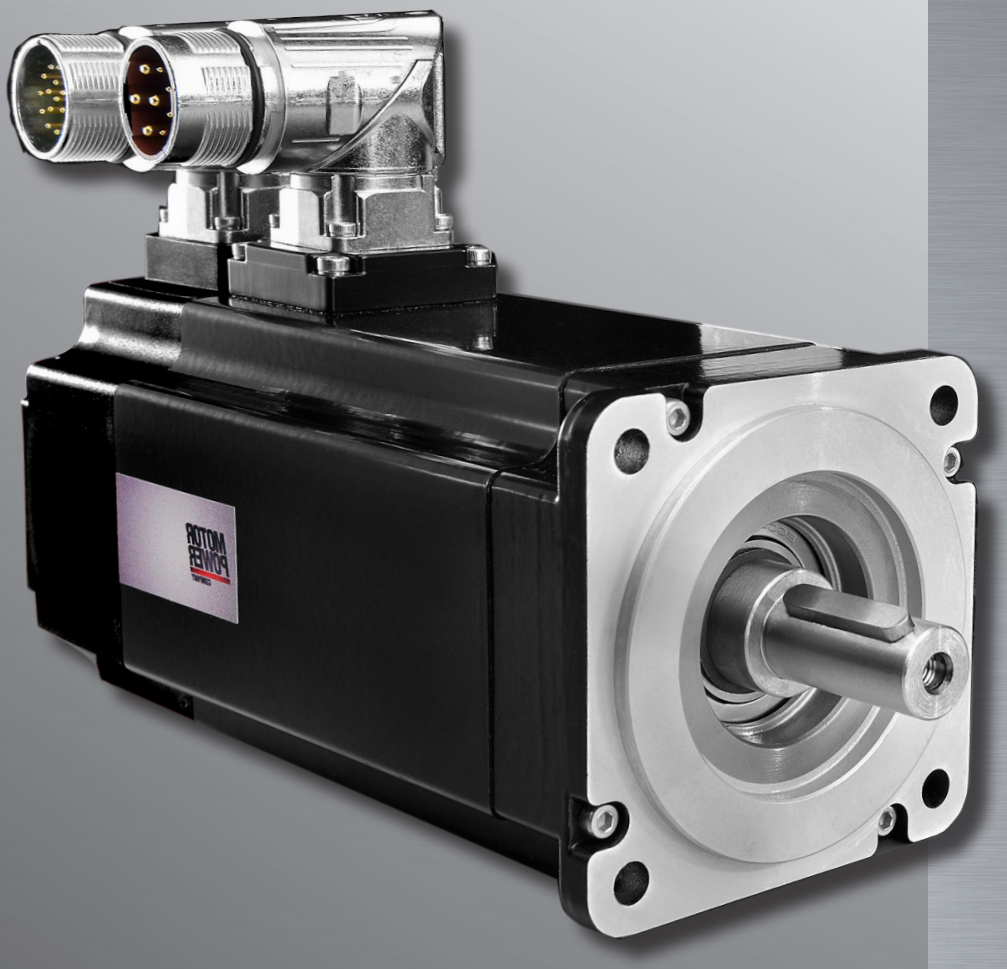
TETRA COMPACT - eXtreme
BRUSHLESS SERVOMOTORS

MOTORS

MOTOR POWER COMPANY



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

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

WELCOME TO MOTOR POWER COMPANY

Tetra Compact–X controls your motion in any outdoor and indoor extreme operation.
Exceptional performance, reliability and stability are guaranteed thanks the special design and manufactuting of this series.
Tetra Compact–X is ready for any applications operating under extreme environmental conditions, between -40°C to +80°C in humid, desert, hot, cold, icy, frozen or any extreme environmental temperature.
Motor Power Company is specialised in the design and development of high performance industrial motion solutions.
The know-how we have built up through continuous research into motion power and control enable us to effectively integrate mechanical, electromechanical and electronic technologies. The constant exchange of information between these disciplines permits us to develop better integrated, more efficient and more effective mechatronic solutions.

CONTENTS

BRUSHLESS TECHNOLOGY

FEATURES AND BENEFITS

- Synchronous brushless servomotor, permanently excited
- Rated output power from 60W to 1600W
- Maximum servomotor speed up to 5000rpm
- Insulation class F (155 °C)
- IP 65 on motor body
- Temperature protection by PT 1000 (excluding TC 40)
- Shaft -16NiCr4- balancing class G 2,5 according ISO 1940
- Smooth or keyed shaft
- Built-in feedback resolver 2 poles
- Cable flange with connectors for TC 40
- 90° round circular turnable connectors (IP 67) for all other models
- Special internal tropical insulation
- Stainless steel external screws
- Special additional external coating with Primer Extra and Sigma Fast black paint -excluding shaft, flange centering, cables and connectors-
- Optional shaft sealing

TETRA COMPACT- eXtreme

PRODUCT LINEUP

Servomotor Type	Rated Output Power	Rated Torque	Peak Torque	Rated Voltage	Rated Speed	Drive Type
	[W]	[Nm]	[Nm]	[V]	[rpm]	
TC-X 40 0,16 32	60	0,19	0,48	24 Vdc	3000	-
TC -X 40 0,16 01	60	0,19	0,48	48 Vdc	3000	-
TC-X 40 0,32 01	100	0,32	0,96	48 Vdc	3000	-
TC-X 40 0,32 21	100	0,32	0,96	230 Vac	3000	FLEXI PRO 1D5 2 A
TC-X 60 0,65 21	200	0,64	1,95	230 Vac	3000	FLEXI PRO 1D5 2 A
TC-X 60 1,3 21	370	1,18	3,9	230 Vac	3000	FLEXI PRO 003 2 A
TC-X 60 1,3 15	370	1,18	3,9	400 Vac	3000	FLEXI PRO 003 4 D
TC-X 80 1,5 21	480	1,53	4,5	230 Vac	3000	FLEXI PRO 006 2 A
TC-X 80 1,5 15	480	1,53	4,5	400 Vac	3000	FLEXI PRO 003 4 D
TC-X 80 2,8 21	800	2,55	8,4	230 Vac	3000	FLEXI PRO 006 2 A
TC-X 80 2,8 15	800	2,55	8,4	400 Vac	3000	FLEXI PRO 006 4 D
TC-X 80 4 15	1068	3,4	12,0	230 Vac	3000	FLEXI PRO 006 2 A
TC-X 80 4 17	1068	3,4	12,0	400 Vac	3000	FLEXI PRO 003 4 D
TC-X 100 3,2 21	820	2,61	11,0	230 Vac	3000	FLEXI PRO 006 2 A
TC-X 100 3,2 15	820	2,61	11,0	400 Vac	3000	FLEXI PRO 006 4 D
TC-X 100 5,6 15	1320	4,2	22,0	400 Vac	3000	FLEXI PRO 012 4 A
TC-X 100 8 15	1570	5,0	33,0	400 Vac	3000	FLEXI PRO 012 4 D

TETRA - TETRA COMPACT SERVOMOTOR TYPE

TC-X	40 0.16	32	0	R1	0	D0	45	XXX
Model		Winding Code	Mechanical Arrangement	Feedback	Brake	Connection	eXtreme	Optional
1		2	3	4	5	6	7	8

1 Model — See product lineup

2

Winding Code	01	14	15	17	21	32
Motor						
TC-X 40 0,16	●	-	-	-	-	●
TC- X 40 0,32	●	-	-	-	●	-
TC-X 60 0,65	-	-	-	-	●	-
TC-X 60 1,3	-	-	●	-	●	-
TC-X 80 1,5	-	-	●	-	●	-
TC-X 80 2,8	-	-	●	-	●	-
TC-X 80 4	-	-	●	●	-	-
TC-X 100 3,2	-	-	●	-	●	-
TC-X 100 5,6	-	-	●	-	-	-
TC-X 100 8	-	-	●	-	-	-

● **available** - **not available**

3 Mechanical Arrangement

0 - Shaft with key / without oil seal (front flange side IP 54)
1 - Shaft with key / with oil seal (front flange side IP 65)
2 - Shaft without key / without oil seal (front flange side IP 54)
3 - Shaft without key / with oil seal (front flange side IP 65)

4 Feedback — **R1 -** Resolver 2 poles

5 Brake — **0 -** Without brake

6 Connection

D0 - 300mm cable lenght with AMP connectors, without thermal protection *(For TC40 only)*
G2 - 90° M23 turnable connectors - PT 1000 on power connector
H2 - 90° M23 turnable connectors - PT 1000 on signal connector

7 eXtreme — 4**5 -** Tetra Compact-X brushless servomotors eXtreme temperature series

FLEXI PRO DRIVE TYPE

FPRO	006	2A	AP	1	XXX
Drive Name	Rating	AC and Controller input Power Supply	Interface Options	Analog Input	Special Specification
	1	2	3	4	5

1

Rating		
	120/240 VAC	
	Cont. [A rms]	Peak [A rms]
1D5	1.5	4.5
003	3	9
4D5	4,5	18
006	6	18
008	8	28
010	10	28
013	13	28
020	20	48
024	24	48

Rating		
	400/480 VAC	
	Cont. [A rms]	Peak [A rms]
003	3	9
006	6	18
012	12	24
024	24	72
030	30	90

2

AC and Controller Input Power Supply	
2A	Input Single Phase 120L - L VAC +10% -15% 50/60Hz
	Input Single Phase 240L - L VAC +10% -15% 50/60Hz
	Input Three Phase 120 - 240L - L VAC +10% -15% 50/60Hz
4D	AC Input Power Supply:
	- Input Three Phase 400L - L VAC +10% -15% 50/60Hz
	- Input Three Phase 480L - L VAC +10% -15% 50/60Hz
	24VDC input for control board power supply

3

Interface Options

AF - Analog Voltage/Pulse Train Ref & CANopen® & USB & RS 232
EC - EtherCAT, USB, RS232
EB - EtherCAT, USB (two analog inputs only)

4

Analog Input

1 - One Analog input, 16 bit
2 - Two Analog inputs, 14 bit each

TETRA COMPACT-X 40 RATINGS AND SPECIFICATIONS

TIME RATING	Continuous	AMBIENT TEMPERATURE	-40 to 80 °C
INSULATION CLASS	F	AMBIENT HUMIDITY	5 to 85% (non-condensing)
ENCLOSURE	Totally enclosed. Self-cooled	POLES	8
PROTECTION CLASS	IP 65 standard on the body	THERMAL PROTECTION	Not available
INSULATION SYSTEM UL	cURus , DV155J File nr.:E216686	CE certified	

			TC-X 40 0,16 32			TC-X 40 0,16 01		
			Ambient temperature			Ambient temperature		
			-40°C	0 ÷ +40°C	+80°C	-40°C	0 ÷ +40°C	+80°C
Continuous stall torque	M_0	Nm	0,24	0,21	0,16	0,24	0,21	0,16
Peak torque	M_{max}	Nm	0,48	0,48	0,48	0,48	0,48	0,48
Nominal torque	M_n	Nm	0,22	0,19	0,14	0,22	0,19	0,14
Rated voltage	Un	V	24 Vdc	24 Vdc	24 Vdc	48 Vdc	48 Vdc	48 Vdc
Nominal power	P_N	W	70	60	44	70	60	44
Continuous stall current	I_0	A_{rms}	4,89	4,23	2,94	2,62	2,23	1,41
Maximum current	Imax	A_{rms}	9,67	9,67	9,67	5,09	5,09	5,09
Nominal current	I_N	A_{rms}	4,57	3,96	2,76	2,46	2,09	1,32
Nominal working speed	nN	min^{-1}	3000	3000	3000	3000	3000	3000
Maximum working speed 24VDC	nmax	min^{-1}	5000	5000	5000	-	-	-
Maximum working speed 48VDC	nmax	min^{-1}	-	-	-	5000	5000	5000
Maximum working speed 230VAC	nmax	min^{-1}	-	-	-	-	-	-
Torque constant	k_t	Nm/A_{rms}	0,050	0,050	0,050	0,094	0,094	0,094
Voltage constant	K_{eu-v}	Vrms/Krpm	3,0	3,0	3,0	5,7	5,7	5,7
Winding resistance	R_{20u-v}	Ohm	1,0	1,0	1,0	3,2	3,2	3,2
Winding inductance	L_{qu-v}	mH	0,7	0,7	0,7	2,5	2,5	2,5
Electrical time constant	Te	ms	0,70	0,70	0,70	0,78	0,78	0,78
Thermal resistance	°C/W	°C/W	2,38	2,38	2,38	2,38	2,38	2,38
Mechanical time constant	Tm	ms	1,62	1,62	1,62	1,47	1,47	1,47
Rotor inertia (a)	J_M	$Kgcm^2$	0,027	0,027	0,027	0,027	0,027	0,027
Mass	m	Kg	0,4	0,4	0,4	0,4	0,4	0,4
Maximum axial shaft load	N		30 (applied on the shaft's center)					
Maximum radial shaft load	N		180 (applied on the shaft's center)					

Rated output with 250 x 250 x 6 mm aluminum heat sink flange coupling - Derating must be considered if the oil seal is applied - IP 54 standard shaft bushing
(a) without feedback

TETRA COMPACT-X 40 RATINGS AND SPECIFICATIONS

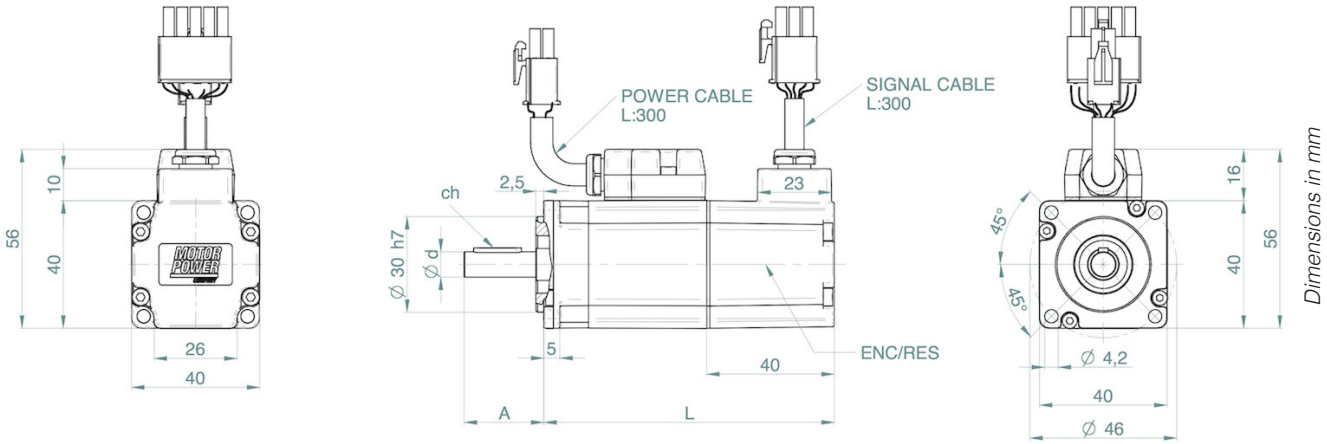
TIME RATING	Continuous	AMBIENT TEMPERATURE	-40 to 80 °C
INSULATION CLASS	F	AMBIENT HUMIDITY	5 to 85% (non-condensing)
ENCLOSURE	Totally enclosed. Self-cooled	POLES	8
PROTECTION CLASS	IP 65 standard on the body	THERMAL PROTECTION	Not available
INSULATION SYSTEM UL	cURus , DV155J File nr.:E216686	CE certified	

			TC-X 40 0,32 01			TC-X 40 0,32 21		
			Ambient temperature			Ambient temperature		
			-40°C	0 ÷ +40°C	+80°C	-40°C	0 ÷ +40°C	+80°C
Continuous stall torque	M_0	Nm	0,40	0,34	0,21	0,40	0,34	0,21
Peak torque	M_{max}	Nm	0,96	0,96	0,96	0,96	0,96	0,96
Nominal torque	M_n	Nm	0,38	0,32	0,19	0,38	0,32	0,19
Rated voltage	Un	V	48 Vdc	48 Vdc	48 Vdc	230 Vac	230 Vac	230 Vac
Nominal power	P_N	W	120	100	60	120	100	60
Continuous stall current	I_0	A_{rms}	4,26	3,61	1,88	0,77	0,65	0,38
Maximum current	Imax	A_{rms}	10,18	10,18	10,18	1,82	1,82	1,82
Nominal current	I_N	A_{rms}	4,11	3,48	1,81	0,74	0,62	0,36
Nominal working speed	nN	min^{-1}	3000	3000	3000	3000	3000	3000
Maximum working speed 24VDC	nmax	min^{-1}	-	-	-	-	-	-
Maximum working speed 48VDC	nmax	min^{-1}	5000	5000	5000	-	-	-
Maximum working speed 230VAC	nmax	min^{-1}	-	-	-	5000	5000	5000
Torque constant	k_t	Nm/A_{rms}	0,094	0,094	0,094	0,526	0,526	0,526
Voltage constant	K_{eu-v}	Vrms/Krpm	5,7	5,7	5,7	31,8	31,8	31,8
Winding resistance	R_{20u-v}	Ohm	1,1	1,1	1,1	36,2	36,2	36,2
Winding inductance	L_{qu-v}	mH	1,42	1,42	1,42	44	44	44
Electrical time constant	Te	ms	1,29	1,29	1,29	1,21	1,21	1,21
Thermal resistance	°C/W	°C/W	2,30	2,30	2,30	2,30	2,30	2,30
Mechanical time constant	Tm	ms	0,88	0,88	0,88	0,92	0,92	0,92
Rotor inertia (a)	J_M	$Kgcm^2$	0,047	0,047	0,047	0,047	0,047	0,047
Mass	m	Kg	0,54	0,54	0,54	0,54	0,54	0,54
Maximum axial shaft load	N		30 (applied on the shaft's center)					
Maximum radial shaft load	N		180 (applied on the shaft's center)					

Rated output with 250 x 250 x 6 mm aluminum heat sink flange coupling - Derating must be considered if the oil seal is applied - IP 54 standard shaft bushing
(a) without feedback

TETRA COMPACT-X 40 DIMENSIONS

		TC-X 40 0,16 32	TC-X 40 0,16 01	TC-X 40 0,32 01	TC-X 40 0,32 21
L	mm	91	91	109	109
A	mm	25	25	25	25
d	mm	8 (h6)	8 (h6)	8 (h6)	8 (h6)
ch	mm	3x3x15	3x3x15	3x3x15	3x3x15

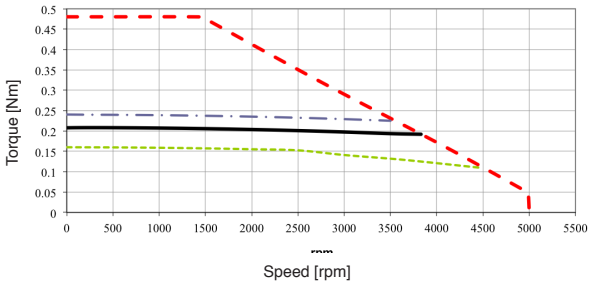


Power connector 6 PIN AMP 172168 - Signal connector 15 PIN AMP 172171

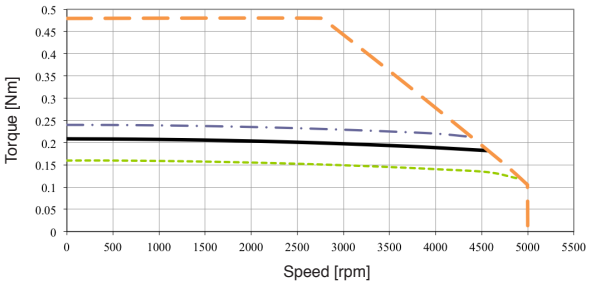
Dimensions in mm

TETRA COMPACT-X 40 TORQUE / SPEED CHARTS

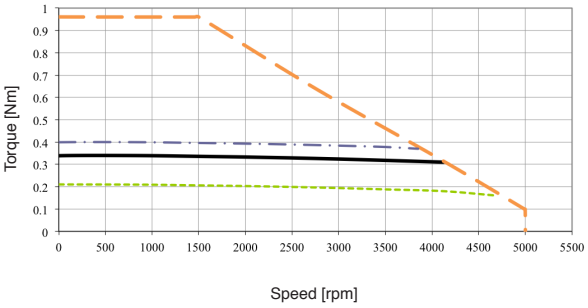
TETRA COMPACT-X 40 0,16 32



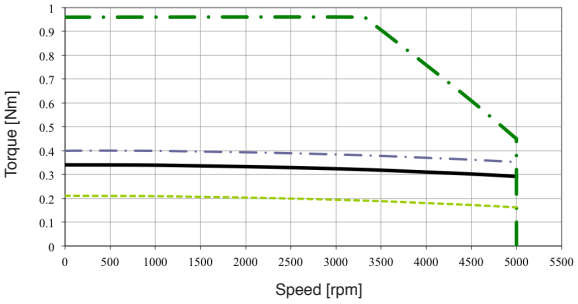
TETRA COMPACT-X 40 0,16 01



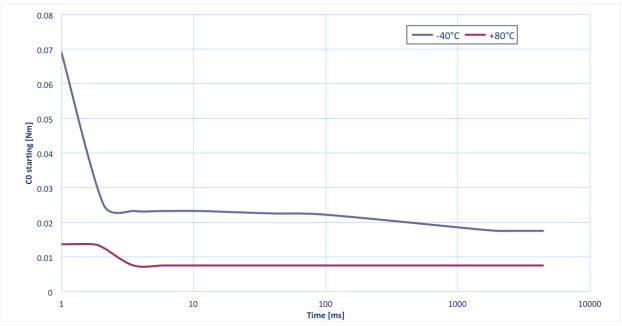
TETRA COMPACT-X 40 0,32 01



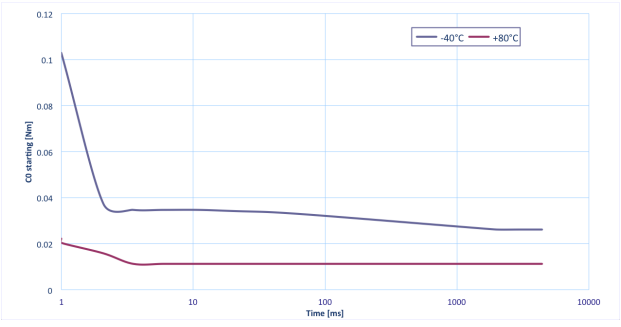
TETRA COMPACT-X 40 0,32 21



TETRA COMPACT-X 40 0,16 NO LOAD STARTING



TETRA COMPACT-X 40 0,32 21 NO LOAD STARTING



Continuous duty@ 0 ÷ +40°C
Continuous duty @ -40°C
Continuous duty @ +80°C
24 Vdc
48 Vdc
230 Vac
400 Vac

TETRA COMPACT-X 60 RATINGS AND SPECIFICATIONS

TIME RATING	Continuous	AMBIENT TEMPERATURE	-40 to +80 °C
INSULATION CLASS	F	AMBIENT HUMIDITY	5 to 85% (non-condensing)
ENCLOSURE	Totally enclosed. Self-cooled	POLES	8
PROTECTION CLASS	IP 65 standard on the body	THERMAL PROTECTION	PT 1000
INSULATION SYSTEM UL	cURus , DV155J File nr.:E216686	CE certified	

			TC-X 60 0,65 21			TC-X 60 1,3 21		
			Ambient temperature			Ambient temperature		
			-40°C	0 ÷ +40°C	+80°C	-40°C	0 ÷ +40°C	+80°C
Continuous stall torque	M_0	Nm	0,80	0,69	0,55	1,52	1,31	0,95
Peak torque	M_{max}	Nm	1,95	1,95	1,95	3,9	3,9	3,9
Nominal torque	M_n	Nm	0,75	0,64	0,50	1,39	1,18	0,82
Rated voltage	Un	V	230	230	230	230	230	230
Nominal power	P_N	W	235	200	157	435	370	260
Continuous stall current	I_0	A_{rms}	1,52	1,31	0,90	2,94	2,49	1,52
Maximum current	Imax	A_{rms}	3,71	3,71	3,71	7,41	7,41	7,41
Nominal current	I_N	A_{rms}	1,45	1,25	0,86	2,73	2,31	1,41
Nominal working speed	nN	min^{-1}	3000	3000	3000	3000	3000	3000
Maximum working speed 230VAC	nmax	min^{-1}	5000	5000	5000	5000	5000	5000
Maximum working speed 400VAC	nmax	min^{-1}	-	-	-	-	-	-
Torque constant	k_t	Nm/A_{rms}	0,526	0,526	0,526	0,526	0,526	0,526
Voltage constant	K_{eu-v}	Vrms/Krpm	31,8	31,8	31,8	31,8	31,8	31,8
Winding resistance	R_{20u-v}	Ohm	12,9	12,9	12,9	4,2	4,2	4,2
Winding inductance	L_{qu-v}	mH	26,5	26,5	26,5	14,9	14,9	14,9
Electrical time constant	Te	ms	2,05	2,05	2,05	3,55	3,55	3,55
Thermal resistance	°C/W	°C/W	1,89	1,89	1,89	1,41	1,41	1,41
Mechanical time constant	Tm	ms	0,91	0,91	0,91	0,55	0,55	0,55
Rotor inertia (a)	J_M	$Kgcm^2$	0,13	0,13	0,13	0,24	0,24	0,24
Mass	m	Kg	1,1	1,1	1,1	1,5	1,5	1,5
Maximum axial shaft load	N		70 (applied on the shaft's center)					
Maximum radial shaft load	N		220 (applied on the shaft's center)					

Rated output with 250 x 250 x 6 mm aluminum heat sink flange coupling - Derating must be considered if the oil seal is applied - IP 54 standard shaft bushing
(a) without feedback

TETRA COMPACT-X 60 RATINGS AND SPECIFICATIONS

TIME RATING	Continuous	AMBIENT TEMPERATURE	-40 to +80 °C
INSULATION CLASS	F	AMBIENT HUMIDITY	5 to 85% (non-condensing)
ENCLOSURE	Totally enclosed. Self-cooled	POLES	8
PROTECTION CLASS	IP 65 standard on the body	THERMAL PROTECTION	PT 1000
INSULATION SYSTEM UL	cURus , DV155J File nr.:E216686	CE certified	

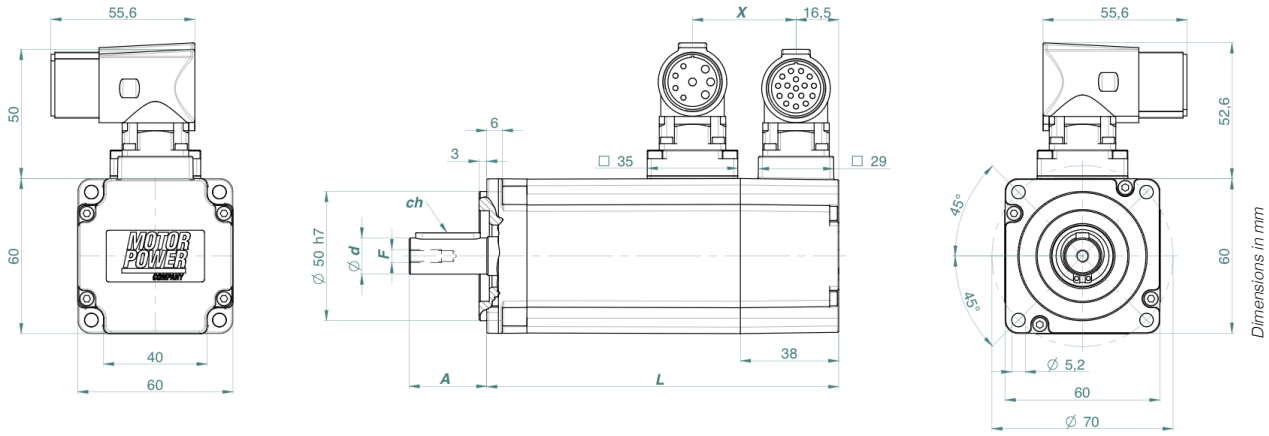
TC-X 60 1,3 15

			Ambient temperature		
			-40°C	0 ÷ +40°C	+80°C
Continuous stall torque	M_0	Nm	1,52	1,31	0,95
Peak torque	M_{max}	Nm	3,9	3,9	3,9
Nominal torque	M_n	Nm	1,39	1,18	0,82
Rated voltage	Un	V	400	400	400
Nominal power	P_N	W	435	370	260
Continuous stall current	I_0	A_{rms}	1,67	1,44	0,99
Maximum current	Imax	A_{rms}	4,29	4,29	4,29
Nominal current	I_N	A_{rms}	1,54	1,33	0,92
Nominal working speed	nN	min^{-1}	3000	3000	3000
Maximum working speed 230VAC	nmax	min^{-1}	3900	3900	3900
Maximum working speed 400VAC	nmax	min^{-1}	5000	5000	5000
Torque constant	k_t	Nm/A_{rms}	0,910	0,910	0,910
Voltage constant	K_{eu-v}	Vrms/Krpm	55,0	55,0	55,0
Winding resistance	R_{20u-v}	Ohm	14,4	14,4	14,4
Winding inductance	L_{qu-v}	mH	41,8	41,8	41,8
Electrical time constant	Te	ms	2,90	2,90	2,90
Thermal resistance	°C/W	°C/W	1,41	1,41	1,41
Mechanical time constant	Tm	ms	0,63	0,63	0,63
Rotor inertia (a)	J_M	$Kgcm^2$	0,24	0,24	0,24
Mass	m	Kg	1,5	1,5	1,5
Maximum axial shaft load	N		70 (applied on the shaft's center)		
Maximum radial shaft load	N		220 (applied on the shaft's center)		

Rated output with 250 x 250 x 6 mm aluminum heat sink flange coupling - Derating must be considered if the oil seal is applied - IP 54 standard shaft bushing
(a) without feedback

TETRA COMPACT-X 60 DIMENSIONS

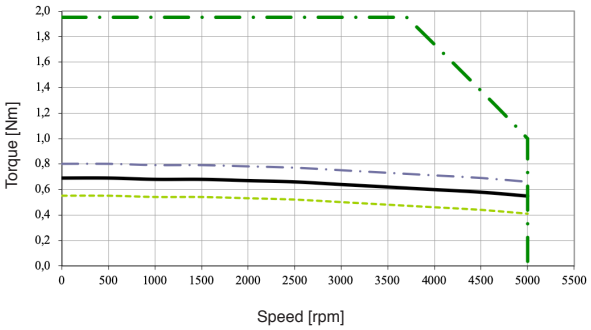
		TC-X 60 0,65 21	TC-X 60 1,3 21	TC-X 60 1,3 15
L	mm	111	136	136
A	mm	23	30	30
d	mm	11 (h6)	14 (h6)	14 (h6)
ch	mm	4x4x18	5x5x25	5x5x25
F	mm	M4x10	M5x12,5	M5x12,5
X	mm	40	40	40



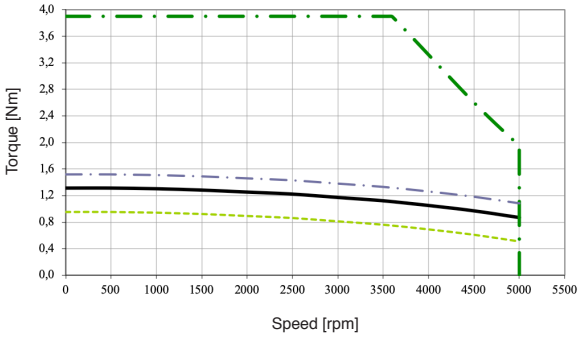
Power connector 4+4 PIN M23 turnable BEDC 110 - Signal connector 17 PIN M23 turnable AEDC 139

TETRA COMPACT-X 60 TORQUE /SPEED CHARTS

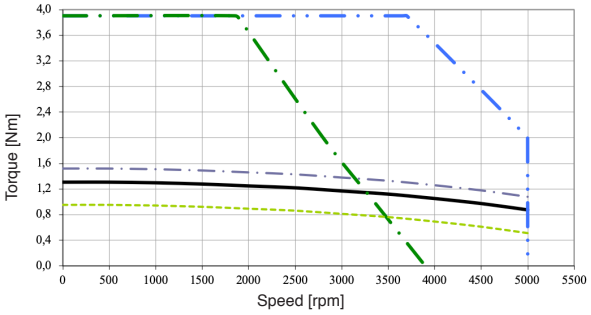
TETRA COMPACT-X 60 0,65 21



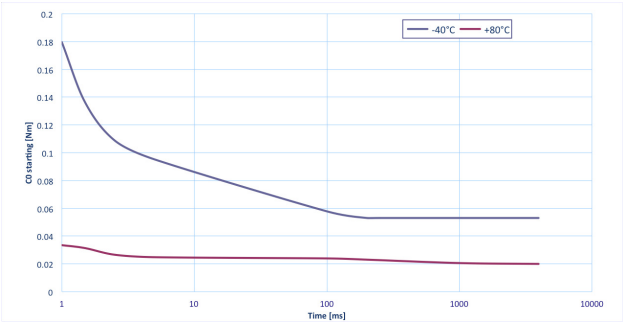
TETRA COMPACT-X 60 1,3 21



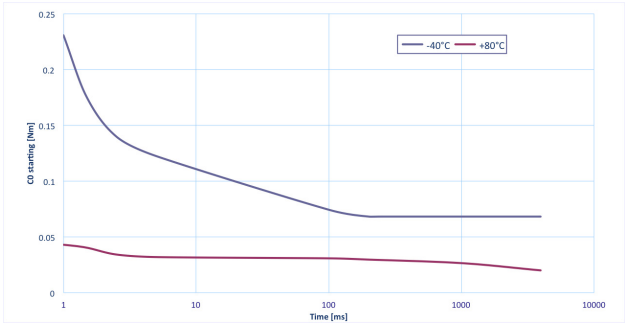
TETRA COMPACT-X 60 1,3 15



TETRA COMPACT-X 60 0,65 NO LOAD STARTING



TETRA COMPACT-X 60 1,3 NO LOAD STARTING



Continuous duty@ 0 ÷ +40°C
Continuous duty @ -40°C
Continuous duty @ +80°C
24 Vdc
48 Vdc
230 Vac
400 Vac

TETRA COMPACT-X 80 RATINGS AND SPECIFICATIONS Sizes 1,5

TIME RATING	Continuous	AMBIENT TEMPERATURE	-40 to +80 °C
INSULATION CLASS	F	AMBIENT HUMIDITY	5 to 85% (non-condensing)
ENCLOSURE	Totally enclosed. Self-cooled	POLES	8
PROTECTION CLASS	IP 65 standard on the body	THERMAL PROTECTION	PT 1000
INSULATION SYSTEM UL	cURus , DV155J File nr.:E216686	CE certified	

			TC-X 80 1,5 21			TC-X 80 1,5 15		
			Ambient temperature			Ambient temperature		
			-40°C	0 ÷ +40°C	+80°C	-40°C	0 ÷ +40°C	+80°C
Continuous stall torque	M_0	Nm	2,01	1,74	1,35	2,01	1,74	1,35
Peak torque	M_{max}	Nm	4,5	4,5	4,5	4,5	4,5	4,5
Nominal torque	M_n	Nm	1,80	1,53	1,13	1,80	1,53	1,13
Rated voltage	Un	V	230	230	230	400	400	400
Nominal power	P_N	W	565	480	355	565	480	355
Continuous stall current	I_0	A_{rms}	3,83	3,31	2,28	2,23	1,91	1,26
Maximum current	Imax	A_{rms}	8,55	8,55	8,55	4,95	4,95	4,95
Nominal current	I_N	A_{rms}	3,46	2,99	2,06	2,02	1,73	1,14
Nominal working speed	nN	min^{-1}	3000	3000	3000	3000	3000	3000
Maximum working speed 230VAC	nmax	min^{-1}	5000	5000	5000	3900	3900	3900
Maximum working speed 400VAC	nmax	min^{-1}	-	-	-	5000	5000	5000
Torque constant	k_t	Nm/A_{rms}	0,526	0,526	0,526	0,910	0,910	0,910
Voltage constant	K_{eu-v}	Vrms/Krpm	31,8	31,8	31,8	55,0	55,0	55,0
Winding resistance	R_{20u-v}	Ohm	2,3	2,3	2,3	6,5	6,5	6,5
Winding inductance	L_{qu-v}	mH	7,4	7,4	7,4	22,2	22,2	22,2
Electrical time constant	Te	ms	3,2	3,2	3,2	3,4	3,4	3,4
Thermal resistance	°C/W	°C/W	1,67	1,67	1,67	1,67	1,67	1,67
Mechanical time constant	Tm	ms	0,80	0,80	0,80	0,75	0,75	0,75
Rotor inertia (a)	J_M	$Kgcm^2$	0,64	0,64	0,64	0,64	0,64	0,64
Mass	m	Kg	2,25	2,25	2,25	2,25	2,25	2,25
Maximum axial shaft load	N		110 (applied on the shaft's center)					
Maximum radial shaft load	N		350 (applied on the shaft's center)					

Rated output with 250 x 250 x 6 mm aluminum heat sink flange coupling - Derating must be considered if the oil seal is applied - IP 54 standard shaft bushing
(a) without feedback

TETRA COMPACT-X 80 RATINGS AND SPECIFICATIONS Sizes 2,8

TIME RATING	Continuous	AMBIENT TEMPERATURE	-40 to +80 °C
INSULATION CLASS	F	AMBIENT HUMIDITY	5 to 85% (non-condensing)
ENCLOSURE	Totally enclosed. Self-cooled	POLES	8
PROTECTION CLASS	IP 65 standard on the body	THERMAL PROTECTION	PT 1000
INSULATION SYSTEM UL	cURus , DV155J File nr.:E216686	CE certified	

			TC-X 80 2,8 21			TC-X 80 2,8 15		
			Ambient temperature			Ambient temperature		
			-40°C	0 ÷ +40°C	+80°C	-40°C	0 ÷ +40°C	+80°C
Continuous stall torque	M_0	Nm	3,43	2,96	2,35	3,43	2,96	2,35
Peak torque	M_{max}	Nm	8,4	8,4	8,4	8,4	8,4	8,4
Nominal torque	M_n	Nm	3,02	2,55	1,94	3,02	2,55	1,94
Rated voltage	Un	V	230	230	230	400	400	400
Nominal power	P_N	W	950	800	610	950	800	610
Continuous stall current	I_0	A_{rms}	6,53	5,63	3,83	3,76	3,25	2,23
Maximum current	Imax	A_{rms}	15,97	15,97	15,97	9,23	9,23	9,23
Nominal current	I_N	A_{rms}	5,79	4,99	3,39	3,34	2,88	1,98
Nominal working speed	nN	min^{-1}	3000	3000	3000	3000	3000	3000
Maximum working speed 230VAC	nmax	min^{-1}	5000	5000	5000	3900	3900	3900
Maximum working speed 400VAC	nmax	min^{-1}	-	-	-	5000	5000	5000
Torque constant	k_t	Nm/A_{rms}	0,526	0,526	0,526	0,910	0,910	0,910
Voltage constant	K_{eu-v}	Vrms/Krpm	31,8	31,8	31,8	55,0	55,0	55,0
Winding resistance	R_{20u-v}	Ohm	0,99	0,99	0,99	3,0	3,0	3,0
Winding inductance	L_{qu-v}	mH	4,4	4,4	4,4	13,2	13,2	13,2
Electrical time constant	Te	ms	4,4	4,4	4,4	4,4	4,4	4,4
Thermal resistance	°C/W	°C/W	1,32	1,32	1,32	1,32	1,32	1,32
Mechanical time constant	Tm	ms	0,62	0,62	0,62	0,63	0,63	0,63
Rotor inertia (a)	J_M	$Kgcm^2$	1,16	1,16	1,16	1,16	1,16	1,16
Mass	m	Kg	3,05	3,05	3,05	3,05	3,05	3,05
Maximum axial shaft load	N		110 (applied on the shaft's center)					
Maximum radial shaft load	N		350 (applied on the shaft's center)					

Rated output with 250 x 250 x 6 mm aluminum heat sink flange coupling - Derating must be considered if the oil seal is applied - IP 54 standard shaft bushing
(a) without feedback

TETRA COMPACT-X 80 RATINGS AND SPECIFICATIONS Sizes 4

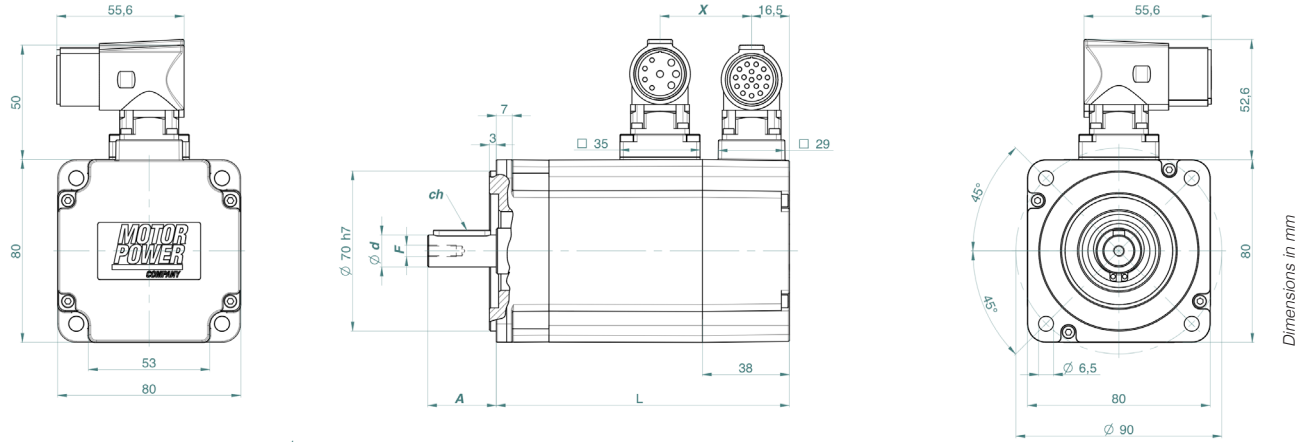
TIME RATING	Continuous	AMBIENT TEMPERATURE	-40 to +80 °C
INSULATION CLASS	F	AMBIENT HUMIDITY	5 to 85% (non-condensing)
ENCLOSURE	Totally enclosed. Self-cooled	POLES	8
PROTECTION CLASS	IP 65 standard on the body	THERMAL PROTECTION	PT 1000
INSULATION SYSTEM UL	cURus , DV155J File nr.:E216686	CE certified	

			TC-X 80 4 15			TC-X 80 4 17		
			Ambient temperature			Ambient temperature		
			-40°C	0 ÷ +40°C	+80°C	-40°C	0 ÷ +40°C	+80°C
Continuous stall torque	M_0	Nm	4,65	4,0	2,90	4,65	4,0	2,90
Peak torque	M_{max}	Nm	12,0	12,0	12,0	12,0	12,0	12,0
Nominal torque	M_n	Nm	4,05	3,40	2,30	4,05	3,40	2,30
Rated voltage	Un	V	230	230	230	400	400	400
Nominal power	P_N	W	1270	1068	720	1270	1068	720
Continuous stall current	I_0	A_{rms}	5,20	4,40	2,68	2,91	2,50	1,68
Maximum current	Imax	A_{rms}	13,19	13,19	13,19	7,50	7,50	7,50
Nominal current	I_N	A_{rms}	4,55	3,85	2,35	2,55	2,19	1,47
Nominal working speed	nN	min^{-1}	3000	3000	3000	3000	3000	3000
Maximum working speed 230VAC	nmax	min^{-1}	3900	3900	3900	-	-	-
Maximum working speed 400VAC	nmax	min^{-1}	5000	5000	5000	3900	3900	3900
Torque constant	k_t	Nm/A_{rms}	0,910	0,910	0,910	1,600	1,600	1,600
Voltage constant	K_{eu-v}	Vrms/Krpm	55,0	55,0	55,0	96,0	96,0	96,0
Winding resistance	R_{20u-v}	Ohm	1,9	1,9	1,9	6,5	6,5	6,5
Winding inductance	L_{qu-v}	mH	8,9	8,9	8,9	28,6	28,6	28,6
Electrical time constant	Te	ms	4,7	4,7	4,7	4,4	4,4	4,4
Thermal resistance	°C/W	°C/W	1,0	1,0	1,0	1,0	1,0	1,0
Mechanical time constant	Tm	ms	0,54	0,54	0,54	0,60	0,60	0,60
Rotor inertia (a)	J_M	$Kgcm^2$	1,58	1,58	1,58	1,58	1,58	1,58
Mass	m	Kg	4,1	4,1	4,1	4,1	4,1	4,1
Maximum axial shaft load	N		110 (applied on the shaft's center)					
Maximum radial shaft load	N		350 (applied on the shaft's center)					

Rated output with 250 x 250 x 6 mm aluminum heat sink flange coupling - Derating must be considered if the oil seal is applied - IP 54 standard shaft bushing
(a) without feedback

TETRA COMPACT-X 80 DIMENSIONS Sizes 1,5 - 2,8

		TC-X 80 1,5 21	TC-X 80 1,5 15	TC-X 80 2,8 21	TC-X 80 2,8 15
L	mm	128	128	153	153
A	mm	30	30	40	40
d	mm	14 (h6)	14 (h6)	19 (h6)	19 (h6)
ch	mm	5x5x25	5x5x25	6x6x30	6x6x30
F	mm	M5x12,5	M5x12,5	M6x16	M6x16
X	mm	40	40	40	40

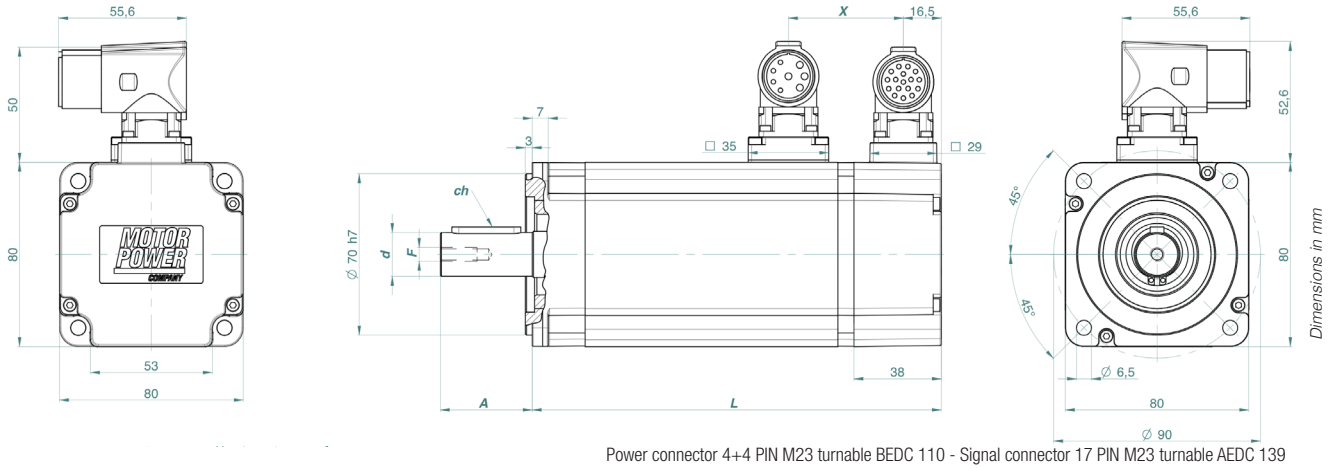


Dimensions in mm

Power connector 4+4 PIN M23 turnable BEDC 110 - Signal connector 17 PIN M23 turnable AEDC 139

TETRA COMPACT-X 80 DIMENSIONS - Size 4

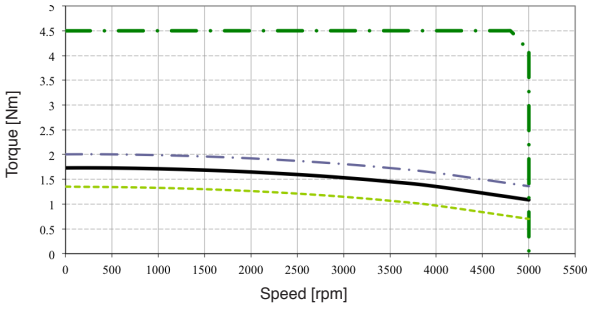
		TC-X 80 4 15	TC-X 80 4 17
L	mm	178	178
A	mm	40	40
d	mm	19 (h6)	19 (h6)
ch	mm	6x6x30	6x6x30
F	mm	M6x16	M6x16
X	mm	50	50



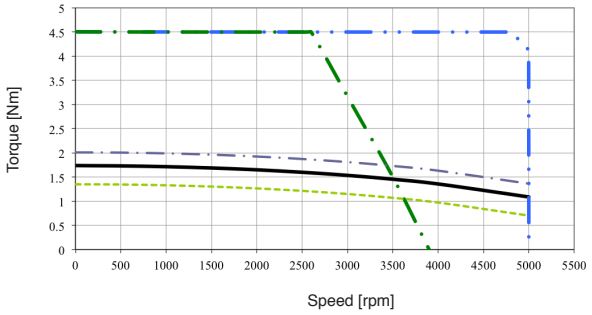
Power connector 4+4 PIN M23 turnable BEDC 110 - Signal connector 17 PIN M23 turnable AEDC 139

TETRA COMPACT-X 80 TORQUE /SPEED CHARTS - Sizes 1,5 - 2,8

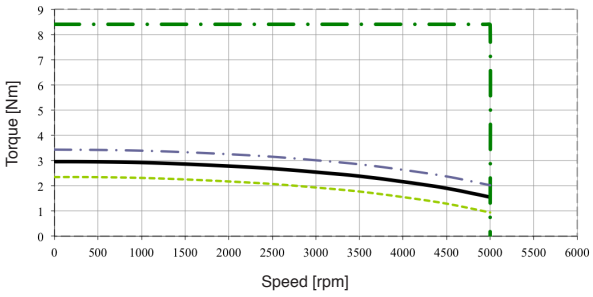
TETRA COMPACT-X 80 1,5 21



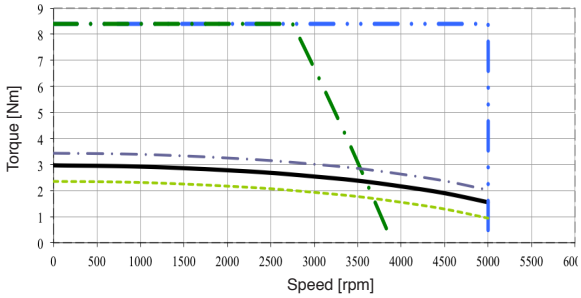
TETRA COMPACT-X 80 1,5 15



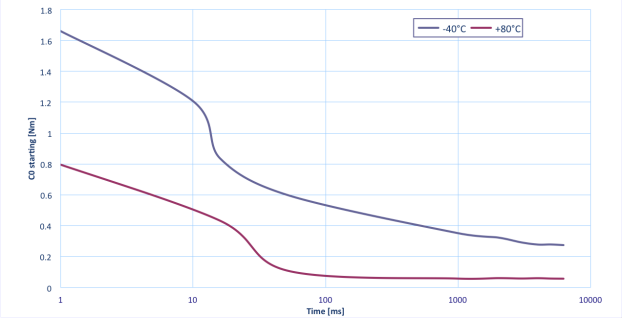
TETRA COMPACT-X 80 2,8 21



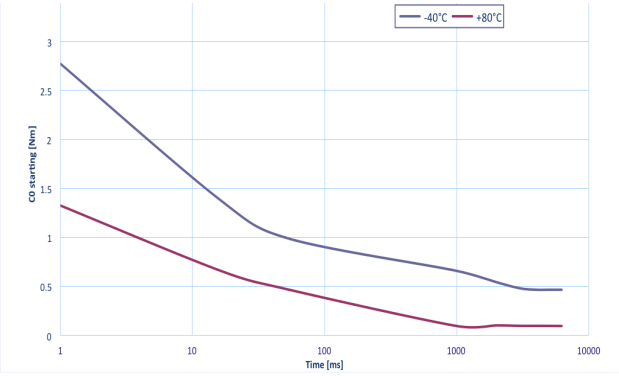
TETRA COMPACT-X 80 2,8 15



TETRA COMPACT-X 80 1,5 NO LOAD STARTING



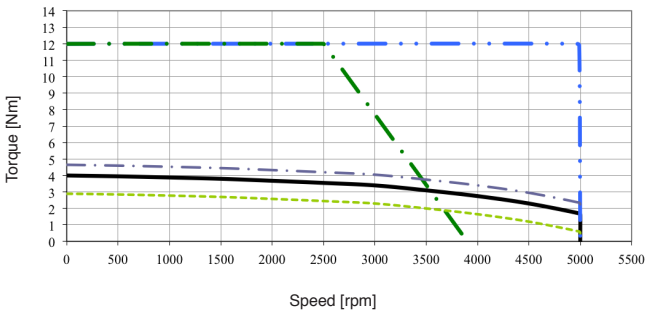
TETRA COMPACT-X 80 2,8 NO LOAD STARTING



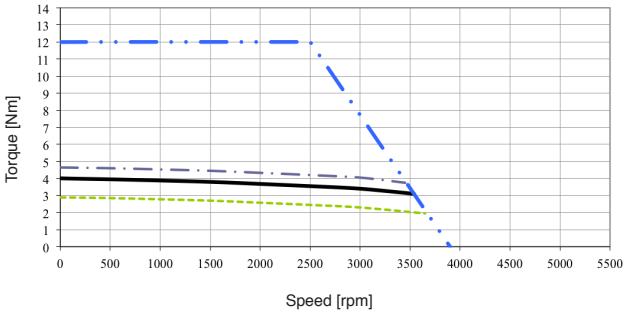
Continuous duty@ 0 ÷ +40°C
Continuous duty @ -40°C
Continuous duty @ +80°C
24 Vdc
48 Vdc
230 Vac
400 Vac

TETRA COMPACT-X 80 TORQUE /SPEED CHARTS - Size 4

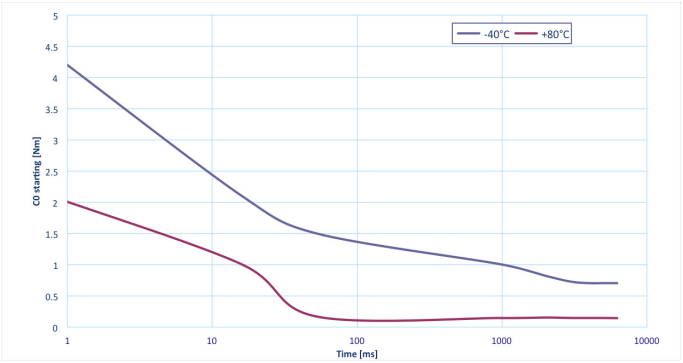
TETRA COMPACT-X 80 4 15



TETRA COMPACT-X 80 4 17



TETRA COMPACT-X 80 4 NO LOAD STARTING



Continuous duty@ 0 ÷ +40°C
Continuous duty @ -40°C
Continuous duty @ +80°C
24 Vdc
48 Vdc
230 Vac
400 Vac

TETRA COMPACT-X 100 RATINGS AND SPECIFICATIONS

TIME RATING	Continuous	AMBIENT TEMPERATURE	-40 to 80 °C
INSULATION CLASS	F	AMBIENT HUMIDITY	5 to 85% (non-condensing)
ENCLOSURE	Totally enclosed. Self-cooled	POLES	8
PROTECTION CLASS	IP 65 standard on the body	THERMAL PROTECTION	PT 1000
INSULATION SYSTEM UL	cURus , DV155J File nr.:E216686	CE certified	

			TC-X 100 3,2 21			TC-X 100 3,2 15		
			Ambient temperature			Ambient temperature		
			-40°C	0 ÷ +40°C	+80°C	-40°C	0 ÷ +40°C	+80°C
Continuous stall torque	M_0	Nm	3,75	3,20	2,30	3,75	3,2	2,30
Peak torque	M_{max}	Nm	11,0	11,0	11,0	11,0	11,0	11,0
Nominal torque	M_n	Nm	3,16	2,61	1,71	3,16	2,61	1,71
Rated voltage	Un	V	230	230	230	400	400	400
Nominal power	P_N	W	990	820	535	990	820	535
Continuous stall current	I_0	A_{rms}	7,08	6,08	4,08	4,18	3,52	2,10
Maximum current	Imax	A_{rms}	20,91	20,91	20,91	12,09	12,09	12,09
Nominal current	I_N	A_{rms}	5,95	5,11	3,43	3,51	2,96	1,76
Nominal working speed	nN	min^{-1}	3000	3000	3000	3000	3000	3000
Maximum working speed 230VAC	nmax	min^{-1}	5000	5000	5000	3900	3900	3900
Maximum working speed 400VAC	nmax	min^{-1}	-	-	-	5000	5000	5000
Torque constant	k_t	Nm/A_{rms}	0,526	0,526	0,526	0,910	0,910	0,910
Voltage constant	K_{eu-v}	Vrms/Krpm	31,8	31,8	31,8	55,0	55,0	55,0
Winding resistance	R_{20u-v}	Ohm	1,1	1,1	1,1	2,90	2,90	2,90
Winding inductance	L_{qu-v}	mH	4,44	4,44	4,44	13,28	13,28	13,28
Electrical time constant	Te	ms	4,03	4,03	4,03	4,58	4,58	4,58
Thermal resistance	°C/W	°C/W	1,0	1,0	1,0	1,0	1,0	1,0
Mechanical time constant	Tm	ms	0,92	0,92	0,92	0,81	0,81	0,81
Rotor inertia (a)	J_M	$Kgcm^2$	1,55	1,55	1,55	1,55	1,55	1,55
Mass	m	Kg	3,9	3,9	3,9	3,9	3,9	3,9
Maximum axial shaft load	N		225 (applied on the shaft's center)					
Maximum radial shaft load	N		626 (applied on the shaft's center)					

Rated Output with 300 x 300 x 6 mm aluminum heat sink flange coupling - Derating must be considered if the oil seal is applied - IP 54 standard shaft bushing
(a) without feedback

TETRA COMPACT-X 100 RATINGS AND SPECIFICATIONS

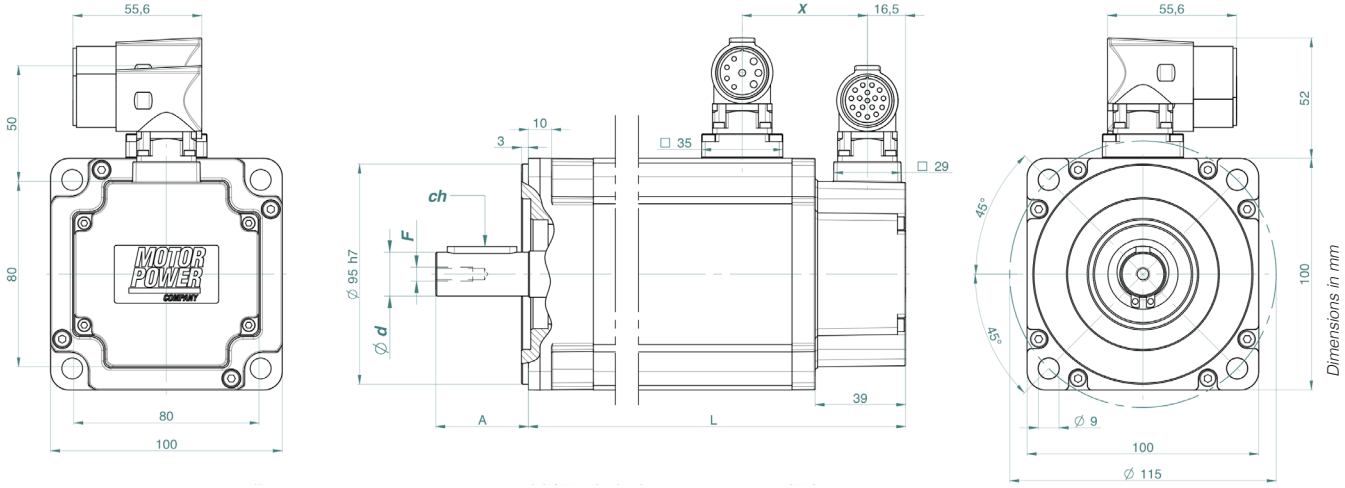
TIME RATING	Continuous	AMBIENT TEMPERATURE	-40 to 80 °C
INSULATION CLASS	F	AMBIENT HUMIDITY	5 to 85% (non-condensing)
ENCLOSURE	Totally enclosed. Self-cooled	POLES	8
PROTECTION CLASS	IP 65 standard on the body	THERMAL PROTECTION	PT 1000
INSULATION SYSTEM UL	cURus , DV155J File nr.:E216686	CE certified	

			TC-X 100 5,6 15			TC-X 100 8 15		
			Ambient temperature			Ambient temperature		
			-40°C	0 ÷ +40°C	+80°C	-40°C	0 ÷ +40°C	+80°C
Continuous stall torque	M_0	Nm	6,48	5,60	4,47	9,27	8,00	6,35
Peak torque	M_{max}	Nm	22,0	22,0	22,0	33,0	33,0	33,0
Nominal torque	M_n	Nm	5,08	4,20	3,07	6,27	5,0	3,35
Rated voltage	Un	V	400	400	400	400	400	400
Nominal power	P_N	W	1600	1320	965	1970	1570	1050
Continuous stall current	I_0	A_{rms}	7,12	6,15	4,24	10,19	8,79	6,02
Maximum current	Imax	A_{rms}	24,18	24,18	24,18	36,27	36,27	36,27
Nominal current	I_N	A_{rms}	5,51	4,76	3,28	6,56	5,66	3,88
Nominal working speed	nN	min^{-1}	3000	3000	3000	3000	3000	3000
Maximum working speed 230VAC	nmax	min^{-1}	3900	3900	3900	3900	3900	3900
Maximum working speed 400VAC	nmax	min^{-1}	5000	5000	5000	5000	5000	5000
Torque constant	k_t	Nm/A_{rms}	0,910	0,910	0,910	0,910	0,910	0,910
Voltage constant	K_{eu-v}	Vrms/Krpm	55,0	55,0	55,0	55,0	55,0	55,0
Winding resistance	R_{20u-v}	Ohm	1,17	1,17	1,17	0,69	0,69	0,69
Winding inductance	L_{qu-v}	mH	6,33	6,33	6,33	4,22	4,22	4,22
Electrical time constant	Te	ms	5,41	5,41	5,41	6,12	6,12	6,12
Thermal resistance	°C/W	°C/W	0,95	0,95	0,95	0,78	0,78	0,78
Mechanical time constant	Tm	ms	0,62	0,62	0,62	0,51	0,51	0,51
Rotor inertia (a)	J_M	$Kgcm^2$	2,91	2,91	2,91	4,1	4,1	4,1
Mass	m	Kg	5,6	5,6	5,6	7,3	7,3	7,3
Maximum axial shaft load	N		225 (applied on the shaft's center)					
Maximum radial shaft load	N		626 (applied on the shaft's center)					

Rated Output with 300 x 300 x 6 mm aluminum heat sink flange coupling - Derating must be considered if the oil seal is applied - IP 54 standard shaft bushing
(a) without feedback

TETRA COMPACT-X 100 DIMENSIONS

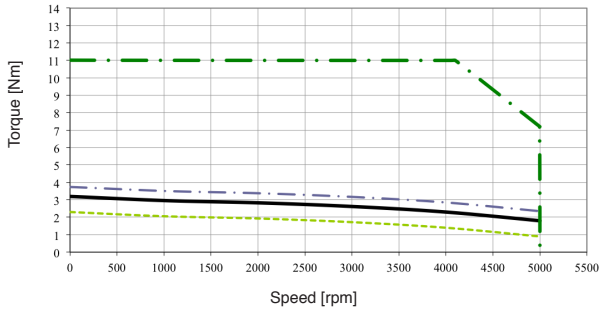
		TC -X 100 3,2 21	TC-X 100 3,2 15	TC-X 100 5,6 15	TC-X 100 8 15
L	mm	145	145	175	205
A	mm	40	40	40	40
d	mm	19 (h6)	19 (h6)	19 (h6)	19 (h6)
C	mm	6x6x30	6x6x30	6x6x30	6x6x30
F	mm	M6x16	M6x16	M6x16	M6x16
X	mm	54	54	54	54



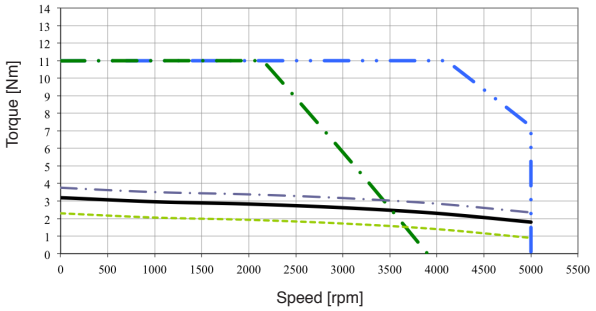
Power connector 4+4 PIN M23 turnable BEDC 110 - Signal connector 17 PIN M23 turnable AEDC 139

TETRA COMPACT-X 100 TORQUE / SPEED CHARTS

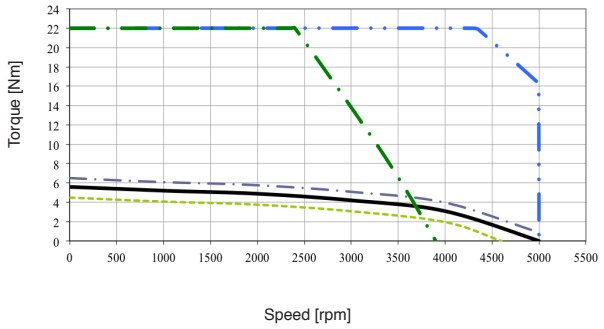
TETRA COMPACT-X 100 3,2 21



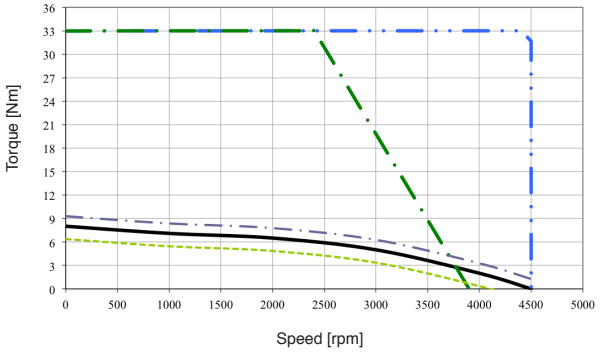
TETRA COMPACT-X 100 3,2 15



TETRA COMPACT-X 100 5.6 15



TETRA COMPACT-X 100 8 15



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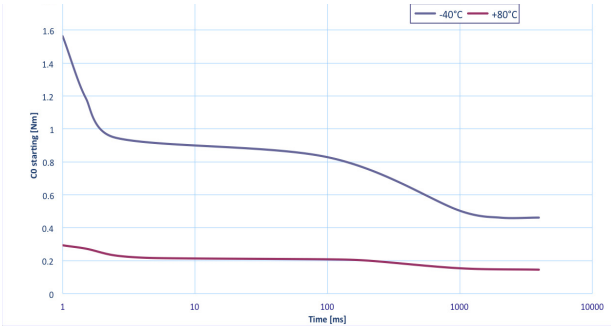
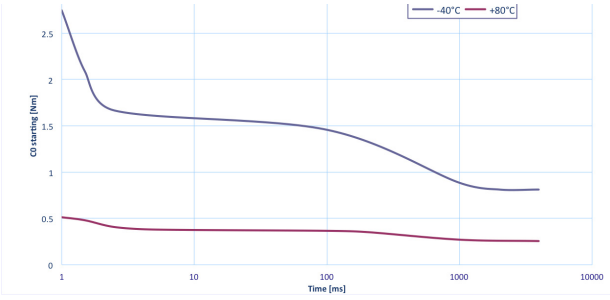
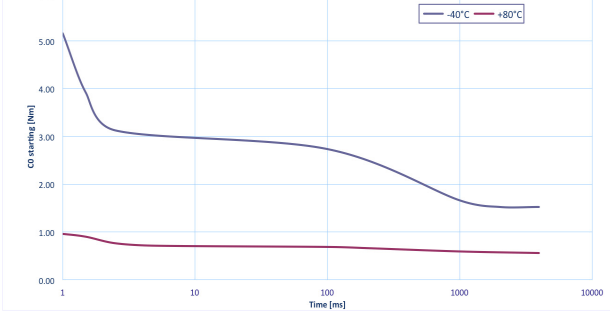
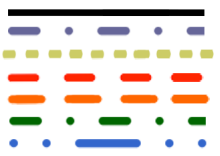


TETRA COMPACT-X 100 5.6 NO LOAD STARTING



TETRA COMPACT-X 100 8 NO LOAD STARTING





Continuous duty@ 0 ÷ +40°C
Continuous duty @ -40°C
Continuous duty @ +80°C
24 Vdc
48 Vdc
230 Vac
400 Vac

FEEDBACK FEATURES

R1 RESOLVER 2 poles

Motor size		TC-X 40	TC-X 60 - TC-X 80	TC-X 100
Nominal Voltage	Vrms	7±5%	7±5%	7±5%
Nominal current	mA	50	50	50
Phase shift		+5°	+3°	-5°
Minimum sin amplitude	mVrms	20	20	20
Frequency	kHz	10	10	10
Poles number		2	2	2
Trasformer ratio		0.5 ± 5%	0.5 ± 5%	0.5 ± 5%
Input impedance	ohm	160	130 + j280	110+j140
Output impedance	ohm	130	425 + j755	130+j240
System accuracy		± 10'	± 10'	± 10'
Rotor inertia	Kg cm^2	0.006	0.03	0.1

THERMAL PROTECTION FEATURES

PT 1000

Thermal protection features	
Type	PT 1000-R8/2-2F
Sensor	Sensor RTD (Platinum Resistance Temperature Detectors) according to DIN EN 60751
Temperature range	from -40 °C to 250 °C
Accuracy	Δt= ± (0,3 + 0,04t) °C

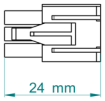
°C	Resistance (Ω)
-40	843
-30	882
-20	922
-10	961
0	1000
10	1039
20	1078
30	1117
40	1155
50	1194
60	1232
70	1271
80	1309
90	1347
100	1385
110	1423
120	1461
130	1498
140	1536
150	1573
160	1611

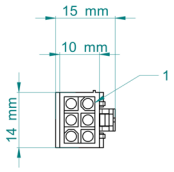
WIRING MOTOR CONNECTIONS

POWER CONNECTOR for TC-X 40 ONLY

PIN	FUNCTION
1	Phase U
2	Phase V
3	Phase W
4	PE
5	Brake 24V (#)
6	Brake 0V (#)

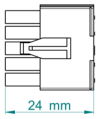
(#) Optional

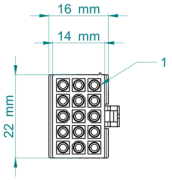




FEEDBACK CONNECTOR for TC-X 40 ONLY
R1 RESOLVER

PIN	FEEDBACK FUNCTION
1	Sin+
2	Sin-
3	Cos+
4	Cos-
5	Ref+
6	Ref-
7	-
8	-
9	-
10	-
11	-
12	-
13	-
14	-
15	Shield





WIRING MOTOR CONNECTIONS

CONNECTORS WITH G2 CONNECTION for ALL OTHER MODELS

POWER CONNECTOR

PIN	FUNCTION
1	Phase U
2	PE
3	Phase W
4	Phase V
A	Brake 24V (#)
B	Brake 0V (#)
C	PT 1000 (+)
D	PT 1000 (-)

(#) Optional

FEEDBACK CONNECTOR

RESOLVER R1

PIN	FEEDBACK FUNCTION
1	-
2	-
3	-
4	-
5	/Sin
6	Sin +
7	/Ref
8	Ref
9	-
10	Shield
11	/Cos
12	Cos
13	-
14	-
15	-
16	-
17	-

CONNECTORS WITH H2 CONNECTION for ALL OTHER MODELS

POWER CONNECTOR

PIN	FUNCTION
1	Phase U
2	PE
3	Phase W
4	Phase V
A	Brake 24V (#)
B	Brake 0V (#)
C	
D	

(#) Optional

FEEDBACK CONNECTOR

RESOLVER R1

PIN	FEEDBACK FUNCTION
1	-
2	-
3	-
4	-
5	/Sin
6	Sin +
7	/Ref
8	Ref
9	-
10	Shield
11	/Cos
12	Cos
13	-
14	-
15	-
16	PT 1000 (+)
17	PT 1000 (-)