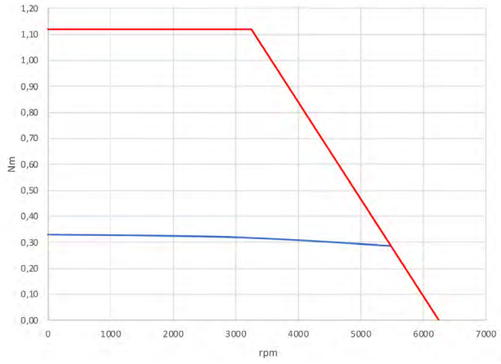
401B 41

Operative curves at 24 Vdc — Cn — Cmax



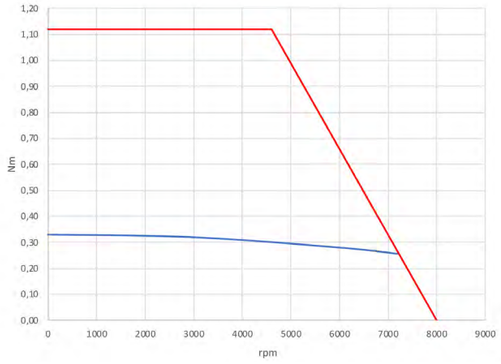
401B 78

Operative curves at 48 Vdc — Cn — Cmax



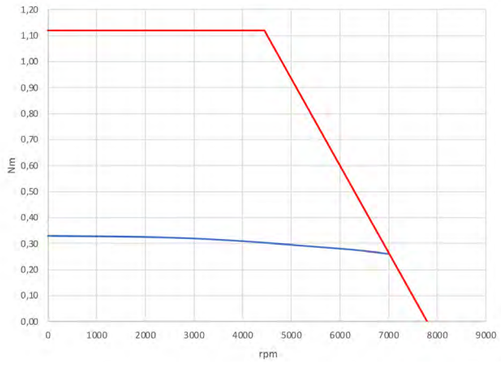
401B 33

Operative curves at 48 Vdc — Cn — Cmax



401B 09

Operative curves at 230 Vac — Cn — Cmax



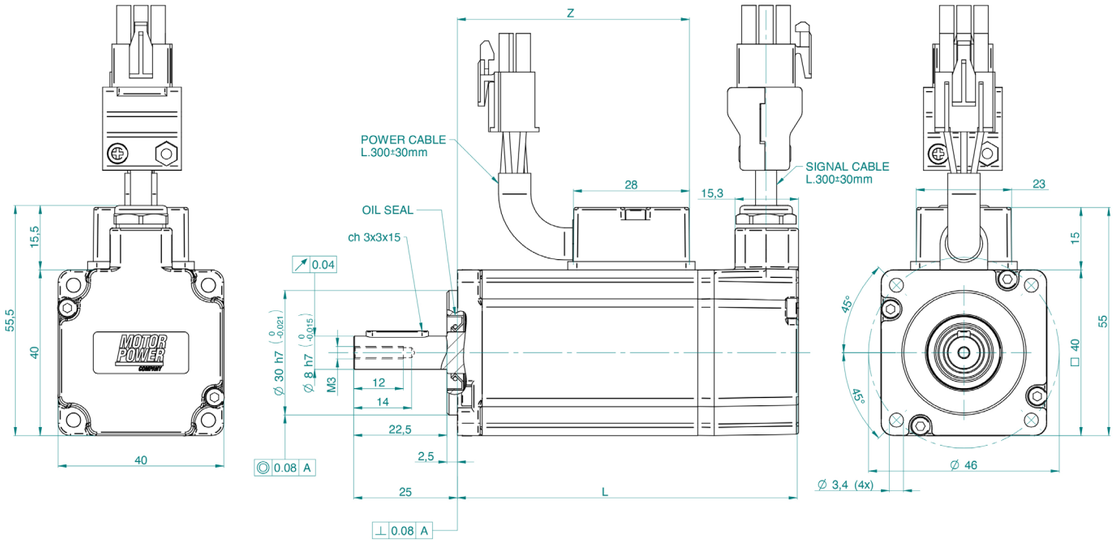
Operative temperature -20 ÷ +40 °C

Any specifications are subjected to change without notice.

TC4

40 EXTERNAL DIMENSIONS

Model	L [mm]*	L with brake [mm]*	Z [mm]*	Z with brake [mm]*
1A	66.0	89.0	40.0	40.0
1B	82.0	105.0	56.0	56.0



* With feedback N1-M1-M2 and connection D0

TETRA COMPACT 4

60

602A RATINGS and SPECIFICATION

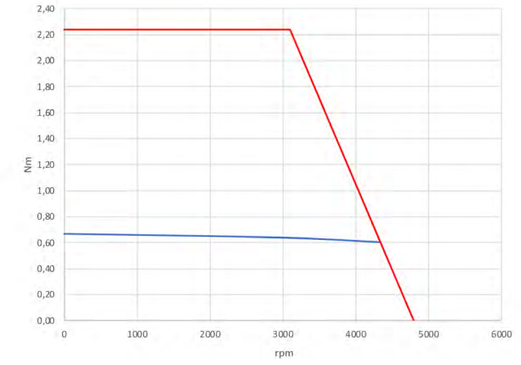
			230 Vac		400 Vac	
	TYPE OF WINDING		20	21	16	15
ELECTRICAL DATA						
Continuous stall torque (*)	M_0	[Nm]	0.67			
Peak torque	M_{Max}	[Nm]	2.24			
Nominal torque	M_n	[Nm]	0.64	0.56	0.64	0.56
Nominal power	P_n	[W]	200	350	200	350
Continuous stall current	I_0	[Arms]	0.92	1.27	0.56	0.74
Maximum current	I_{Max}	[Arms]	3.42	4.73	2.08	2.74
Nominal current	I_n	[Arms]	0.93	1.12	0.56	0.65
Nominal working speed	n_N	[rpm]	3000	6000	3000	6000
Maximum working speed	n_{Max}	[rpm]	4800	6800	5100	6800
Torque constant	K_t	[Nm/Arms]	0.728	0.526	1.2	0.91
Voltage constant	$K_{e\ u-v}$	[Vrms/krpm]	44.0	31.8	72.5	55
Winding resistance @ 20 °C	R_{u-v}	[Ohm]	20.367	10.260	52.39	31.805
Winding inductance	$L_{q\ u-v}$	[mH]	19.461	10.119	52.74	30.160
Electrical time constant	Te	[ms]	0.96	0.99	1.01	0.95
Thermal resistance	Rth	[°C/W]	2.59			
Mechanical time constant (a)	Tm	[ms]	0.86	0.83	0.81	0.86
Rotor inertia without holding brake	J	[kg·cm²]	0.223			
Rotor inertia with holding brake	J	[kg·cm²]	0.236			
Mass without holding brake	m	[kg]	0.92			
Mass with holding brake	m	[kg]	1.44			
Max. axial shaft load 3000 / 6000 rpm	SL_a	[N]	42 / 32			
Max. radial shaft load 3000 / 6000 rpm	SL_r	[N]	260 / 200			

Rated output with 250 x 250 x 12 mm aluminium heat sink flange coupling. Derating must be considered if the oil seal is applied - IP 54 standard shaft bushing.
(*) without brake.
(a) without brake and without feedback.

TORQUE/SPEED CHARTS

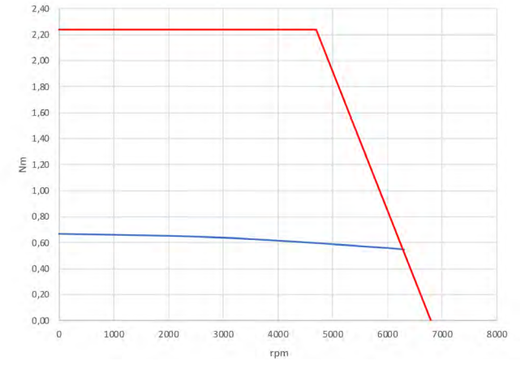
602A 20

Operative curves at 230 Vac — Cn — Cmax



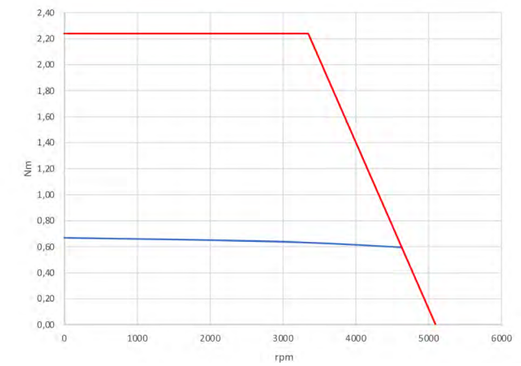
602A 21

Operative curves at 230 Vac — Cn — Cmax



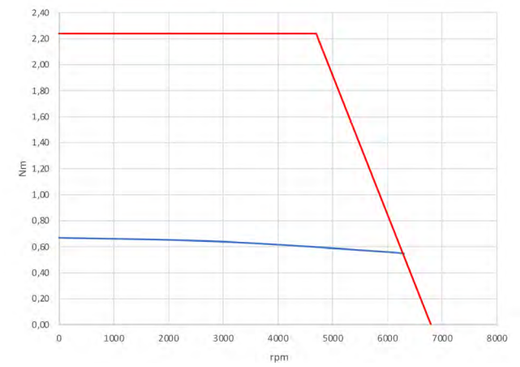
602A 16

Operative curves at 400 Vac — Cn — Cmax



602A 15

Operative curves at 400 Vac — Cn — Cmax



Operative temperature -20 ÷ +40 °C

602B RATINGS and SPECIFICATION

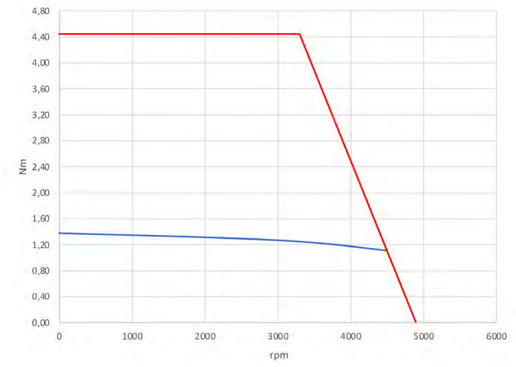
			230 Vac		400 Vac	
	TYPE OF WINDING		20	21	16	15
ELECTRICAL DATA						
Continuous stall torque (*)	M_0	[Nm]	1.38			
Peak torque	M_{Max}	[Nm]	4.44			
Nominal torque	M_n	[Nm]	1.27	0.95	1.27	0.95
Nominal power	P_n	[W]	400	600	400	600
Continuous stall current	I_0	[Arms]	1.90	2.62	1.15	1.52
Maximum current	I_{Max}	[Arms]	6.78	9.38	4.11	5.42
Nominal current	I_n	[Arms]	1.49	1.90	1.11	1.10
Nominal working speed	n_N	[rpm]	3000	6000	3000	6000
Maximum working speed	n_{Max}	[rpm]	4900	6800	5150	6800
Torque constant	K_t	[Nm/Arms]	0.728	0.526	1.2	0.91
Voltage constant	$K_{e\ u-v}$	[Vrms/krpm]	44.0	31.8	72.5	55
Winding resistance @ 20 °C	R_{u-v}	[Ohm]	7.869	4.120	20.926	12.598
Winding inductance	$L_{q\ u-v}$	[mH]	10.836	5.690	29.579	16.833
Electrical time constant	Te	[ms]	1.38	1.38	1.41	1.34
Thermal resistance	Rth	[°C/W]	1.52			
Mechanical time constant (a)	Tm	[ms]	0.57	0.57	0.56	0.59
Rotor inertia without holding brake	J	[kg·cm²]	0.414			
Rotor inertia with holding brake	J	[kg·cm²]	0.427			
Mass without holding brake	m	[kg]	1.33			
Mass with holding brake	m	[kg]	1.85			
Max. axial shaft load 3000 / 6000 rpm	SL_a	[N]	42 / 32			
Max. radial shaft load 3000 / 6000 rpm	SL_r	[N]	260 / 200			

Rated output with 250 x 250 x 12 mm aluminium heat sink flange coupling. Derating must be considered if the oil seal is applied - IP 54 standard shaft bushing.
(*) without brake.
(a) without brake and without feedback.

TORQUE/SPEED CHARTS

602B 20

Operative curves at 230 Vac — Cn — Cmax

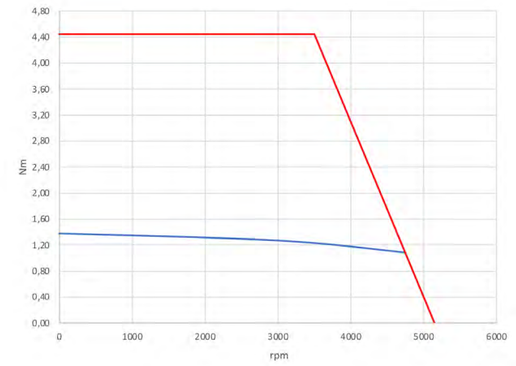


602B 21

Operative curves at 230 Vac — Cn — Cmax

602B 16

Operative curves at 400 Vac — Cn — Cmax



602B 15

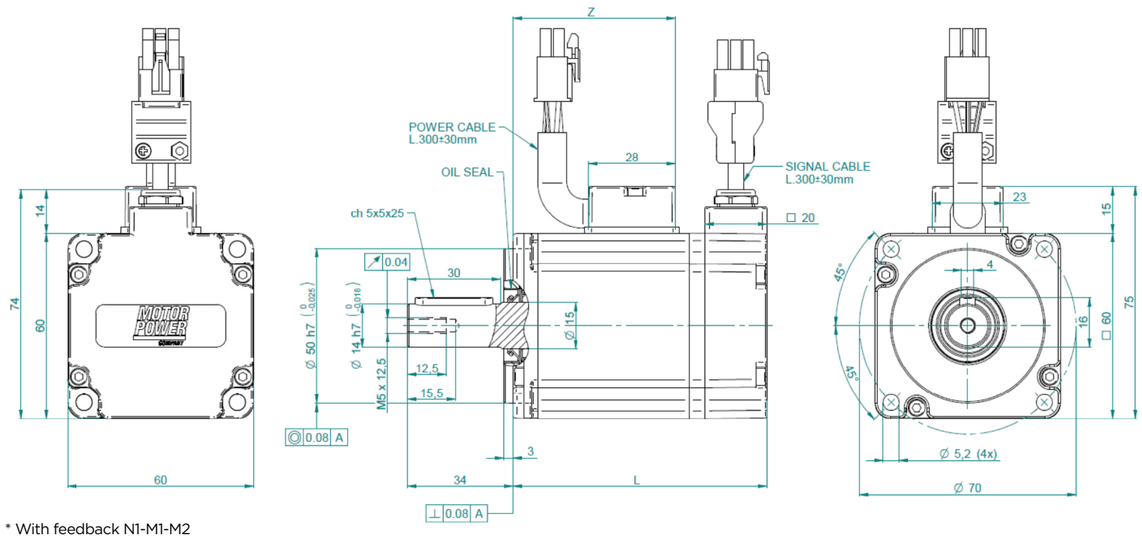
Operative curves at 400 Vac — Cn — Cmax

Operative temperature -20 ÷ +40 °C

60 EXTERNAL DIMENSIONS

DO connection

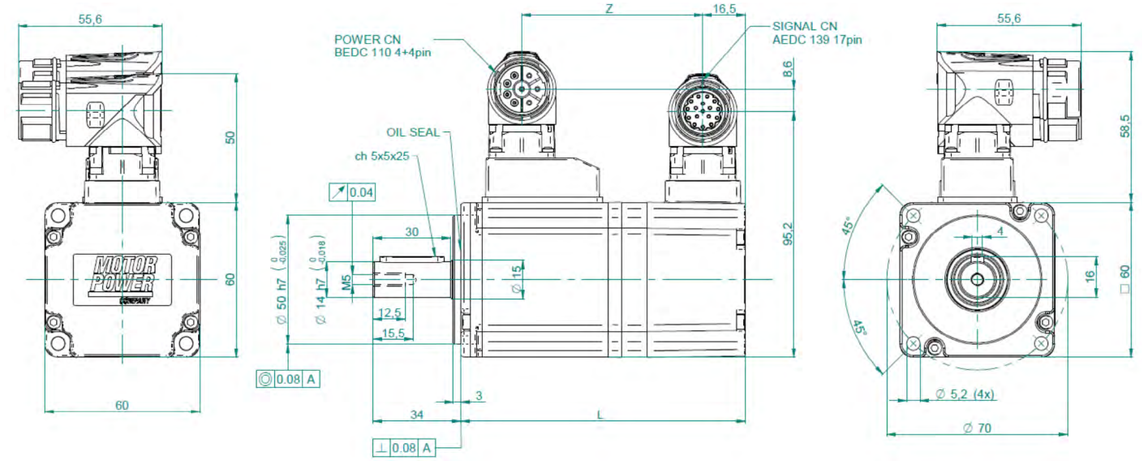
Model	L [mm]*	L with brake [mm]*	Z [mm]*	Z with brake [mm]*
2A	82.0	112.0	52.5	52.5
2B	105.0	135.0	75.5	75.5



* With feedback N1-M1-M2

G2/H2 connection

Model	L [mm]*	L with brake [mm]*	Z [mm]*	Z with brake [mm]*
2A	110	140	70	100
2B	133	163	70	100



* With feedback A1-M1-M2-R1

TETRA COMPACT 4

803A RATINGS and SPECIFICATION

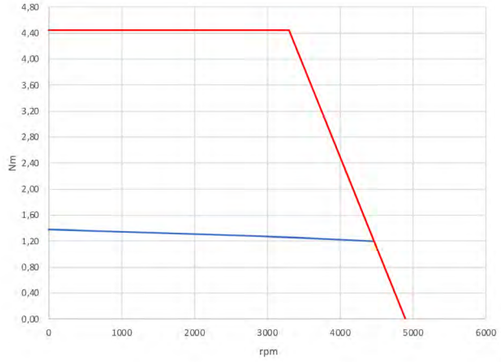
			230 Vac		400 Vac	
	TYPE OF WINDING		20	21	16	15
ELECTRICAL DATA						
Continuous stall torque (*)	M_0	[Nm]	1.38			
Peak torque	M_{Max}	[Nm]	4.44			
Nominal torque	M_n	[Nm]	1.27	1.12	1.27	1.12
Nominal power	P_n	[W]	400	700	400	700
Continuous stall current	I_0	[Arms]	1.90	2.62	1.15	1.52
Maximum current	I_{Max}	[Arms]	6.78	9.38	4.11	5.42
Nominal current	I_n	[Arms]	1.84	2.24	1.11	1.3
Nominal working speed	n_N	[rpm]	3000	6000	3000	6000
Maximum working speed	n_{Max}	[rpm]	4900	6800	5200	6800
Torque constant	K_t	[Nm/Arms]	0.728	0.526	1.2	0.91
Voltage constant	$K_{e\ u-v}$	[Vrms/krpm]	44.0	31.8	72.5	55
Winding resistance @ 20 °C	R_{u-v}	[Ohm]	6.125	3.080	15.840	9.45
Winding inductance	$L_{q\ u-v}$	[mH]	11.766	6.170	32.235	18.385
Electrical time constant	Te	[ms]	1.92	2.00	2.04	1.95
Thermal resistance	Rth	[°C/W]	1.97			
Mechanical time constant (a)	Tm	[ms]	0.93	0.89	0.88	0.92
Rotor inertia without holding brake	J	[kg·cm²]	0.79			
Rotor inertia with holding brake	J	[kg·cm²]	0.86			
Mass without holding brake	m	[kg]	1.83			
Mass with holding brake	m	[kg]	2.62			
Max. axial shaft load 3000 / 6000 rpm	SL_a	[N]	115 / 90			
Max. radial shaft load 3000 / 6000 rpm	SL_r	[N]	440 / 350			

Rated output with 250 x 250 x 12 mm aluminium heat sink flange coupling. Derating must be considered if the oil seal is applied - IP 54 standard shaft bushing.
(*) without brake.
(a) without brake and without feedback.

TORQUE/SPEED CHARTS

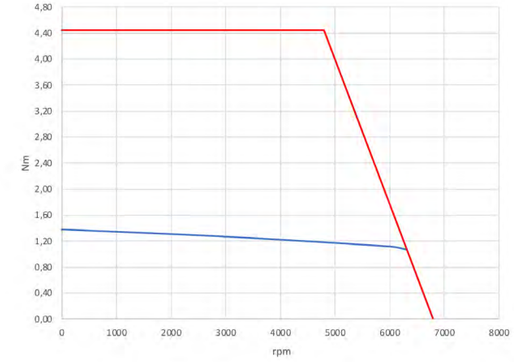
803A 20

Operative curves at 230 Vac — Cn — Cmax



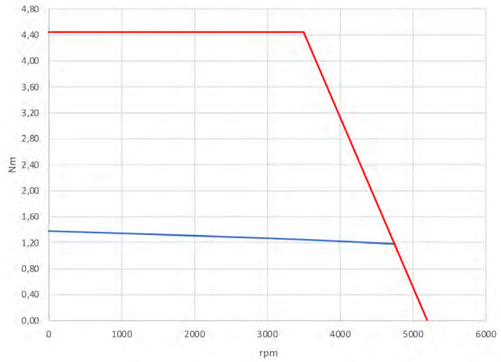
803A 21

Operative curves at 230 Vac — Cn — Cmax



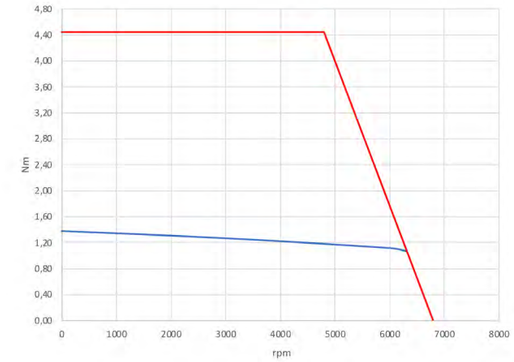
803A 16

Operative curves at 400 Vac — Cn — Cmax



803A 15

Operative curves at 400 Vac — Cn — Cmax



Operative temperature -20 ÷ +40 °C

Any specifications are subjected to change without notice.

80*3B* RATINGS and SPECIFICATION

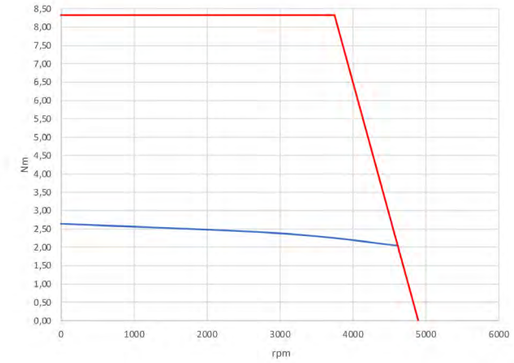
			230 Vac		400 Vac	
	TYPE OF WINDING		20	21	16	15
ELECTRICAL DATA						
Continuous stall torque (*)	M_0	[Nm]	2.64			
Peak torque	M_{Max}	[Nm]	8.33			
Nominal torque	M_n	[Nm]	2.38	1.75	2.38	1.75
Nominal power	P_n	[W]	750	1100	750	1100
Continuous stall current	I_0	[Arms]	3.63	5.02	2.20	2.90
Maximum current	I_{Max}	[Arms]	12.72	17.60	7.72	10.17
Nominal current	I_n	[Arms]	3.44	3.50	2.09	2.02
Nominal working speed	n_N	[rpm]	3000	6000	3000	6000
Maximum working speed	n_{Max}	[rpm]	4900	6800	5350	6800
Torque constant	K_t	[Nm/Arms]	0.728	0.526	1.2	0.91
Voltage constant	$K_{e\ u-v}$	[Vrms/krpm]	44.0	31.8	72.5	55
Winding resistance @ 20 °C	R_{u-v}	[Ohm]	2.351	1.216	6.319	3.794
Winding inductance	$L_{q\ u-v}$	[mH]	4.785	2.544	13.291	7.728
Electrical time constant	Te	[ms]	2.04	2.09	2.10	2.04
Thermal resistance	Rth	[°C/W]	1.35			
Mechanical time constant (a)	Tm	[ms]	0.61	0.61	0.61	0.63
Rotor inertia without holding brake	J	[kg·cm²]	1.42			
Rotor inertia with holding brake	J	[kg·cm²]	1.50			
Mass without holding brake	m	[kg]	2.76			
Mass with holding brake	m	[kg]	3.37			
Max. axial shaft load 3000 / 6000 rpm	SL_a	[N]	115 / 90			
Max. radial shaft load 3000 / 6000 rpm	SL_r	[N]	440 / 350			

Rated output with 250 x 250 x 12 mm aluminium heat sink flange coupling. Derating must be considered if the oil seal is applied - IP 54 standard shaft bushing.
(*) without brake.
(a) without brake and without feedback.

TORQUE/SPEED CHARTS

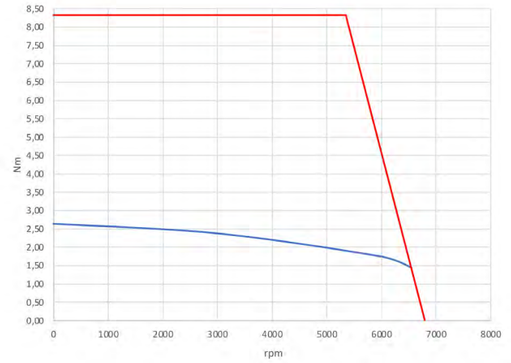
80*3B* 20

Operative curves at 230 Vac — Cn — Cmax



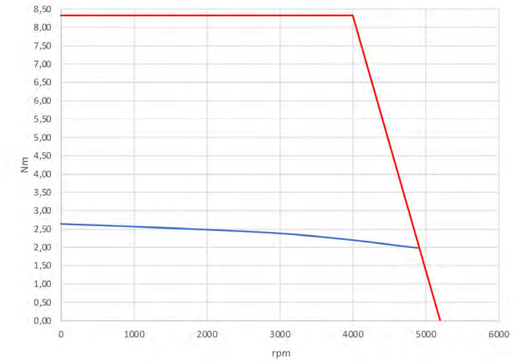
80*3B* 21

Operative curves at 230 Vac — Cn — Cmax



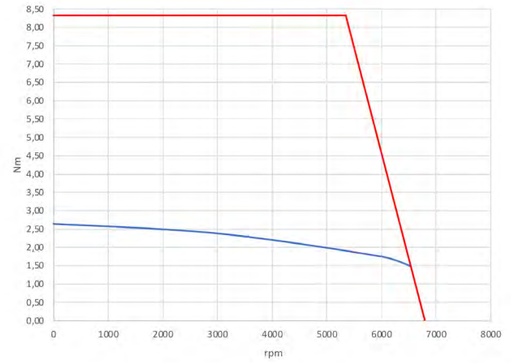
80*3B* 16

Operative curves at 400 Vac — Cn — Cmax



80*3B* 15

Operative curves at 400 Vac — Cn — Cmax



Operative temperature -20 ÷ +40 °C

803C RATINGS and SPECIFICATION

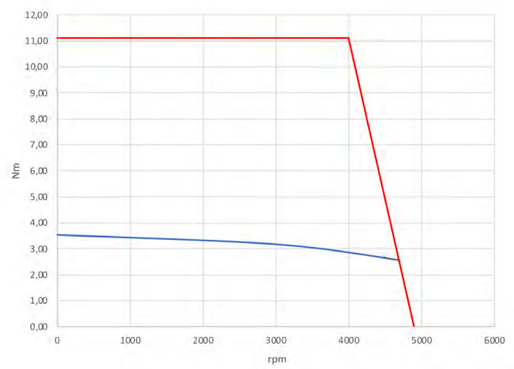
			230 Vac		400 Vac	
	TYPE OF WINDING		20	21	16	15
ELECTRICAL DATA						
Continuous stall torque (*)	M_0	[Nm]	3.54			
Peak torque	M_{Max}	[Nm]	11.1			
Nominal torque	M_n	[Nm]	3.18	2.10	3.18	2.10
Nominal power	P_n	[W]	1000	1300	1000	1300
Continuous stall current	I_0	[Arms]	4.86	6.73	2.95	3.89
Maximum current	I_{Max}	[Arms]	16.95	23.45	10.29	13.56
Nominal current	I_n	[Arms]	4.50	4.12	2.73	2.43
Nominal working speed	n_N	[rpm]	3000	6000	3000	6000
Maximum working speed	n_{Max}	[rpm]	4900	6800	5200	6800
Torque constant	K_t	[Nm/Arms]	0.728	0.526	1.2	0.91
Voltage constant	$K_{e\ u-v}$	[Vrms/krpm]	44.0	31.8	72.5	55
Winding resistance @ 20 °C	R_{u-v}	[Ohm]	1.369	0.726	3.648	2.189
Winding inductance	$L_{q\ u-v}$	[mH]	3.729	2.025	10.250	5.950
Electrical time constant	Te	[ms]	2.72	2.79	2.81	2.72
Thermal resistance	Rth	[°C/W]	1.25			
Mechanical time constant (a)	Tm	[ms]	0.52	0.53	0.51	0.53
Rotor inertia without holding brake	J	[kg·cm²]	2.03			
Rotor inertia with holding brake	J	[kg·cm²]	2.11			
Mass without holding brake	m	[kg]	3.25			
Mass with holding brake	m	[kg]	3.87			
Max. axial shaft load 3000 / 6000 rpm	SL_a	[N]	115 / 90			
Max. radial shaft load 3000 / 6000 rpm	SL_r	[N]	440 / 350			

Rated output with 250 x 250 x 12 mm aluminium heat sink flange coupling. Derating must be considered if the oil seal is applied - IP 54 standard shaft bushing.
(*) without brake.
(a) without brake and without feedback.

TORQUE/SPEED CHARTS

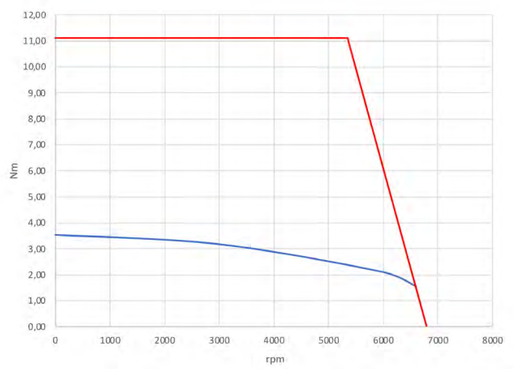
803C 20

Operative curves at 230 Vac — Cn — Cmax



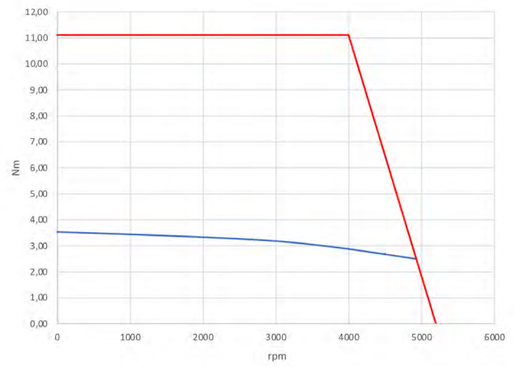
803C 21

Operative curves at 230 Vac — Cn — Cmax



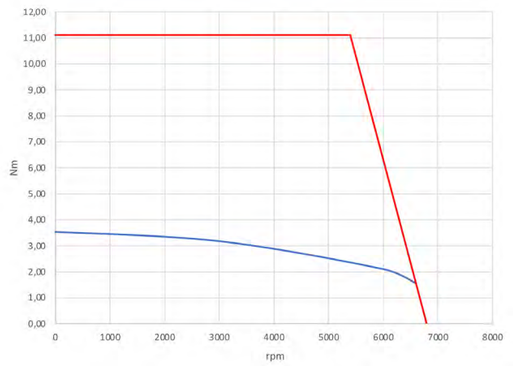
803C 16

Operative curves at 400 Vac — Cn — Cmax



803C 15

Operative curves at 400 Vac — Cn — Cmax

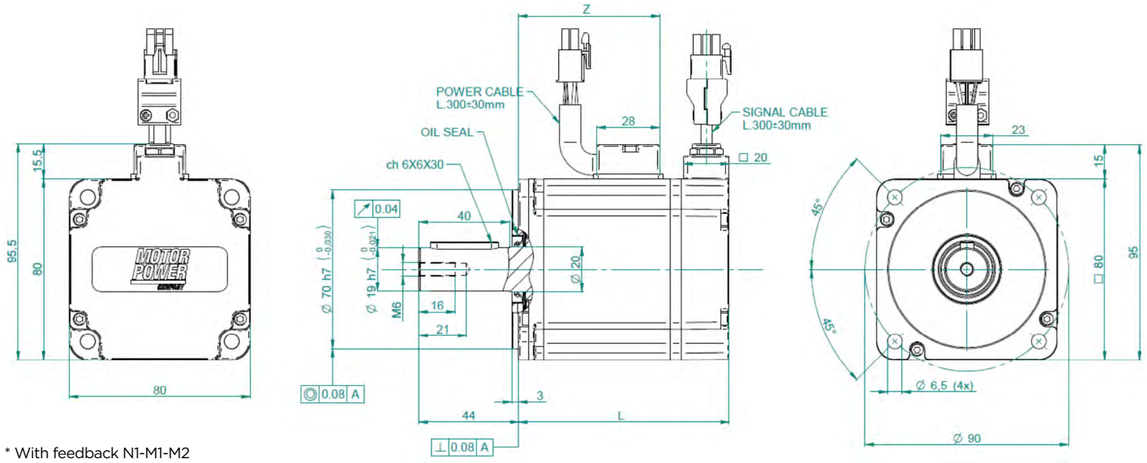


Operative temperature -20 ÷ +40 °C

80 EXTERNAL DIMENSIONS

DO connection

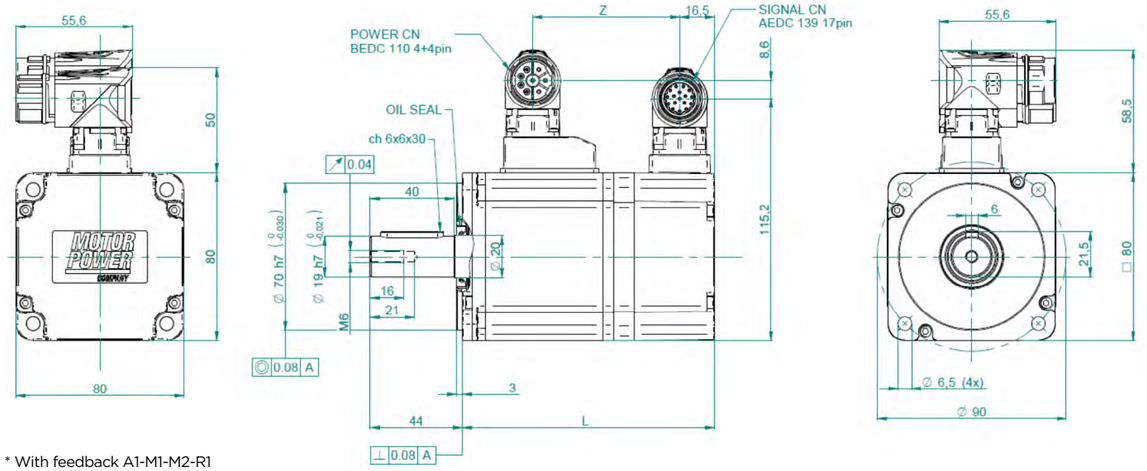
Model	L [mm]*	L with brake [mm]*	Z [mm]*	Z with brake [mm]*
3A	93.0	125.0	62.5	62.5
3B	115.0	147.0	84.5	84.5
3C	127.0	159.0	96.0	96.0



* With feedback N1-M1-M2

G2/H2 connection

Model	L [mm]*	L with brake [mm]*	Z [mm]*	Z with brake [mm]*
3A	120	152	70	102
3B	142	174	70	102
3C	154	186	70	102



* With feedback A1-M1-M2-R1

TETRA COMPACT 4

100 *4A* RATINGS and SPECIFICATION

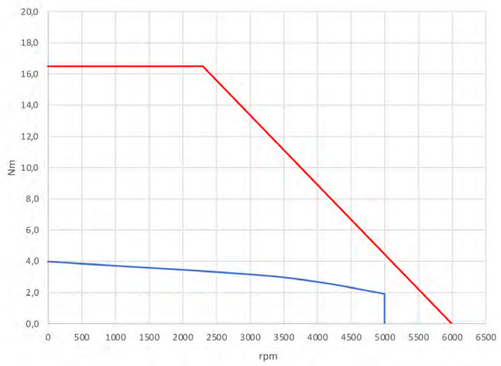
			230 Vac		400 Vac	
	TYPE OF WINDING		D1	15	D6	17
ELECTRICAL DATA						
Continuous stall torque (*)	M_0	[Nm]	4.0			
Peak torque	M_{Max}	[Nm]	16.5			
Nominal torque	M_n	[Nm]	3.18			
Nominal power	P_n	[W]	1000			
Continuous stall current	I_0	[Arms]	7.33	4.40	6.36	2.50
Maximum current	I_{Max}	[Arms]	35.56	21.34	30.89	12.14
Nominal current	I_n	[Arms]	6.26	3.76	5.44	2.14
Nominal working speed	n_N	[rpm]	3000			
Maximum working speed	n_{Max}	[rpm]	6000	3900	6000	3900
Torque constant	K_t	[Nm/Arms]	0.55	0.91	0.63	1.60
Voltage constant	$K_{e\ u-v}$	[Vrms/krpm]	33.0	55.0	38.0	96.7
Winding resistance @ 20 °C	R_{u-v}	[Ohm]	0.64	1.82	0.80	5.12
Winding inductance	$L_{q\ u-v}$	[mH]	4.85	13.50	6.30	41.30
Electrical time constant	Te	[ms]	7.6	7.4	7.8	8.1
Thermal resistance	Rth	[°C/W]	1.23			
Mechanical time constant (a)	Tm	[ms]	0.54	0.56	0.51	0.51
Rotor inertia without holding brake	J	[kg·cm²]	2.53			
Rotor inertia with holding brake	J	[kg·cm²]	2.65			
Mass without holding brake	m	[kg]	5.55			
Mass with holding brake	m	[kg]	6.60			
Max. axial shaft load 3000 / 5000 rpm	SL_a	[N]	245 / 220			
Max. radial shaft load 3000 / 5000 rpm	SL_r	[N]	690 / 580			

Rated output with 300 x 300 x 20 mm aluminium heat sink flange. Derating must be considered if the oil seal is applied - IP 54 standard shaft bushing.
(*) without brake.
(a) without brake and without feedback.

TORQUE/SPEED CHARTS

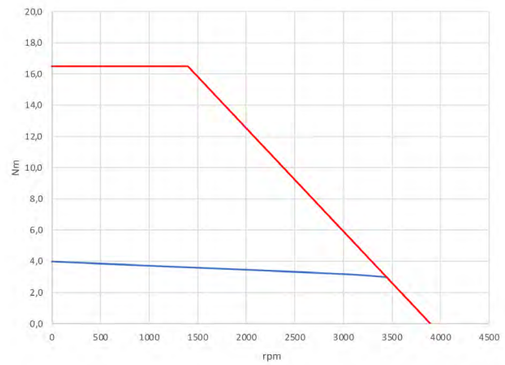
1004A D1

Operative curves at 230 Vac — Cn — Cmax



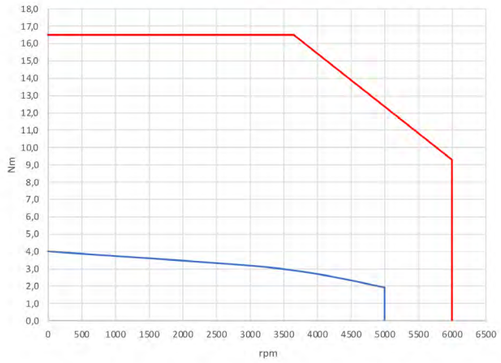
1004A 15

Operative curves at 230 Vac — Cn — Cmax



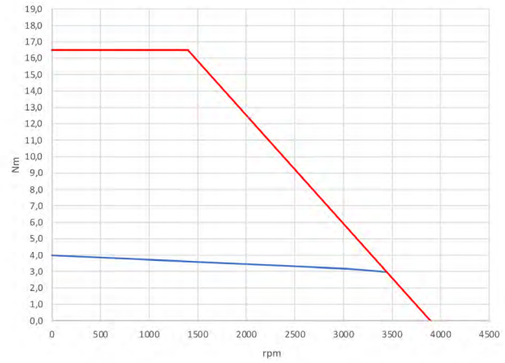
1004A D6

Operative curves at 400 Vac — Cn — Cmax



1004A 17

Operative curves at 400 Vac — Cn — Cmax



Operative temperature -20 ÷ +40 °C

100 *4B* RATINGS and SPECIFICATION

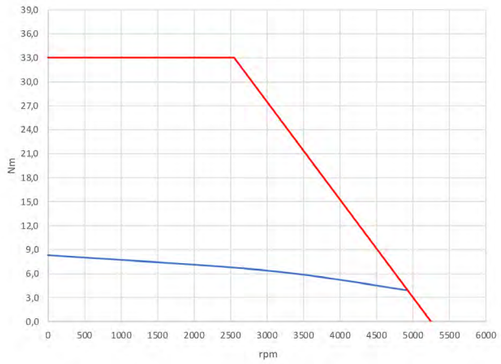
			230 Vac		400 Vac	
	TYPE OF WINDING		D5	15	H3	17
ELECTRICAL DATA						
Continuous stall torque (*)	M_0	[Nm]	8.3			
Peak torque	M_{Max}	[Nm]	33.0			
Nominal torque	M_n	[Nm]	6.37			
Nominal power	P_n	[W]	2000			
Continuous stall current	I_0	[Arms]	12.87	9.12	6.97	5.19
Maximum current	I_{Max}	[Arms]	60.19	42.68	32.60	24.27
Nominal current	I_n	[Arms]	10.62	7.53	5.75	4.28
Nominal working speed	n_N	[rpm]	3000			
Maximum working speed	n_{Max}	[rpm]	5250	3900	5000	3900
Torque constant	K_t	[Nm/Arms]	0.65	0.91	1.19	1.60
Voltage constant	$K_{e\ u-v}$	[Vrms/krpm]	39.0	55.0	72.0	96.7
Winding resistance @ 20 °C	R_{u-v}	[Ohm]	0.32	0.64	1.04	2.01
Winding inductance	$L_{q\ u-v}$	[mH]	2.45	4.87	8.35	15.14
Electrical time constant	Te	[ms]	7.5	7.6	8.0	7.5
Thermal resistance	Rth	[°C/W]	0.78			
Mechanical time constant (a)	Tm	[ms]	0.36	0.35	0.34	0.36
Rotor inertia without holding brake	J	[kg·cm²]	4.61			
Rotor inertia with holding brake	J	[kg·cm²]	4.73			
Mass without holding brake	m	[kg]	8.09			
Mass with holding brake	m	[kg]	9.14			
Max. axial shaft load 3000 / 5000 rpm	SL_a	[N]	245 / 220			
Max. radial shaft load 3000 / 5000 rpm	SL_r	[N]	690 / 580			

Rated output with 300 x 300 x 20 mm aluminium heat sink flange. Derating must be considered if the oil seal is applied - IP 54 standard shaft bushing.
(*) without brake.
(a) without brake and without feedback.

TORQUE/SPEED CHARTS

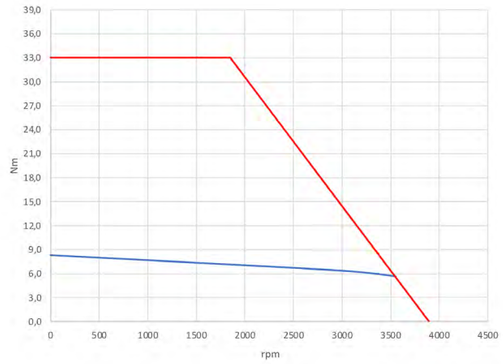
100*4B* D5

Operative curves at 230 Vac — Cn — Cmax



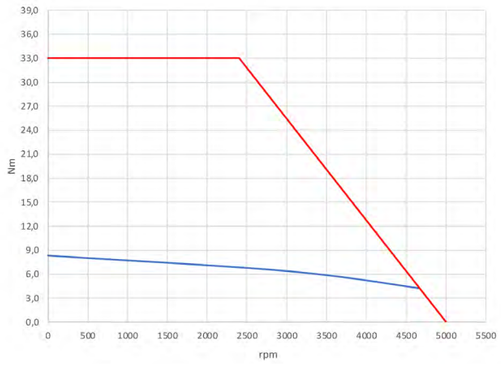
100*4B* 15

Operative curves at 230 Vac — Cn — Cmax



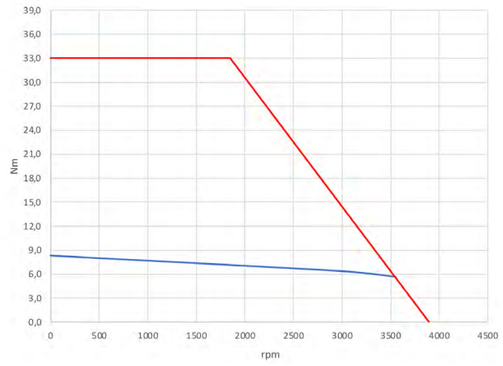
100*4B* H3

Operative curves at 400 Vac — Cn — Cmax



100*4B* 17

Operative curves at 400 Vac — Cn — Cmax

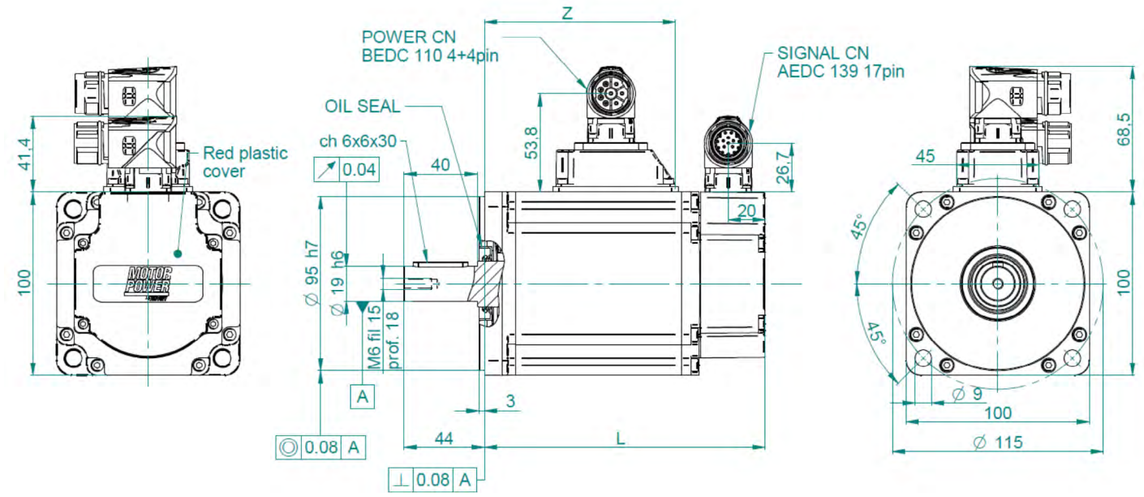


Operative temperature -20 ÷ +40 °C

TC4

100 EXTERNAL DIMENSIONS

Model	L [mm]*	L with brake [mm]*	Z [mm]*	Z with brake [mm]*
4A	173.0	203.0	103.5	103.5
4B	218.0	248.0	149.0	149.0



* With feedback A1-M1-M2-R1 and connection G2-H2

TETRA
COMPACT 4

130

TC4

130 *5F* RATINGS and SPECIFICATION

			230/400 Vac	
	TYPE OF WINDING		F1	
ELECTRICAL DATA				
Continuous stall torque (*)	M_0	[Nm]	4.77	
Peak torque	M_{Max}	[Nm]	14.3	
Nominal torque	M_n	[Nm]	3.18	
Nominal power	P_n	[W]	1000	
Continuous stall current	I_0	[Arms]	5.77	
Maximum current	I_{Max}	[Arms]	19.2	
Nominal current	I_n	[Arms]	4.14	
Nominal working speed	n_N	[rpm]	3000	
Maximum working speed	n_{Max}	[rpm]	4000	
Torque constant	K_t	[Nm/Arms]	0.83	
Voltage constant	$K_{e\ u-v}$	[Vrms/krpm]	50	
Winding resistance @ 20 °C	R_{u-v}	[Ohm]	0.71	
Winding inductance	$L_{q\ u-v}$	[mH]	7.84	
Electrical time constant	Te	[ms]	11.1	
Thermal resistance	Rth	[°C/W]	-	
Mechanical time constant (a)	Tm	[ms]	0.69	
Rotor inertia without holding brake	J	[kg·cm²]	6.70	
Rotor inertia with holding brake	J	[kg·cm²]	7.95	
Mass without holding brake	m	[kg]	7.35	
Mass with holding brake	m	[kg]	8.87	
Max. axial shaft load 2000 rpm	SL_a	[N]	230	
Max. radial shaft load 2000 rpm	SL_r	[N]	1200	

Rated output with 400 x 400 x 20 mm aluminium heat sink flange. Derating must be considered if the oil seal is applied - IP 54 standard shaft bushing.
(*) without brake. (a) without brake and without feedback.

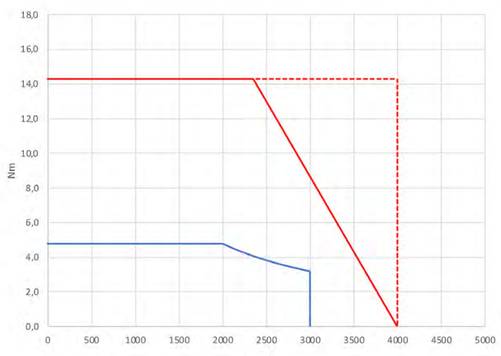
TORQUE/SPEED CHARTS

Operative temperature -20 ÷ +40 °C

130*5F* F1

Operative curves at 230/400 Vac

Cn — Cmax @ 230Vac - - - Cmax @ 400 Vac



TC4

130 *5G* RATINGS and SPECIFICATION

			230/400 Vac	
	TYPE OF WINDING		H1	
ELECTRICAL DATA				
Continuous stall torque (*)	M_0	[Nm]	7.16	
Peak torque	M_{Max}	[Nm]	21.48	
Nominal torque	M_n	[Nm]	4.78	
Nominal power	P_n	[W]	1500	
Continuous stall current	I_0	[Arms]	6.18	
Maximum current	I_{Max}	[Arms]	20.6	
Nominal current	I_n	[Arms]	4.44	
Nominal working speed	n_N	[rpm]	3000	
Maximum working speed	n_{Max}	[rpm]	4000	
Torque constant	K_t	[Nm/Arms]	1.16	
Voltage constant	$K_{e\ u-v}$	[Vrms/krpm]	70	
Winding resistance @ 20 °C	R_{u-v}	[Ohm]	0.64	
Winding inductance	$L_{q\ u-v}$	[mH]	7.2	
Electrical time constant	Te	[ms]	11.25	
Thermal resistance	Rth	[°C/W]	-	
Mechanical time constant (a)	Tm	[ms]	0.46	
Rotor inertia without holding brake	J	[kg·cm²]	9.72	
Rotor inertia with holding brake	J	[kg·cm²]	10.98	
Mass without holding brake	m	[kg]	8.80	
Mass with holding brake	m	[kg]	10.32	
Max. axial shaft load 2000 rpm	SL_a	[N]	230	
Max. radial shaft load 2000 rpm	SL_r	[N]	1200	

Rated output with 400 x 400 x 20 mm aluminium heat sink flange. Derating must be considered if the oil seal is applied - IP 54 standard shaft bushing.
(*) without brake. (a) without brake and without feedback.

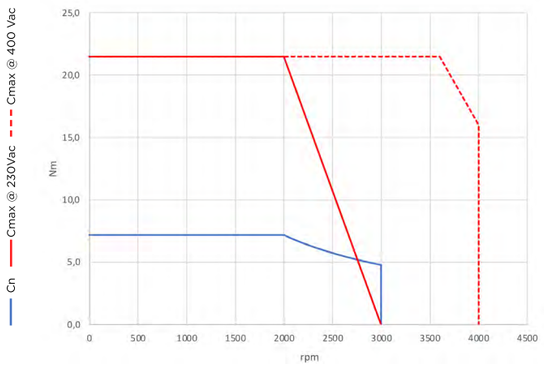
TORQUE/SPEED CHARTS

Operative temperature -20 ÷ +40 °C

130*5G* H1

Operative curves at 230/400 Vac

Cn — Cmax @ 230Vac - - - Cmax @ 400 Vac



130 *5H* RATINGS and SPECIFICATION

			230/400 Vac	
	TYPE OF WINDING		22	
ELECTRICAL DATA				
Continuous stall torque (*)	M_0	[Nm]		9.55
Peak torque	M_{Max}	[Nm]		28.65
Nominal torque	M_n	[Nm]		6.37
Nominal power	P_n	[W]		2000
Continuous stall current	I_0	[Arms]	9.95	
Maximum current	I_{Max}	[Arms]	33.2	
Nominal current	I_n	[Arms]	7.14	
Nominal working speed	n_N	[rpm]		3000
Maximum working speed	n_{Max}	[rpm]	4000	
Torque constant	K_t	[Nm/Arms]	0.96	
Voltage constant	$K_{e\ u-v}$	[Vrms/krpm]	58	
Winding resistance @ 20 °C	R_{u-v}	[Ohm]	0.46	
Winding inductance	$L_{q\ u-v}$	[mH]	5.8	
Electrical time constant	Te	[ms]	12.7	
Thermal resistance	Rth	[°C/W]		-
Mechanical time constant (a)	Tm	[ms]	0.63	
Rotor inertia without holding brake	J	[kg·cm²]		12.77
Rotor inertia with holding brake	J	[kg·cm²]		14.04
Mass without holding brake	m	[kg]		10.54
Mass with holding brake	m	[kg]		12.68
Max. axial shaft load 2000 rpm	SL_a	[N]		230
Max. radial shaft load 2000 rpm	SL_r	[N]		1200

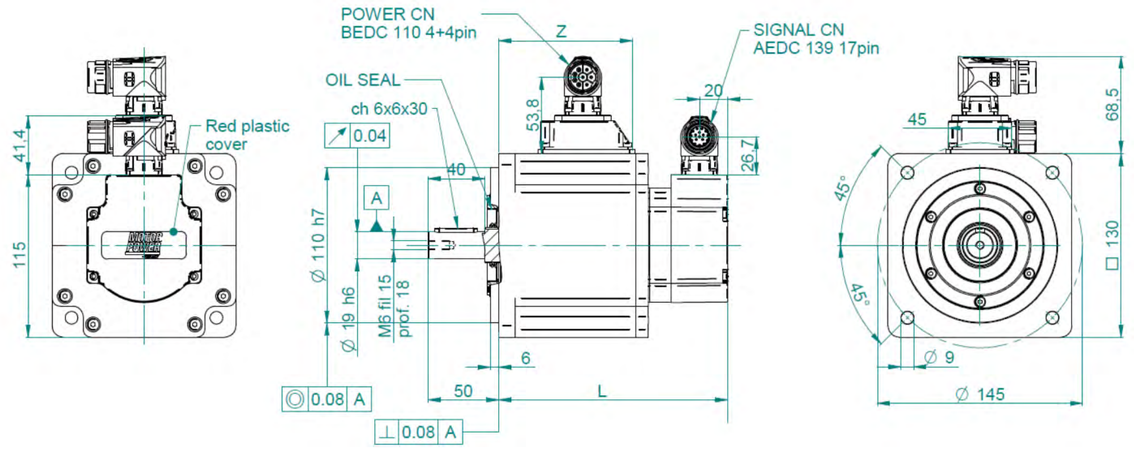
Rated output with 400 x 400 x 20 mm aluminium heat sink flange. Derating must be considered if the oil seal is applied - IP 54 standard shaft bushing.
(*) without brake. (a) without brake and without feedback.

TORQUE/SPEED CHARTS

Operative temperature -20 ÷ +40 °C

EXTERNAL DIMENSIONS 130

Model	L [mm]*	L with brake [mm]*	Z [mm]*	Z with brake [mm]*
5F	162.0	191.0	94.5	94.5
5G	178.0	207.0	110.5	110.5
5H	202.0	231.0	134.5	134.5



* With feedback A1-M1-M2-R1 and connection G2-H2

NOTE

TETRA
COMPACT 4

150

150 *6A* RATINGS and SPECIFICATION

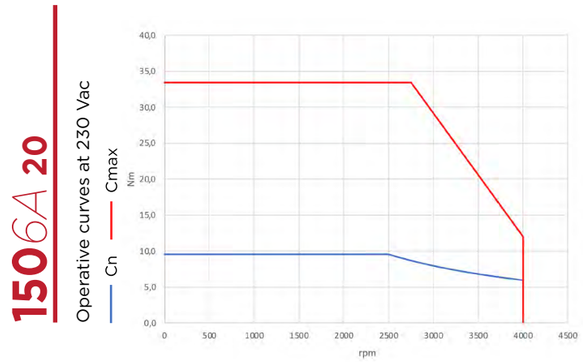
			230 Vac		400 Vac	
	TYPE OF WINDING		20		70	
ELECTRICAL DATA						
Continuous stall torque (*)	M_0	[Nm]		9.55		
Peak torque	M_{Max}	[Nm]		33.425		
Nominal torque	M_n	[Nm]		7.96		
Nominal power	P_n	[W]		2500		
Continuous stall current	I_0	[Arms]	13.12		7.70	
Maximum current	I_{Max}	[Arms]	51.03		29.94	
Nominal current	I_n	[Arms]	11.76		6.90	
Nominal working speed	n_N	[rpm]		3000		
Maximum working speed	n_{Max}	[rpm]	4000		4000	
Torque constant	K_t	[Nm/Arms]	0.73		1.24	
Voltage constant	$K_{e\ u-v}$	[Vrms/krpm]	44.0		75.0	
Winding resistance @ 20 °C	R_{u-v}	[Ohm]	0.18		0.54	
Winding inductance	$L_{q\ u-v}$	[mH]	2.54		7.35	
Electrical time constant	Te	[ms]	13.9		13.5	
Thermal resistance	Rth	[°C/W]		1.33		
Mechanical time constant (a)	Tm	[ms]	0.52		0.54	
Rotor inertia without holding brake	J	[kg·cm²]		15.18		
Rotor inertia with holding brake	J	[kg·cm²]		16.55		
Mass without holding brake	m	[kg]		13.68		
Mass with holding brake	m	[kg]		17.20		
Max. axial shaft load 2500 rpm	SL_a	[N]		450		
Max. radial shaft load 2500 rpm	SL_r	[N]		1850		

Rated output with 475 x 475 x 20 mm aluminium heat sink flange coupling. Derating must be considered if the oil seal is applied - IP 54 standard shaft bushing.
(*) without brake. (a) without brake and without feedback.

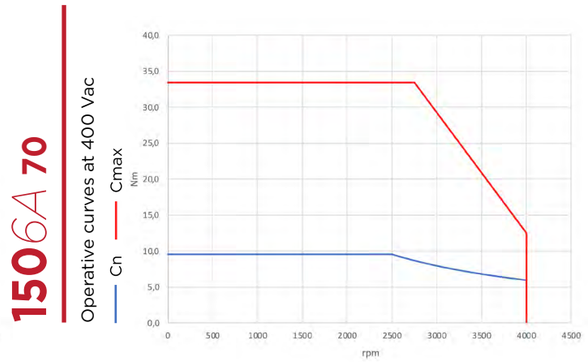
TORQUE/SPEED CHARTS

Operative temperature -20 ÷ +40 °C

150*6A* 20



150*6A* 70



150 *6B* RATINGS and SPECIFICATION

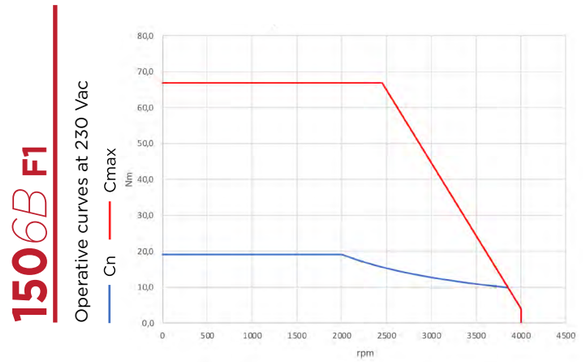
			230 Vac		400 Vac	
	TYPE OF WINDING		F1		G1	
ELECTRICAL DATA						
Continuous stall torque (*)	M_0	[Nm]		19.10		
Peak torque	M_{Max}	[Nm]		66.85		
Nominal torque	M_n	[Nm]		12.73		
Nominal power	P_n	[W]		4000		
Continuous stall current	I_0	[Arms]	23.10		13.12	
Maximum current	I_{Max}	[Arms]	89.82		51.03	
Nominal current	I_n	[Arms]	16.56		9.41	
Nominal working speed	n_N	[rpm]		3000		
Maximum working speed	n_{Max}	[rpm]	4000		4000	
Torque constant	K_t	[Nm/Arms]	0.83		1.46	
Voltage constant	$K_{e\ u-v}$	[Vrms/krpm]	50.0		88.0	
Winding resistance @ 20 °C	R_{u-v}	[Ohm]	0.086		0.282	
Winding inductance	$L_{q\ u-v}$	[mH]	1.60		5.090	
Electrical time constant	Te	[ms]	18.6		18.0	
Thermal resistance	Rth	[°C/W]		0.90		
Mechanical time constant (a)	Tm	[ms]	0.35		0.37	
Rotor inertia without holding brake	J	[kg·cm²]		27.68		
Rotor inertia with holding brake	J	[kg·cm²]		28.76		
Mass without holding brake	m	[kg]		18.00		
Mass with holding brake	m	[kg]		22.40		
Max. axial shaft load 2500 rpm	SL_a	[N]		450		
Max. radial shaft load 2500 rpm	SL_r	[N]		1850		

Rated output with 475 x 475 x 20 mm aluminium heat sink flange coupling. Derating must be considered if the oil seal is applied - IP 54 standard shaft bushing.
(*) without brake. (a) without brake and without feedback.

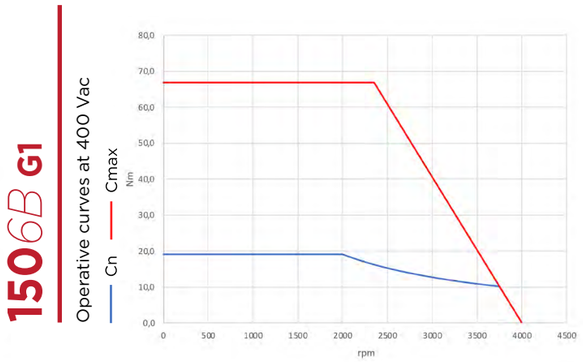
TORQUE/SPEED CHARTS

Operative temperature -20 ÷ +40 °C

150*6B* F1



150*6B* G1



150 6C RATINGS and SPECIFICATION

			230 Vac		400 Vac	
	TYPE OF WINDING		F1		G1	
ELECTRICAL DATA						
Continuous stall torque (*)	M_0	[Nm]		28.65		
Peak torque	M_{Max}	[Nm]		100.275		
Nominal torque	M_n	[Nm]		19.1		
Nominal power	P_n	[W]		6000		
Continuous stall current	I_0	[Arms]	34.64		19.68	
Maximum current	I_{Max}	[Arms]	134.72		76.55	
Nominal current	I_n	[Arms]	24.84		14.11	
Nominal working speed	n_N	[rpm]		3000		
Maximum working speed	n_{Max}	[rpm]	4000		4000	
Torque constant	K_t	[Nm/Arms]	0.83		1.46	
Voltage constant	$K_{e\ u-v}$	[Vrms/krpm]	50.0		88.0	
Winding resistance @ 20 °C	R_{u-v}	[Ohm]	0.057		0.171	
Winding inductance	$L_{q\ u-v}$	[mH]	1.10		3.320	
Electrical time constant	Te	[ms]	19.4		19.4	
Thermal resistance	Rth	[°C/W]		0.61		
Mechanical time constant (a)	Tm	[ms]	0.33		0.33	
Rotor inertia without holding brake	J	[kg·cm²]		40.17		
Rotor inertia with holding brake	J	[kg·cm²]		41.25		
Mass without holding brake	m	[kg]		23.26		
Mass with holding brake	m	[kg]		27.67		
Max. axial shaft load 2500 rpm	SL_a	[N]		450		
Max. radial shaft load 2500 rpm	SL_r	[N]		1850		

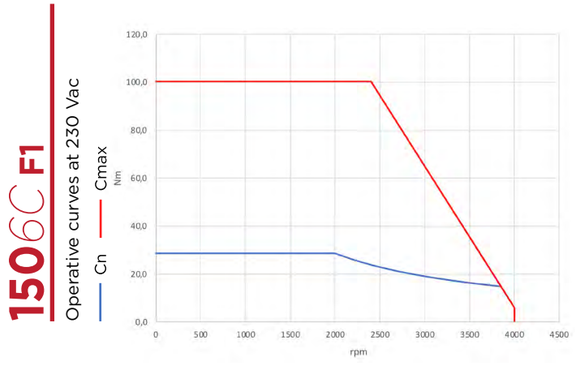
Rated output with 475 x 475 x 20 mm aluminium heat sink flange coupling. Derating must be considered if the oil seal is applied - IP 54 standard shaft bushing.
(*) without brake. (a) without brake and without feedback.

TORQUE/SPEED CHARTS

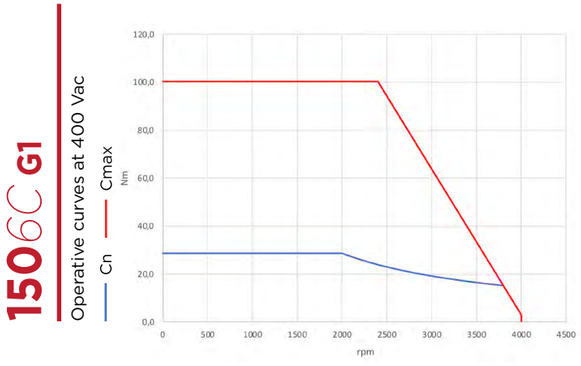
Operative temperature -20 ÷ +40 °C

Any specifications are subjected to change without notice.

150 6C F1 Operative curves at 230 Vac

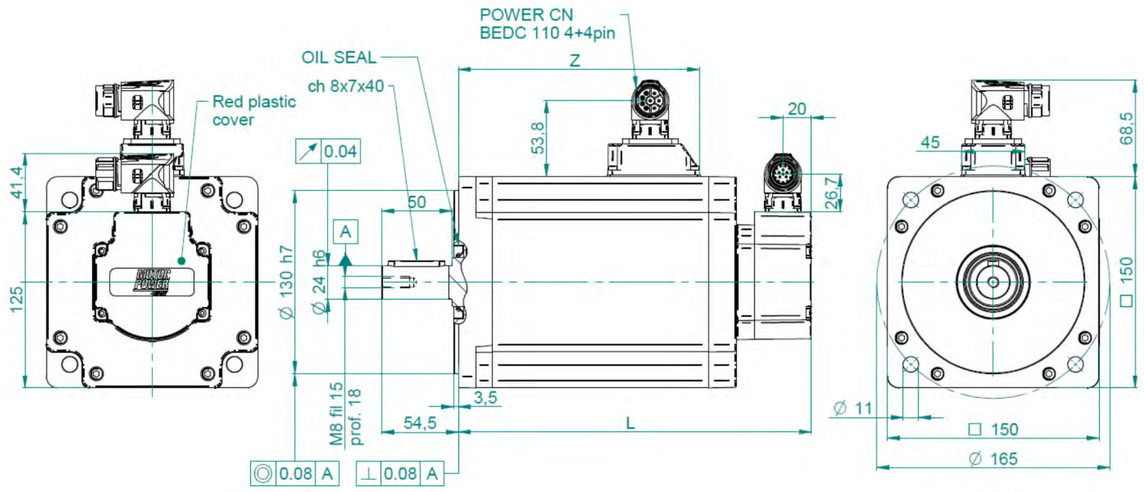


150 6C G1 Operative curves at 400 Vac



EXTERNAL DIMENSIONS 150

Model	L [mm]*	L with brake [mm]*	Z [mm]*	Z with brake [mm]*
6A	205.0	250.0	126.5	126.5
6B	250.0	295.0	171.0	171.0
6C	295.0	340.0	216.5	216.5



* With feedback A1-M1-M2-R1 and connection G2-H2

TETRA
COMPACT 4

180

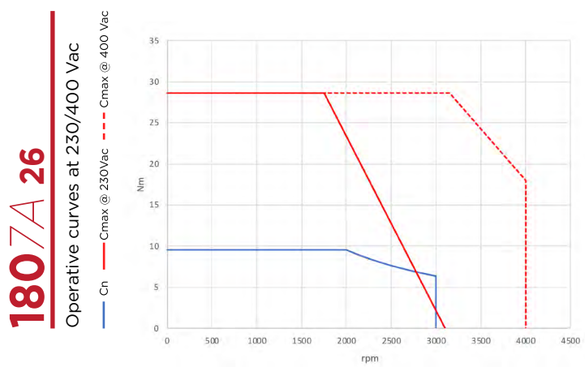
180 *7A* RATINGS and SPECIFICATION

			230/400 Vac	
	TYPE OF WINDING		26	
ELECTRICAL DATA				
Continuous stall torque (*)	M_0	[Nm]	9.55	
Peak torque	M_{Max}	[Nm]	28.65	
Nominal torque	M_n	[Nm]	6.37	
Nominal power	P_n	[W]	2000	
Continuous stall current	I_0	[Arms]	8.75	
Maximum current	I_{Max}	[Arms]	35.5	
Nominal current	I_n	[Arms]	6.27	
Nominal working speed	n_N	[rpm]	3000	
Maximum working speed	n_{Max}	[rpm]	4000	
Torque constant	K_t	[Nm/Arms]	1.09	
Voltage constant	$K_{e\ u-v}$	[Vrms/krpm]	66	
Winding resistance @ 20 °C	R_{u-v}	[Ohm]	0.590	
Winding inductance	$L_{q\ u-v}$	[mH]	6.7	
Electrical time constant	Te	[ms]	11.4	
Thermal resistance	Rth	[°C/W]	-	
Mechanical time constant (a)	Tm	[ms]	1.25	
Rotor inertia without holding brake	J	[kg·cm²]	25.22	
Rotor inertia with holding brake	J	[kg·cm²]	30.39	
Mass without holding brake	m	[kg]	14.64	
Mass with holding brake	m	[kg]	19.64	
Max. axial shaft load 3000 / 6000 rpm	SL_a	[N]	500	
Max. radial shaft load 3000 / 6000 rpm	SL_r	[N]	2300	

Rated output with 550 x 550 x 20 mm aluminium heat sink flange. Derating must be considered if the oil seal is applied - IP 54 standard shaft bushing.
(*) without brake. (a) without brake and without feedback.

TORQUE/SPEED CHARTS

Operative temperature -20 ÷ +40 °C



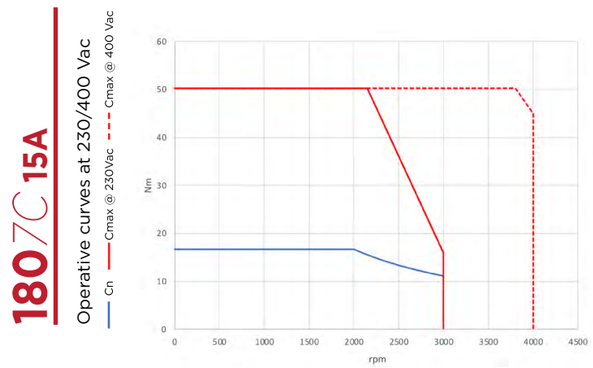
180 *7C* RATINGS and SPECIFICATION

			230/400 Vac	
	TYPE OF WINDING		15A	
ELECTRICAL DATA				
Continuous stall torque (*)	M_0	[Nm]	16.7	
Peak torque	M_{Max}	[Nm]	50.3	
Nominal torque	M_n	[Nm]	11.14	
Nominal power	P_n	[W]	3500	
Continuous stall current	I_0	[Arms]	16.83	
Maximum current	I_{Max}	[Arms]	61.0	
Nominal current	I_n	[Arms]	12.07	
Nominal working speed	n_N	[rpm]	3000	
Maximum working speed	n_{Max}	[rpm]	4000	
Torque constant	K_t	[Nm/Arms]	0.99	
Voltage constant	$K_{e\ u-v}$	[Vrms/krpm]	60	
Winding resistance @ 20 °C	R_{u-v}	[Ohm]	0.136	
Winding inductance	$L_{q\ u-v}$	[mH]	2.48	
Electrical time constant	Te	[ms]	18.2	
Thermal resistance	Rth	[°C/W]	-	
Mechanical time constant (a)	Tm	[ms]	TBD	TBD
Rotor inertia without holding brake	J	[kg·cm²]	TBD	
Rotor inertia with holding brake	J	[kg·cm²]	TBD	
Mass without holding brake	m	[kg]	TBD	
Mass with holding brake	m	[kg]	TBD	
Max. axial shaft load 3000 / 6000 rpm	SL_a	[N]	500	
Max. radial shaft load 3000 / 6000 rpm	SL_r	[N]	2300	

Rated output with 550 x 550 x 20 mm aluminium heat sink flange. Derating must be considered if the oil seal is applied - IP 54 standard shaft bushing.
(*) without brake. (a) without brake and without feedback.

TORQUE/SPEED CHARTS

Operative temperature -20 ÷ +40 °C



TC4

180 *7D* RATINGS and SPECIFICATION

			230/400 Vac	
	TYPE OF WINDING		G1	
ELECTRICAL DATA				
Continuous stall torque (*)	M_0	[Nm]	28.65	
Peak torque	M_{Max}	[Nm]	71.62	
Nominal torque	M_n	[Nm]	28.65	
Nominal power	P_n	[W]	4500	
Continuous stall current	I_0	[Arms]	19.68	
Maximum current	I_{Max}	[Arms]	61.0	
Nominal current	I_n	[Arms]	22.8	
Nominal working speed	n_N	[rpm]	1500	
Maximum working speed	n_{Max}	[rpm]	4000	
Torque constant	K_t	[Nm/Arms]	1.46	
Voltage constant	$K_{e\ u-v}$	[Vrms/krpm]	88	
Winding resistance @ 20 °C	R_{u-v}	[Ohm]	0.169	
Winding inductance	$L_{q\ u-v}$	[mH]	3.46	
Electrical time constant	Te	[ms]	20.4	
Thermal resistance	Rth	[°C/W]	-	
Mechanical time constant (a)	Tm	[ms]	TBD	TBD
Rotor inertia without holding brake	J	[kg·cm²]	TBD	
Rotor inertia with holding brake	J	[kg·cm²]	TBD	
Mass without holding brake	m	[kg]	TBD	
Mass with holding brake	m	[kg]	TBD	
Max. axial shaft load 3000 / 6000 rpm	SL_a	[N]	500	
Max. radial shaft load 3000 / 6000 rpm	SL_r	[N]	2300	

Rated output with 550 x 550 x 20 mm aluminium heat sink flange. Derating must be considered if the oil seal is applied - IP 54 standard shaft bushing.
(*) without brake. (a) without brake and without feedback.

TORQUE/SPEED CHARTS

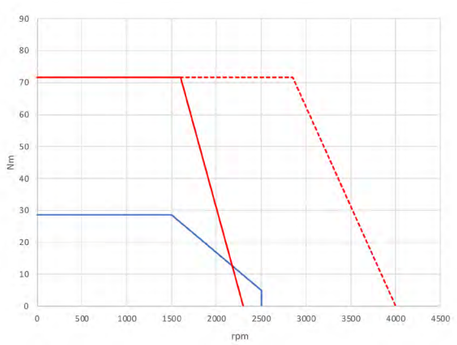
Operative temperature -20 ÷ +40 °C

Any specifications are subjected to change without notice.

180 *7D* G1

Operative curves at 230/400 Vac

Cn — Cmax @ 230Vac - - - Cmax @ 400 Vac



TC4

180 *7E* RATINGS and SPECIFICATION

			230/400 Vac	
	TYPE OF WINDING		G5	
ELECTRICAL DATA				
Continuous stall torque (*)	M_0	[Nm]	35	
Peak torque	M_{Max}	[Nm]	87.53	
Nominal torque	M_n	[Nm]	35	
Nominal power	P_n	[W]	5500	
Continuous stall current	I_0	[Arms]	25.05	
Maximum current	I_{Max}	[Arms]	74.2	
Nominal current	I_n	[Arms]	28.8	
Nominal working speed	n_N	[rpm]	1500	
Maximum working speed	n_{Max}	[rpm]	4000	
Torque constant	K_t	[Nm/Arms]	1.4	
Voltage constant	$K_{e\ u-v}$	[Vrms/krpm]	84.5	
Winding resistance @ 20 °C	R_{u-v}	[Ohm]	0.093	
Winding inductance	$L_{q\ u-v}$	[mH]	2.08	
Electrical time constant	Te	[ms]	22.4	
Thermal resistance	Rth	[°C/W]	-	
Mechanical time constant (a)	Tm	[ms]	TBD	TBD
Rotor inertia without holding brake	J	[kg·cm²]	TBD	
Rotor inertia with holding brake	J	[kg·cm²]	TBD	
Mass without holding brake	m	[kg]	TBD	
Mass with holding brake	m	[kg]	TBD	
Max. axial shaft load 3000 / 6000 rpm	SL_a	[N]	500	
Max. radial shaft load 3000 / 6000 rpm	SL_r	[N]	2300	

Rated output with 550 x 550 x 20 mm aluminium heat sink flange. Derating must be considered if the oil seal is applied - IP 54 standard shaft bushing.
(*) without brake. (a) without brake and without feedback.

TORQUE/SPEED CHARTS

Operative temperature -20 ÷ +40 °C

Any specifications are subjected to change without notice.

180 *7E* G5

Operative curves at 230/400 Vac

Cn — Cmax @ 230Vac - - - Cmax @ 400 Vac

180 *7F* RATINGS and SPECIFICATION

			230/400 Vac	
	TYPE OF WINDING		69	
ELECTRICAL DATA				
Continuous stall torque (*)	M_0	[Nm]	47.75	
Peak torque	M_{Max}	[Nm]	119.37	
Nominal torque	M_n	[Nm]	47.75	
Nominal power	P_n	[W]	7500	
Continuous stall current	I_0	[Arms]	36.08	
Maximum current	I_{Max}	[Arms]	106.9	
Nominal current	I_n	[Arms]	41.5	
Nominal working speed	n_N	[rpm]	1500	
Maximum working speed	n_{Max}	[rpm]	4000	
Torque constant	K_t	[Nm/Arms]	1.32	
Voltage constant	$K_{e\ u-v}$	[Vrms/krpm]	80	
Winding resistance @ 20 °C	R_{u-v}	[Ohm]	0.053	
Winding inductance	$L_{q\ u-v}$	[mH]	1.34	
Electrical time constant	Te	[ms]	25.3	
Thermal resistance	Rth	[°C/W]	-	
Mechanical time constant (a)	Tm	[ms]	TBD	TBD
Rotor inertia without holding brake	J	[kg·cm²]	TBD	
Rotor inertia with holding brake	J	[kg·cm²]	TBD	
Mass without holding brake	m	[kg]	TBD	
Mass with holding brake	m	[kg]	TBD	
Max. axial shaft load 3000 / 6000 rpm	SL_a	[N]	500	
Max. radial shaft load 3000 / 6000 rpm	SL_r	[N]	2300	

Rated output with 550 x 550 x 20 mm aluminium heat sink flange. Derating must be considered if the oil seal is applied - IP 54 standard shaft bushing.
(*) without brake. (a) without brake and without feedback.

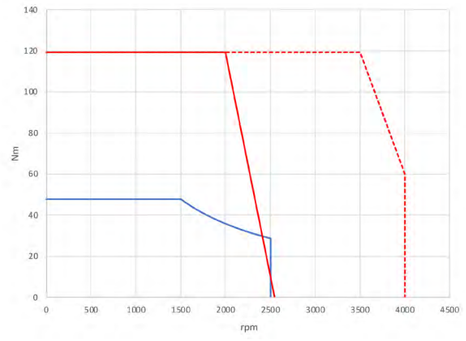
TORQUE/SPEED CHARTS

Operative temperature -20 ÷ +40 °C

180 7F 69

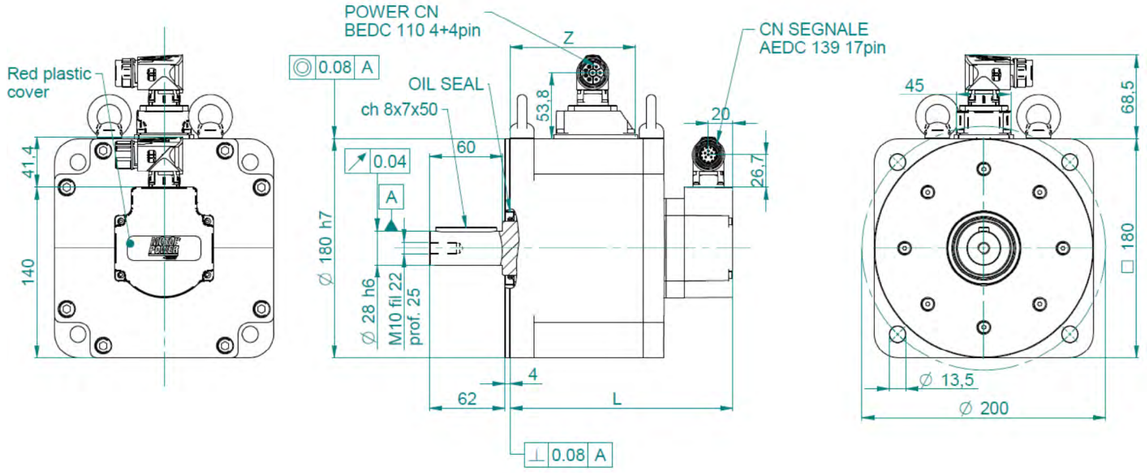
Operative curves at 230/400 Vac

Cn — Cmax @ 230Vac - - - Cmax @ 400 Vac



180 EXTERNAL DIMENSIONS

Model	L [mm]*	L with brake [mm]*	Z [mm]*	Z with brake [mm]*
7A	183.0	230.0	103.0	103.0
7C	225.0	260.0	145.0	145.0
7D	255.0	290.0	175.0	175.0
7E	305.0	340.0	225.0	225.0
7F	360.0	391.0	276.0	276.0



* With feedback A1-M1-M2-R1 and connection G2-H2

TC4 Resolver

		R1	
Motor size		TC4 60 - TC4 80	TC4 100 - TC4 130 - TC4 150 - TC4 180
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
Tranformer 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

Type	M1 M-CODER IH INCREMENTAL WITH HALL SENSOR ENCODER	M2 M-CODER ST ABSOLUTE ENCODER	M3 M-CODER STBL ABSOLUTE ENCODER
Protocol/Interface	Line Driver A/B/Z - U/V/W	RS 485 2,5 Mbit	Biss Line 2 Wire
Resolution	2-5000 ppr	23 bit	23 bit
Accuracy	+/- 250''	+/- 250''	+/- 250''
Working temperature	–40 °C ... +125 °C	–40 °C ... +125 °C	–40 °C ... +125 °C
Working speed	<12000 rpm	<12000 rpm	<12000 rpm
Max acceleration	100.000 rad/s²	100.000 rad/s²	100.000 rad/s²
Inertia	5.6 × 10-5 kg*cm2	5.6 × 10-5 kg*cm2	5.6 × 10-5 kg*cm2
Weigth	20 g	20 g	20 g
Main supply voltage	**5 - 12 V**	5 - 12 V	5 - 12 V
Current consumption	100mA (Max)	100mA (Max)	100mA (Max)
External battery voltage	-	-	-
External battery current consumption	-	-	-
Note	Condition monitoring option	Condition monitoring option	Condition monitoring option

Type	A5 HIPERFACE SAFETY DSL SINGLETURN 20 BIT ENCODER	A6 HIPERFACE SAFETY DSL MULTITURN 20 BIT ENCODER	A15 HIPERFACE SAFETY DSL SINGLETURN 24 BIT ENCODER
Protocol/Interface	HIPERFACE DSL®	HIPERFACE DSL®	HIPERFACE DSL®
Resolution	20 bit	20 bit	24 bit
N° absolute multiturn steps	**-**	4096 (12 bit)	-
Accuracy	+/- 100''	+/- 100''	+/- 25''
Working temperature	–20 °C ... +115 °C	–20 °C ... +115 °C	–40 °C ... +115 °C
Working speed	<12000 rpm	<12000 rpm	<9000 rpm
Max acceleration	250.000 rad/s²	250.000 rad/s²	250.000 rad/s²
Inertia	5 gcm²	5 gcm²	5 gcm²
Weigth	100 g	100 g	100 g
Main supply voltage	**7 - 12 V**	7 - 12 V	7 - 12 V
Current consumption	150 mA (max)	150 mA (max)	150 mA (max)
External battery voltage	-	-	-
External battery current consumption	-	-	-
Note		Mechanical multiturn	
	Safety function: SIL2 (IEC 61508) PL.d (EN ISO 13849)	Safety function: SIL2 (IEC 61508) PL.d (EN ISO 13849)	Safety function: SIL2 (IEC 61508) PL.d (EN ISO 13849-1:2015)

Type	A1 HIPERFACE ABSOLUTE MULTITURN ENCODER	A3 HIPERFACE DSL ABSOLUTE SINGLETURN ENCODER	A4 HIPERFACE DSL ABSOLUTE MULTITURN ENCODER
Protocol/Interface	HIPERFACE®	HIPERFACE DSL®	HIPERFACE DSL®
Resolution	128 line	20 bit	20 bit
N° absolute multiturn steps	**4096 (12 bit)**	-	4096 (12 bit)
Accuracy	4096 (12 bit)	+/- 100''	+/- 100''
Working temperature	–20 °C ... +100 °C	–20 °C ... +115 °C	–20 °C ... +115 °C
Working speed	<9000 rpm	<12000 rpm	<12000 rpm
Max acceleration	500.000 rad/s²	500.000 rad/s²	500.000 rad/s²
Inertia	4,5 gcm²	4,5 gcm²	4,5 gcm²
Weigth	70 g	100 g	100 g
Main supply voltage	**7 - 12 V**	7 - 12 V	7 - 12 V
Current consumption	60 mA (withoul Load)	150 mA (max)	150 mA (max)
External battery voltage	-	-	-
External battery current consumption	-	-	-
Note	Mechanical multiturn		Mechanical multiturn

Type	A16 HIPERFACE SAFETY DSL MULTITURN 24 BIT ENCODER	A22 ENCODER SAFETY ENDAT 3 SINGLETURN 19 BIT ENCODER	A23 ENCODER SAFETY ENDAT 3 MULTITURN 19 BIT ENCODER
Protocol/Interface	HIPERFACE DSL®	ENDAT 3®	ENDAT 3®
Resolution	24 bit	19 bit	19 bit
N° absolute multiturn steps	**4096 (12 bit)**	-	4096 (12 bit)
Accuracy	+/- 25''	+/- 120''	+/- 120''
Working temperature	–40 °C ... +115 °C	–40 °C ... +110 °C	–40 °C ... +110 °C
Working speed	<9000 rpm	<15000 rpm	<12000 rpm
Max acceleration	250.000 rad/s²	≤ 1 · 10^5 rad/s 2	≤ 1 · 10^ 5 rad/s 2
Inertia	5 gcm²	0.2 · 10 –6 kgm 2	0.2 · 10 –6 kg m 2
Weigth	100 g	40 g	40 g
Main supply voltage	**7 - 12 V**	3,6 - 14 V	3,6 - 14 V
Current consumption	150 mA (max)	At 5 V: 95 mA (without load)	At 5 V: 115 mA (without load)
External battery voltage	-	-	-
External battery current consumption	-	-	-
Note	Mechanical multiturn		Mechanical multiturn
	Safety function: SIL2 (IEC 61508) PL.d (EN ISO 13849-1:2015)	Safety function: SIL3 (IEC 61508) PL.e	Safety function: SIL3 (IEC 61508) PL.e

TC4 Encoder

	N1
Type	**A-FORMAT 24-BIT ABSOLUTE MULTITURN ENCODER**
Protocol/Interface	A-FORMAT RS 485 2,5-16Mbits
Resolution	24 bit
N° absolute multiturn steps	**65536 (16 bit)**
Accuracy	+/- 90''
Working temperature	–20 °C ... +105 °C
Working speed	<8000 rpm
Max acceleration	1.0 × 10^5 rad/s2
Inertia	2.6 × 10-9 kg*m2
Weigth	13 g
Main supply voltage	**5 +/- 10% V**
Current consumption	80uA typical 110 uA max
External battery voltage	3,6 +/-10% V
External battery current consumption	55uA typical 110 uA max
Note	Battery multiturn

MOTOR POWER COMPANY

specifications

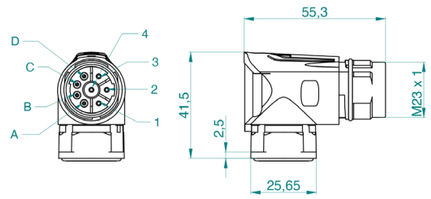
TC4 Brake features

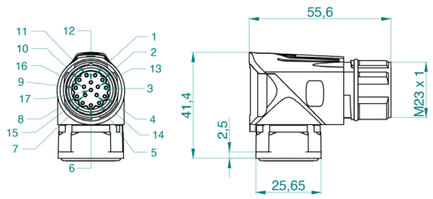
MOTOR SIZE		40	60	80	100	130	150	180
Operating motor temperature	[°C]				-20 ÷ 120			
External ambient temperature	[°C]				-20 ÷ 40			
Standard brake duty	-				Stationary			
Minimum dry static torque (-20 ÷ 120 °C)	[Nm]	0.32	1.3	2.5	6.5	9.6	32	48
Nominal operating voltage (± 10 %)	[Vdc]				24			
Power consumption at 20 °C (± 7 %)	[W]	4.35	11.2	10.2	10.4	19.7	TBD	49.6
Release time	[ms]	22	58	46	49	71	TBD	120
Brake release time (pull-in)	[ms]	77	25	58	30	39	TBD	37
Maximum backlash	[deg]				1.2			

Connectors with G2 connection

Power connector		Feedback connector			
Pin	Function	**Pin**	**A1**	**N1**	**R1**
1	Phase U	**1**	-	-	-
2	PE	**2**	-	-	-
3	Phase W	**3**	0V	0V	-
4	Phase V	**4**	7-12V	+ 5V	-
A	Brake + (#)	**5**	/sin	data -	/sin
B	Brake - (#)	**6**	sin	data +	sin
C	PT 1000 +	**7**	/data	-	/ref
D	PT 1000 -	**8**	data	-	ref
		9	-	-	-
		10	shield	shield	shield
		11	/cos	-	/cos
		12	cos	-	cos
		13	-	-	-
		14	-	-	-
		15	-	-	-
		16	-	-	-
		17	-	-	-

(#) Optional

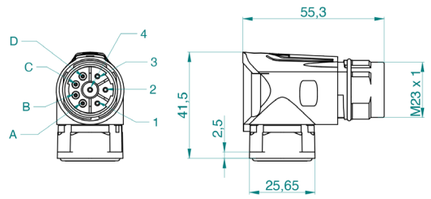


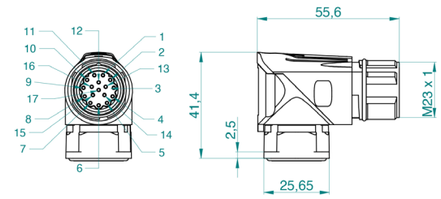


Connectors with H2 connection

Power connector		Feedback connector			
Pin	Function	**Pin**	**A1**	**N1**	**R1**
1	Phase U	**1**	-	-	-
2	PE	**2**	-	-	-
3	Phase W	**3**	0V	0V	-
4	Phase V	**4**	7-12V	+ 5V	-
A	Brake + (#)	**5**	/sin	data -	/sin
B	Brake - (#)	**6**	sin	data +	sin
C	-	**7**	/data	-	/ref
D	-	**8**	data	-	ref
		9	-	-	-
		10	shield	shield	shield
		11	/cos	-	/cos
		12	cos	-	cos
		13	-	-	-
		14	-	-	-
		15	-	-	-
		16	PT 1000 +	PT 1000 +	PT 1000 +
		17	PT 1000 -	PT 1000 -	PT 1000 -

(#) Optional



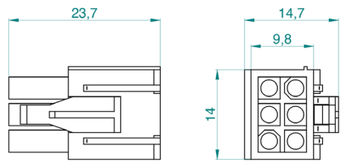


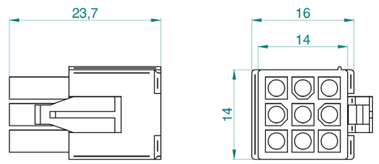
TC4 Wiring motor connection

Connectors with D0 connection (only for models 40-60-80)

Power connector		Feedback connector			
Pin	Function	**Pin**	**A1**	**N1**	**R1**
1	Phase U	**1**	data +	data +	-
2	Phase V	**2**	+ sin	data -	-
3	Phase W	**3**	Refsin	-	-
4	PE	**4**	data -	-	-
5	PT 1000 + / brake + (#)	**5**	+ cos	-	-
6	PT 1000 - / brake - (#)	**6**	Refcos	-	-
		7	8V / us	+ 5V	-
		8	0V	0V	-
		9	shield	shield	-

(#) Optional





Motor Power Company
www.motorpowerco.com
info@motorpowerco.it

All technical data in this catalog
may be changed without prior notice.

Catalogue 1.0 - 10/23

Motor Power Company s.r.l.
Via Leonardo Da Vinci, 4
42024 Castelnovo Sotto
Reggio Emilia (Italy)
Tel. +39 0522 682710
Fax +39 0522 683552
info@motorpowerco.it

Motor Power Company (Taicang) Motion Co. Ltd.
Workshop 7, Shiny Science Park No. 111
215400 Taicang, P.R.China
Tel + 86 512 33337978
Fax +86 512 53207871
infoasia@motorpowerco.com

motorpowerco.com