

TETRA COMPACT SERVOMOTOR TYPE

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



1	Model	See product lineup
2	Winding code	See data sheet
3	Mechanical Arrangement	<p>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)</p> <p style="font-size: x-small; text-align: right;">N.B.: All motor body are IP 65</p>
4	Feedback	<p>E1 - Encoder TTL 2000ppr R1 - Resolver 2 poles A1 - Absolute Multiturn Encoder</p>
5	Brake	<p>0 - Without brake 1 - With brake</p>
6	Connection	<p>D0 - 300mm cable length with AMP connectors, without thermal protection <i>(For TC40 only)</i> specify D0/F88 if the connection is with Lite Pro drive G2 - 90° M23 turnable connectors - PT 1000 on power connector specify G2/F88 if the connection is with Lite Pro drive H2 - 90° M23 turnable connectors - PT 1000 on signal connector specify H2/F88 if the connection is with Lite Pro drive</p>

SEE IT BEFORE IT HAPPENS

TETRA COMPACT 40 RATINGS AND SPECIFICATIONS

TIME RATING	Continuous	AMBIENT TEMPERATURE	0 to 40 °C
INSULATION CLASS	F	AMBIENT HUMIDITY	20 to 80% (non-condensing)
ENCLOSURE	Totally enclosed. Self-cooled	POLES	8
PROTECTION CLASS	IP 65 standard on the body	THERMAL PROTECTION	Not available
INSULATION SYSTEM UL /CSA	cURus , DV155J File nr.:E216686	CE certified	

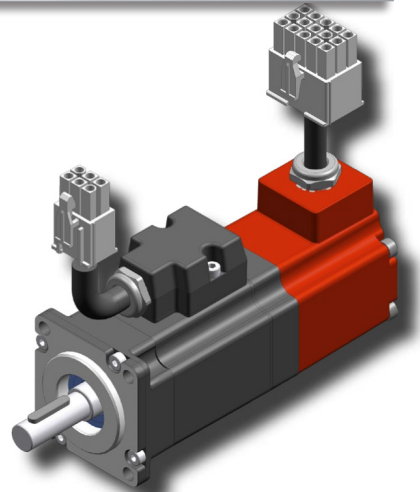
		TC 40 0,16 00	TC 40 0,16 32	TC 40 0,32 00	TC 40 0,32 32
Stall Torque	Nm	0,21	0,21	0,34	0,34
Peak Torque	Nm	0,48	0,48	0,96	0,96
Rated Torque	Nm	0,19	0,19	0,32	0,32
Rated Voltage	Vdc	48	24	48	24
Rated Output Power	W	60	60	100	100
Stall Current	Arms	2,84	4,23	4,6	6,8
Peak Current	Arms	7,13	9,67	14,2	21,3
Rated Current	Arms	2,6	3,96	4,3	6,4
Rated Speed	rpm	3000	3000	3000	3000
Maximum Speed 48VDC	rpm	5000	-	5000	
Maximum Speed 24VDC	rpm	-	5000	-	5000
Torque Constant (± 5%)	Nm/Arms	0,074	0,050	0,074	0,050
Voltage Constant (± 5%)	Vrms/Krpm	4,5	3,0	4,5	3,0
Phase/phase resistance (± 10%@25°C)	Ohm	1,77	1,0	0,85	0,37
Phase/phase inductance (± 10%)	mH	1,6	0,7	0,9	0,42
Electrical time constant	ms	0,9	0,7	1,06	1,13
Thermal Resistance	°C/W	2,38	2,38	2,30	2,30
Mechanical time constant	ms	1,0	1,62	1,04	1,04
Rotor Inertia (*)	Kg cm ²	0,027	0,027	0,047	0,047
Motor weight	Kg	0,4	0,4	0,54	0,54
Motor weight + Brake	Kg	0,54	0,54	0,68	0,68
Motor weight with absolute encoder	Kg	0,41	0,41	0,55	0,55
Motor weight with absolute encoder + Brake	Kg	0,61	0,61	0,75	0,75
Axial Load	N		30 (applied on the shaft's center)		
Radial Load	N		180 (applied on the shaft's center)		

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

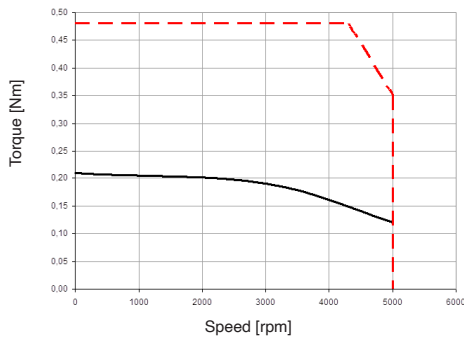
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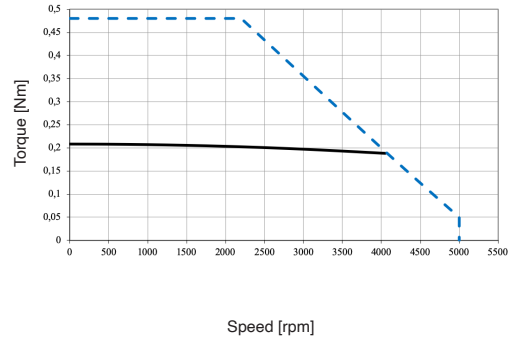
TETRA COMPACT 40 TORQUE / SPEED CHARTS



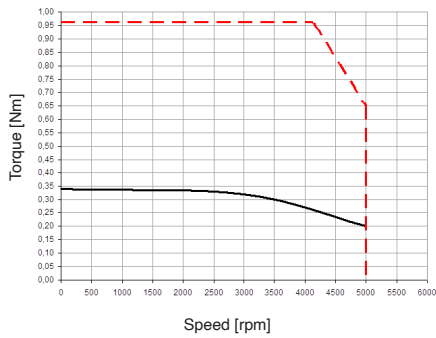
TETRA COMPACT 40 0,16 00



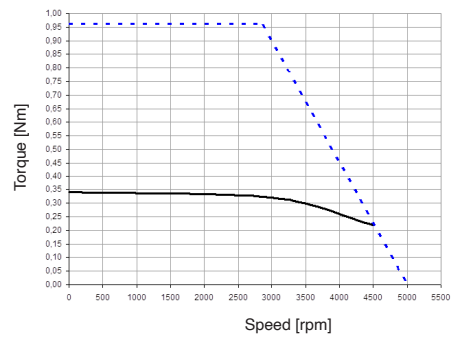
TETRA COMPACT 40 0,16 32



TETRA COMPACT 40 0,32 00



TETRA COMPACT 40 0,32 32



SEE IT BEFORE IT HAPPENS



Continuous duty @ rated voltage
 48 Vdc
 24 Vdc

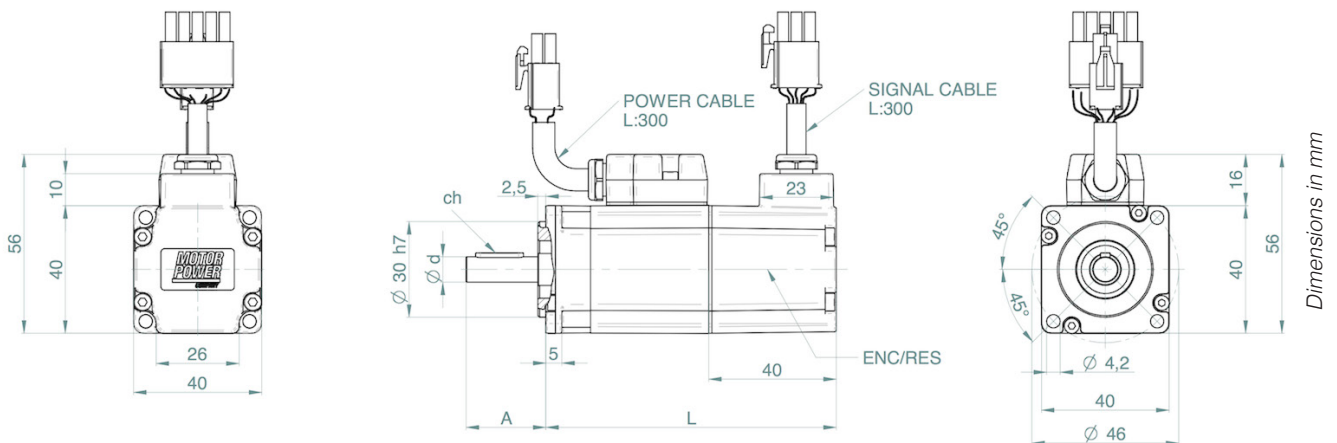
TETRA COMPACT 40 DIMENSIONS

TC 40 0,16

TC 40 0,32

L * (Without Brake)	mm	91	109
L * (With Brake)	mm	122	140
A	mm	25	25
d	mm	8 (h6)	8 (h6)
ch	mm	3x3x15	3x3x15

* Motor's length increases of 10 mm with absolute encoder feedback



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

SEE IT BEFORE IT HAPPENS

TETRA COMPACT 60 RATINGS AND SPECIFICATIONS

TIME RATING	Continuous	AMBIENT TEMPERATURE	0 to 40 °C
INSULATION CLASS	F	AMBIENT HUMIDITY	20 to 80% (non-condensing)
ENCLOSURE	Totally enclosed. Self-cooled	POLES	8
PROTECTION CLASS	IP 65 standard on the body	THERMAL PROTECTION	PT 1000
INSULATION SYSTEM UL /CSA	cURus , DV155J File nr.:E216686	CE certified	

TC 60 0,65 00

TC 60 0,65 01

TC 60 0,65 32

Stall Torque	Nm	0,69	0,69	0,69
Peak Torque	Nm	1,95	1,95	1,95
Rated Torque	Nm	0,64	0,64	0,64
Rated Voltage	Vdc	48	48	24
Rated Output Power	W	200	200	200
Stall Current	Arms	9,32	7,34	13,8
Peak Current	Arms	29	22,8	43
Rated Current	Arms	8,7	6,8	12,8
Rated Speed	rpm	3000	3000	3000
Maximum Speed 24VAC	rpm	-	-	5000
Maximum Speed 48VAC	rpm	5000	5000	-
Torque Constant (± 5%)	Nm/Arms	0,074	0,094	0,050
Voltage Constant (± 5%)	Vrms/Krpm	4,5	5,7	3
Phase/phase resistance (± 10%@25°C)	Ohm	0,21	0,38	0,1
Phase/phase inductance (± 10%)	mH	0,5	0,9	0,28
Electrical time constant	ms	2,38	2,4	2,75
Thermal Resistance	°C/W	1,89	1,89	1,89
Mechanical time constant	ms	0,75	0,8	0,78
Rotor Inertia (*)	Kg cm ²	0,13	0,13	0,13
Motor Weight	Kg	1,1	1,1	1,1
Motor Weight + Brake	Kg	1,5	1,5	1,5
Axial Load	N	70 (applied on the shaft's center)		
Radial Load	N	220 (applied on the shaft's center)		

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

TETRA COMPACT 60 RATINGS AND SPECIFICATIONS

TIME RATING	Continuous	AMBIENT TEMPERATURE	0 to 40 °C
INSULATION CLASS	F	AMBIENT HUMIDITY	20 to 80% (non-condensing)
ENCLOSURE	Totally enclosed. Self-cooled	POLES	8
PROTECTION CLASS	IP 65 standard on the body	THERMAL PROTECTION	PT 1000
INSULATION SYSTEM UL /CSA	cURus , DV155J File nr.:E216686	CE certified	

TC 60 1,3 01

TC 60 1,3 32

Stall Torque	Nm	1,31	0,9 for S1	1,3 for S2 (**)
Peak Torque	Nm	3,9		3,9
Rated Torque	Nm	1,18	0,87 for S1	1,18 for S2 (**)
Rated Voltage	Vdc	48		24
Rated Output Power	W	370	280 for S1	370 for S2 (**)
Stall Current	Arms	13,8	18,0 for S1	26,0 for S2 (**)
Peak Current	Arms	45,6		85
Rated Current	Arms	12,6	17,85 for S1	23,6 for S2 (**)
Rated Speed	rpm	3000		3000
Maximum Speed 24VAC	rpm	-		5000
Maximum Speed 48VAC	rpm	5000		-
Torque Constant (± 5%)	Nm/Arms	0,094		0,05
Voltage Constant (± 5%)	Vrms/Krpm	5,7		3
Phase/phase resistance (± 10%@25°C)	Ohm	0,16		0,09
Phase/phase inductance (± 10%)	mH	0,48		0,11
Electrical time constant	ms	3,0		1,22
Thermal Resistance	°C/W	1,41		1,41
Mechanical time constant	ms	0,65		1,2
Rotor Inertia (*)	Kg cm ²	0,24		0,24
Motor Weight	Kg	1,5		1,5
Motor Weight + Brake	Kg	1,9		1,9
Axial Load	N	70 (applied on the shaft's center)		
Radial Load	N	220 (applied on the shaft's center)		

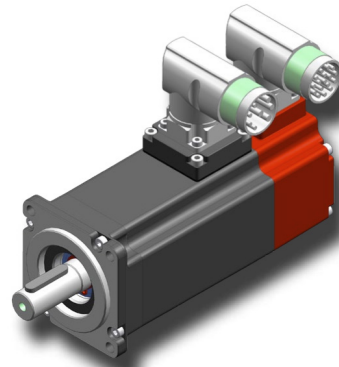
Rated output with 250 x 250 x 6 mm metallic heat sink flange coupling - Derating must be considered if the oil seal is applied - IP 54 standard shaft bushing

(*) without brake and without feedback
 (**) for intermittent duty S2 T= 10'/20'

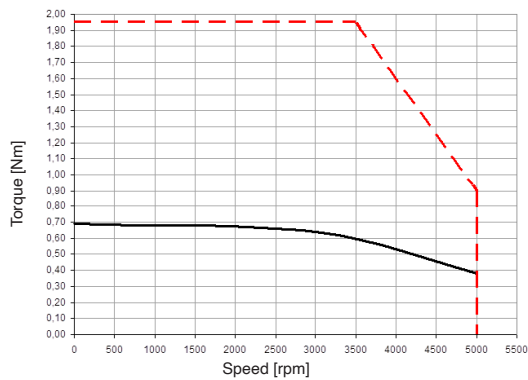
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**MOTOR
POWER**
COMPANY

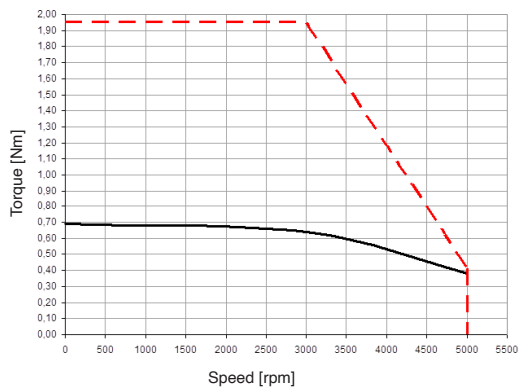
TETRA COMPACT 60 TORQUE /SPEED CHARTS



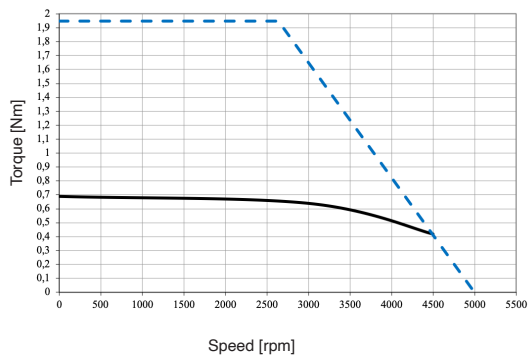
TETRA COMPACT 60 0,65 00



TETRA COMPACT 60 0,65 01

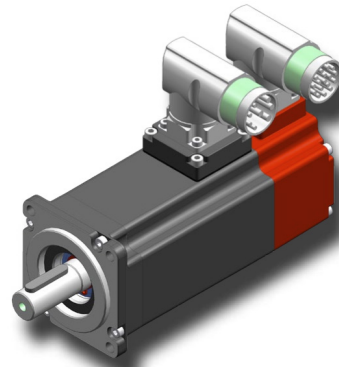


TETRA COMPACT 60 0,65 32

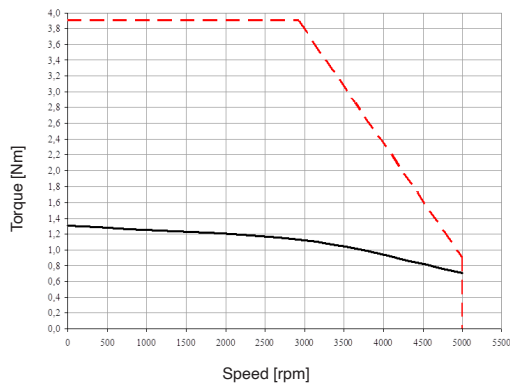


Continuous duty @ rated voltage
 48 Vdc
 24 Vdc

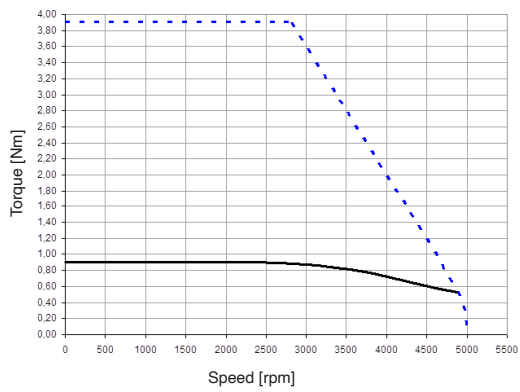
TETRA COMPACT 60 TORQUE /SPEED CHARTS



TETRA COMPACT 60 1,3 01



TETRA COMPACT 60 1,3 32



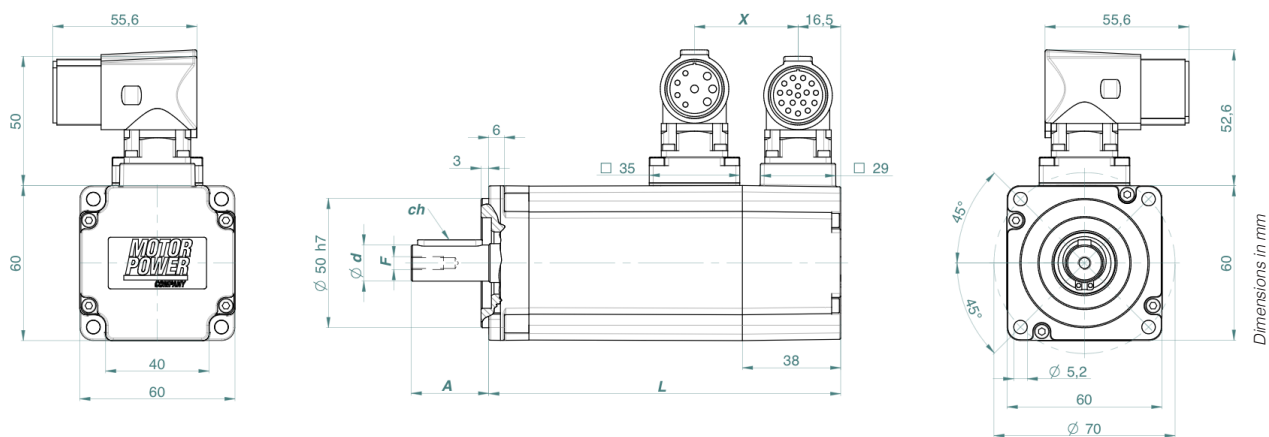
Continuous duty @ rated voltage
 48 Vdc
 24 Vdc

TETRA COMPACT 60 DIMENSIONS

TC 60 0,65

TC 60 1,3

L (Without Brake)	mm	111	136
L (With Brake)	mm	148	173
A	mm	23	30
d	mm	11 (h6)	14 (h6)
ch	mm	4x4x18	5x5x25
F	mm	M4x10	M5x12,5
X (Without Brake)	mm	40	40
X (With Brake)	mm	77	77



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

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**MOTOR
POWER**
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TETRA COMPACT 80 RATINGS AND SPECIFICATIONS

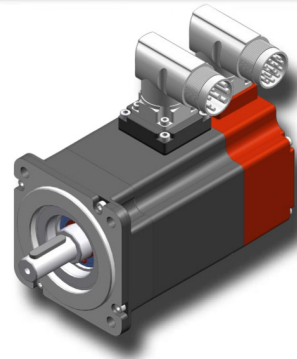
TIME RATING	Continuous	AMBIENT TEMPERATURE	0 to 40 °C
INSULATION CLASS	F	AMBIENT HUMIDITY	20 to 80% (non-condensing)
ENCLOSURE	Totally enclosed. Self-cooled	POLES	8
PROTECTION CLASS	IP 65 standard on the body	THERMAL PROTECTION	PT 1000
INSULATION SYSTEM UL /CSA	cURus , DV155J File nr.:E216686	CE certified	

	TC 80 1,5 01	TC 80 1,5 03	TC 80 2,8 02
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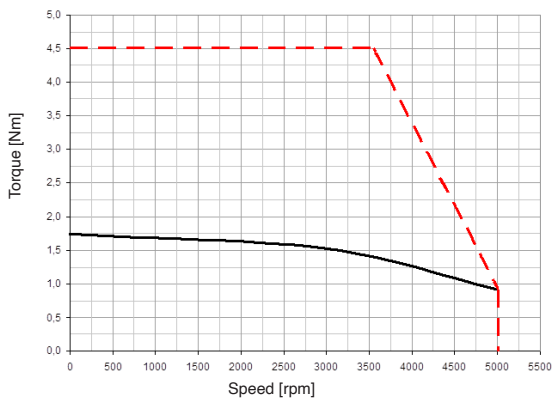
		TC 80 1,5 01	TC 80 1,5 03	TC 80 2,8 02
Stall Torque	Nm	1,74	1,74	2,0 for S1 2,8 for S2 (**)
Peak Torque	Nm	4,5	4,5	8,4
Rated Torque	Nm	1,53	1,53	1,54 for S1 2,34 for S2 (**)
Rated Voltage	Vdc	48	48	48
Rated Output Power	W	480	480	480 for S1 735 for S2 (**)
Stall Current	Arms	18,5	12,3	17,7 for S1 24,8 for S2 (**)
Peak Current	Arms	52,7	35,1	82
Rated Current	Arms	16,3	11	14,3 for S1 21,7 for S2 (**)
Rated Speed	rpm	3000	3000	3000
Maximum Speed 48VAC	rpm	5000	3700	4700
Torque Constant (± 5%)	Nm/Arms	0,094	0,141	0,113
Voltage Constant (± 5%)	Vrms/Krpm	5,7	8,5	6,8
Phase/phase resistance (± 10%@25°C)	Ohm	0,075	0,136	0,064
Phase/phase inductance (± 10%)	mH	0,314	0,53	0,24
Electrical time constant	ms	4,2	3,9	3,75
Thermal Resistance	°C/W	1,67	1,67	2,13
Mechanical time constant	ms	0,80	0,80	0,65
Rotor Inertia (*)	Kg cm ²	0,64	0,64	1,16
Motor weight	Kg	2,25	2,25	3,05
Motor Weight + Brake	Kg	2,97	2,97	3,77
Axial Load	N		110 (applied on the shaft's center)	
Radial Load	N		350 (applied on the shaft's center)	

Rated output with 250 x 250 x 6 mm metallic heat sink flange coupling - Derating must be considered if the oil seal is applied - IP 54 standard shaft bushing
 (*) without brake and without feedback
 (**) for intermittent duty S2 T= 15'/30'

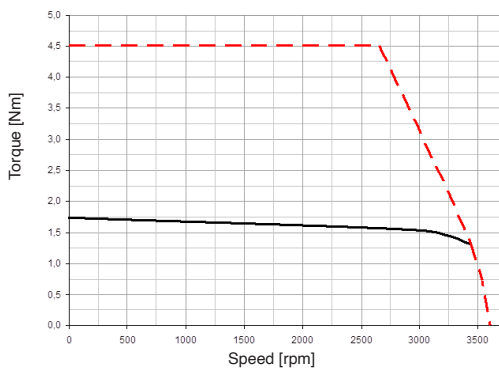
TETRA COMPACT 80 TORQUE /SPEED CHARTS



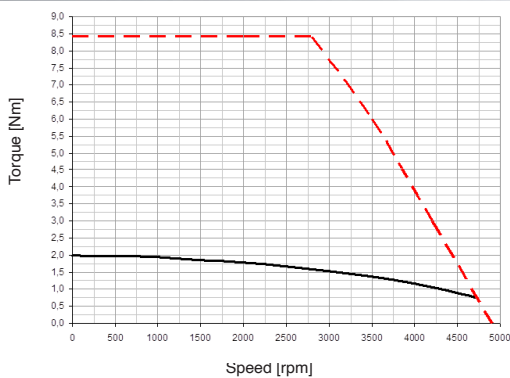
TETRA COMPACT 80 1,5 01



TETRA COMPACT 80 1,5 03



TETRA COMPACT 80 2,8 02



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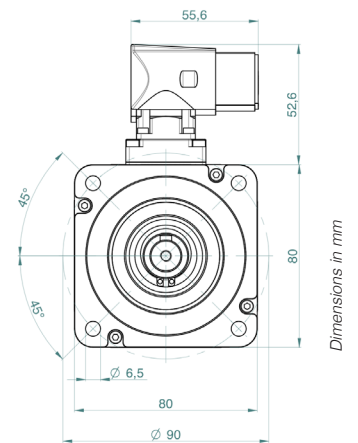
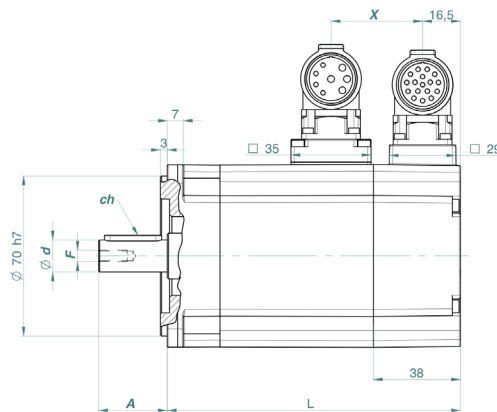
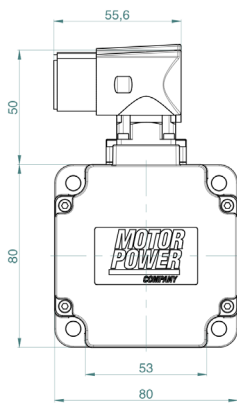
Continuous duty @ rated voltage
 48 Vdc
 24 Vdc

TETRA COMPACT 80 DIMENSIONS

TC 80 1,5

TC 80 2,8

L (Without Brake)	mm	128	153
L (With Brake)	mm	170 [173 with A1 feedback]	195 [198 with A1 feedback]
A	mm	30	40
d	mm	14 (h6)	19 (h6)
ch	mm	5x5x25	6x6x30
F	mm	M5x12,5	M6x16
X (Without Brake)	mm	40	40
X (With Brake)	mm	82	82



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

Dimensions in mm

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**MOTOR
POWER**
COMPANY

FEEDBACK FEATURES

E1 TTL ENCODER

Motor size	TC 40 - 60 - 80	
Nominal Voltage	V	5±5%
Nominal current	mA	200
Max Frequency	Khz	200
Electronic type	LINE DRIVER AM 26 LS31	
Zero impulse	ONE AT A LAP	
N° of pulses revolution	ppr	2000
Resolution	cpr	8000
N° of commutation signal	3 DIFFERENTIAL	
System accuracy	arc sec	± 50
Rotor inertia	Kg cm ²	0.01

Please note: for all motors size **TC 40** - all motors size **TC 60** with encoder TTL the maximum theoretical acceleration is 80.000 rad/s²

R1 RESOLVER 2 poles

Motor size		TC40	TC60 - TC80
Nominal Voltage	Vrms	7±5%	7±5%
Nominal current	mA	50	50
Phase shift		+5°	+3°
Minimum sin amplitude	mVrms	20	20
Frequency	kHz	10	10
Poles number		2	2
Trasformer ratio		0.5 ± 5%	0.5 ± 5%
Input impedance	ohm	160	130 + j280
Output impedance	ohm	130	425 + j755
System accuracy		± 10'	± 10'
Rotor inertia	Kg cm ²	0.006	0.03

A1 ABSOLUTE MULTITURN ENCODER

Motor size	TC40 - TC60 - TC80	
Nominal Voltage	V	7 ÷ 12
Nominal current	mA	60
Max frequency fon Sin Cos signal	Khz	65
Interface type	Hiperface	
N° absolute singleturn steps	4096 (12 Bits)	
N° absolute multiturn steps	4096 (12 Bits)	
N° of sin/cos periods per revolution	128	
System accuracy	arc sec	± 320
Rotor inertia	Kg cm ²	0.0045

BRAKE FEATURES

		TC 40	TC 60	TC 80	
Static Torque @20°C	Nm	0,4	2	4,5	
Moment of Inertia	Kg cm ²	0,008	0,050	0,220	
Rated Current	A	0,34	0,46	0,5	
Input Power	W	8	11	12	
Engaging Time	ms	6	6	7	
Release Time	ms	10	25	35	
Operating Voltage	24 Vdc +6% - 10% Stabilized				

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	$\Delta t = \pm (0,3 + 0,04t) \text{ } ^\circ\text{C}$

°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