RTMBi

T STANDALONE AXIS

ASME-RTMBi140###3##S0000

Data sheet

Version 1.1

ETEL MOTION TECHNOLOGY

TESTING CONDITIONS	UNIT	
Position controller	-	AccurET modular 300 or 400
Rated inertia	$kg.m^2$	0.025
Tool point position	mm	Centered on the table. 18.4 mm above the rotor's interface
Ambient temperature	°C	22 ±1

DIMENSIONAL DATA		UNIT	
OD	Outside diameter	mm (in)	166 (6.53)
	Table height	mm (in)	86 (3.38)
ID	Inside diameter	mm (in)	Ø 25 (Ø 0.98)
	Total mass (without payload)	kg (lbs)	8.5 (18.73)
J	Rotor inertia (without payload)	$kg.m^2$	1.53E-03

TORQUE CAPABILITIES		UNIT	
Tp	Peak torque (1)	Nm	39.3
Tc	Continuous torque (1) (2)	Nm	9.47
Ts	Stall torque	Nm	7.27
Td	Max. detent torque (average to peak)	Nm	0.29
Tfrs	Static friction (maximal value)	Nm	0.30
Tfrd	Dynamic friction (maximal value)	Nm/(rad/s)	0.012

LOAD CAPACITIES	UNIT	
Moment load (3)	Nm	9
Axial load	kg (lbs)	12 (26.45)
Upside down load	kg (lbs)	12 (26.45)

DYNAMIC PERFORMANCE	UNIT	
Maximum speed (1)	rad/s (rpm)	125.6 (1200)
Maximum acceleration	rad/s^2	10'000
Typical position stability (4)	arcsec	± 1.5

STAGE ACCURACY	UNIT	
Positioning accuracy (w/o mapping)	arcsec	± 20
Positioning accuracy (w/ mapping)	arcsec	± 6
Unidirectional repeatability	arcsec	± 2
Bidirectional repeatability	arcsec	± 3
Radial runout	µm	20
Total axial error	µm	20 measured on Ø82mm

ENCODER CHARACTERISTICS	UNIT	
Encoder and signal type	-	Optical - incremental
Output signal	-	1 Vpp
Line count	Period/turn	5'000
Reference mark	-	1
Power supply	V	5 ±10%

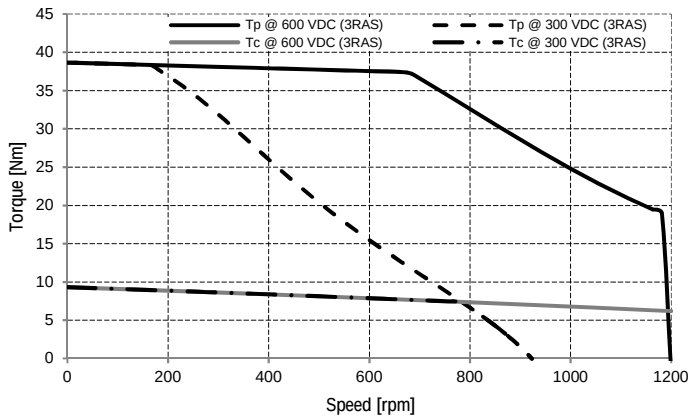
WORKING ENVIRONMENT	
IP protection grade	IP40

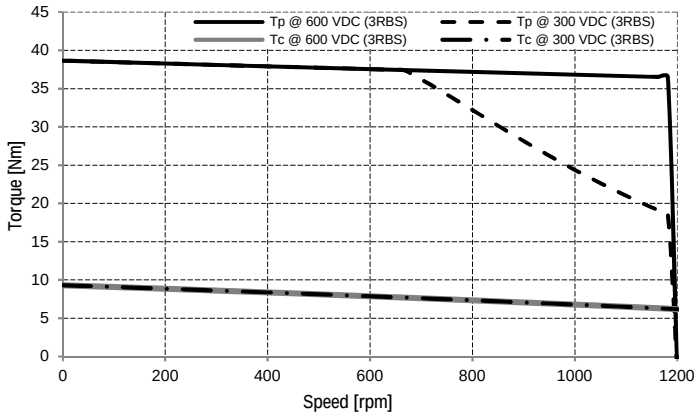
ELECTRICAL SPECIFICATIONS		UNIT		
	Motor type	-	Ironcore	Ironcore
	Motor model	-	TMB0140-030-3RAS	TMB0140-030-3RBS
	Number of phases	-	3	3
Kt	Torque constant	Nm/Arms	3.59	1.79
Ku	Back EMF constant (5)	Vrms/(rad/s)	2.08	1.04
R20	Electrical resistance at 20°C (5)	Ohm	7.08	1.77
L1	Electrical inductance (5)	mH	33.5	8.37
Ip	Peak current	Arms	19.5	39.1
Ic	Continuous current (2)	Arms	2.82	5.65
Is	Stall current	Arms	2.14	4.28
ns	Stall speed	rpm	0.035	0.035
Udc	Nominal input voltage	VDC	600	600
Pc	Max. cont. power dissipation (2)	W	111	111
2p	Number of poles	-	22	22

GUIDING ELEMENTS	
Type	Ball bearing

MATERIALS AND FINISH	
Baseplate	Stainless steel
Shaft	Stainless steel

Torque = f (Speed)





According to the Machinery Directive 2006/42/EC, the system presently described falls into the "partly completed machinery" category and fully complies with it as long as the system is operated according to the working conditions described in the corresponding manual. Customer is responsible for setting safeties/limitations that will keep the motor in its safe operating area. ETEL cannot be held responsible if the system is used in an improper way.

Notes: The specifications given may be mutually exclusive. Hypothesis, tolerances and definition are in ETEL systems documentation.
(1) See torque vs speed curve to check if the specifications can be reached based on selected winding and DC bus voltage limitation.
(2) Coils at 100°C with additional surface of 0.070m^2 fixed on the base and 0.012m^2 on the rotor made of black anodized aluminum.
(3) At the fastening holes of the rotor.
(4) Specification given at encoder level without any additional load fixed to the customer interface. This specification is reduced when an additional mass is fixed to the customer interface.
(5) Terminal to terminal.

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ETEL MOTION TECHNOLOGY

PRECISION INDEXING ROTARY TABLE

Standard
ASME-RTMBi1400503R#S0000-T STANDALONE AXIS

TESTING CONDITIONS	UNIT	
Position controller	-	AccurET modular 300 or 400
Rated inertia	$kg.m^2$	0.025
Tool point position	mm	Centered on the table. 18.4 mm above the rotor's interface
Ambient temperature	°C	22 ±1

DIMENSIONAL DATA		UNIT	
OD	Outside diameter	mm (in)	166 (6.53)
	Table height	mm (in)	115 (4.52)
ID	Inside diameter	mm (in)	Ø 25 (Ø 0.98)
	Total mass (without payload)	kg (lbs)	10.5 (23.14)
J	Rotor inertia (without payload)	$kg.m^2$	2.07E-03

TORQUE CAPABILITIES		UNIT	
Tp	Peak torque (1)	Nm	65.5
Tc	Continuous torque (1) (2)	Nm	14.5
Ts	Stall torque	Nm	11.1
Td	Max. detent torque (average to peak)	Nm	0.48
Tfrs	Static friction (maximal value)	Nm	0.45
Tfrd	Dynamic friction (maximal value)	Nm/(rad/s)	0.012

LOAD CAPACITIES	UNIT	
Moment load (3)	Nm	12
Axial load	kg (lbs)	12 (26.45)
Upside down load	kg (lbs)	12 (26.45)

DYNAMIC PERFORMANCE	UNIT	
Maximum speed (1)	rad/s (rpm)	125.6 (1200)
Maximum acceleration	rad/s^2	10'000
Typical position stability (4)	arcsec	± 1.5

STAGE ACCURACY	UNIT	
Positioning accuracy (w/o mapping)	arcsec	± 20
Positioning accuracy (w/ mapping)	arcsec	± 6
Unidirectional repeatability	arcsec	± 2
Bidirectional repeatability	arcsec	± 3
Radial runout	µm	20
Total axial error	µm	20 measured on Ø82mm

ENCODER CHARACTERISTICS	UNIT	
Encoder and signal type	-	Optical - incremental
Output signal	-	1 Vpp
Line count	Period/turn	5'000
Reference mark	-	1
Power supply	V	5 ±10%

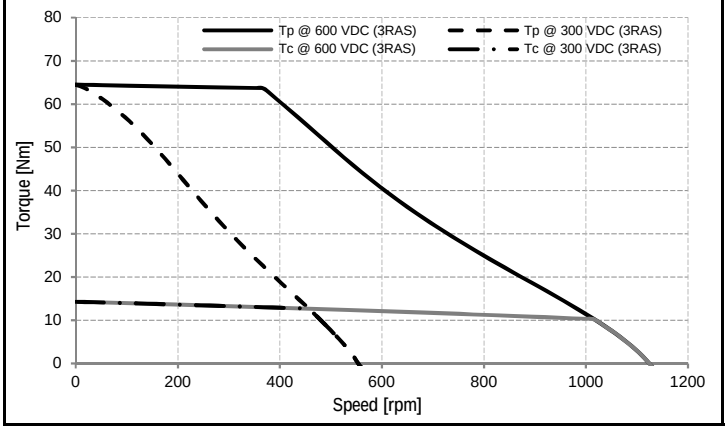
WORKING ENVIRONMENT	
IP protection grade	IP40

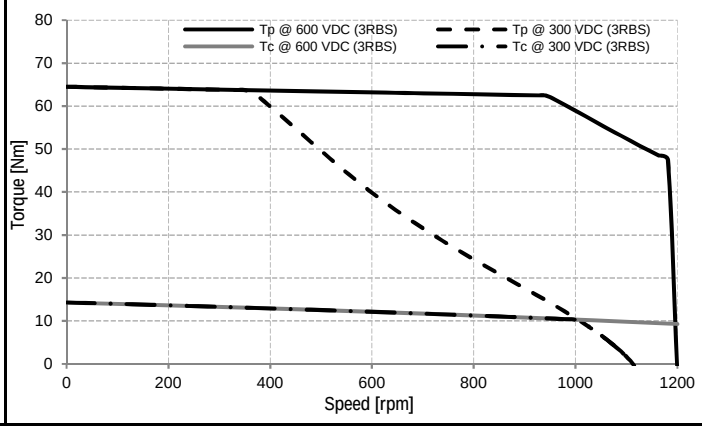
ELECTRICAL SPECIFICATIONS		UNIT		
	Motor type	-	Ironcore	Ironcore
	Motor model	-	TMB0140-050-3RAS	TMB0140-050-3RBS
	Number of phases	-	3	3
Kt	Torque constant	Nm/Arms	6.01	3.00
Ku	Back EMF constant (5)	Vrms/(rad/s)	3.47	1.74
R20	Electrical resistance at 20°C (5)	Ohm	9.98	2.49
L1	Electrical inductance (5)	mH	55.9	14.0
Ip	Peak current	Arms	17.9	35.8
Ic	Continuous current (2)	Arms	2.55	5.10
Is	Stall current	Arms	1.93	3.86
ns	Stall speed	rpm	0.029	0.029
Udc	Nominal input voltage	VDC	600	600
Pc	Max. cont. power dissipation (2)	W	128	128
2p	Number of poles	-	22	22

GUIDING ELEMENTS	
Type	Ball bearing

MATERIALS AND FINISH	
Baseplate	Stainless steel
Shaft	Stainless steel

Torque = f (Speed)





According to the Machinery Directive 2006/42/EC, the system presently described falls into the "partly completed machinery" category and fully complies with it as long as the system is operated according to the working conditions described in the corresponding manual. Customer is responsible for setting safeties/limitations that will keep the motor in its safe operating area. ETEL cannot be held responsible if the system is used in an improper way.

Notes: The specifications given may be mutually exclusive. Hypothesis, tolerances and definition are in ETEL systems documentation.
(1) See torque vs speed curve to check if the specifications can be reached based on selected winding and DC bus voltage limitation.
(2) Coils at 100°C with additional surface of 0.070m^2 fixed on the base and 0.015m^2 on the rotor made of black anodized aluminum.
(3) At the fastening holes of the rotor.
(4) Specification given at encoder level without any additional load fixed to the customer interface. This specification is reduced when an additional mass is fixed to the customer interface.
(5) Terminal to terminal.

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Data sheet

Version 1.1

ETEL MOTION TECHNOLOGY

TESTING CONDITIONS	UNIT	
Position controller	-	AccurET modular 300 or 400
Rated inertia	$kg.m^2$	0.025
Tool point position	mm	Centered on the table. 18.4 mm above the rotor's interface
Ambient temperature	°C	22 ±1

DIMENSIONAL DATA		UNIT	
OD	Outside diameter	mm (in)	166 (6.53)
	Table height	mm (in)	135 (5.31)
ID	Inside diameter	mm (in)	Ø 25 (Ø 0.98)
	Total mass (without payload)	kg (lbs)	12.6 (27.77)
J	Rotor inertia (without payload)	$kg.m^2$	2.58E-03

TORQUE CAPABILITIES		UNIT	
Tp	Peak torque (1)	Nm	91.7
Tc	Continuous torque (1) (2)	Nm	18.9
Ts	Stall torque	Nm	14.4
Td	Max. detent torque (average to peak)	Nm	0.68
Tfrs	Static friction (maximal value)	Nm	0.55
Tfrd	Dynamic friction (maximal value)	Nm/(rad/s)	0.012

LOAD CAPACITIES	UNIT	
Moment load (3)	Nm	15
Axial load	kg (lbs)	12 (26.45)
Upside down load	kg (lbs)	12 (26.45)

DYNAMIC PERFORMANCE	UNIT	
Maximum speed (1)	rad/s (rpm)	125.6 (1'200)
Maximum acceleration	rad/s^2	10'000
Typical position stability (4)	arcsec	± 1.5

STAGE ACCURACY	UNIT	
Positioning accuracy (w/o mapping)	arcsec	± 20
Positioning accuracy (w/ mapping)	arcsec	± 6
Unidirectional repeatability	arcsec	± 2
Bidirectional repeatability	arcsec	± 3
Radial runout	µm	20
Total axial error	µm	20 measured on Ø82mm

ENCODER CHARACTERISTICS	UNIT	
Encoder and signal type	-	Optical - incremental
Output signal	-	1 Vpp
Line count	Period/turn	5'000
Reference mark	-	1
Power supply	V	5 ±10%

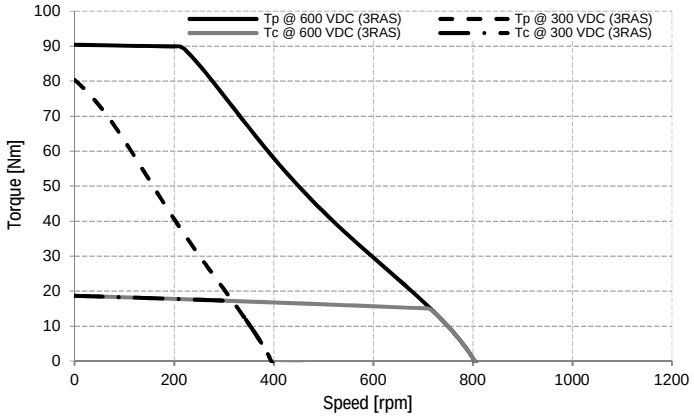
WORKING ENVIRONMENT	
IP protection grade	IP40

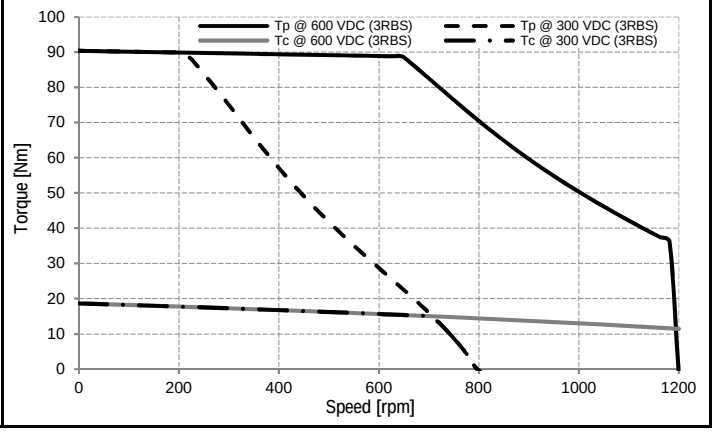
ELECTRICAL SPECIFICATIONS		UNIT		
	Motor type	-	Ironcore	Ironcore
	Motor model	-	TMB0140-070-3RAS	TMB0140-070-3RBS
	Number of phases	-	3	3
Kt	Torque constant	Nm/Arms	8.43	4.21
Ku	Back EMF constant (5)	Vrms/(rad/s)	4.87	2.44
R20	Electrical resistance at 20°C (5)	Ohm	12.9	3.23
L1	Electrical inductance (5)	mH	78.4	19.6
Ip	Peak current	Arms	17.3	34.5
Ic	Continuous current (2)	Arms	2.35	4.71
Is	Stall current	Arms	1.78	3.57
ns	Stall speed	rpm	0.025	0.025
Udc	Nominal input voltage	VDC	600	600
Pc	Max. cont. power dissipation (2)	W	141	141
2p	Number of poles	-	22	22

GUIDING ELEMENTS	
Type	Ball bearing

MATERIALS AND FINISH	
Baseplate	Stainless steel
Shaft	Stainless steel

Torque = f (Speed)





According to the Machinery Directive 2006/42/EC, the system presently described falls into the "partly completed machinery" category and fully complies with it as long as the system is operated according to the working conditions described in the corresponding manual. Customer is responsible for setting safeties/limitations that will keep the motor in its safe operating area. ETEL cannot be held responsible if the system is used in an improper way.

Notes: The specifications given may be mutually exclusive. Hypothesis, tolerances and definition are in ETEL systems documentation.
(1) See torque vs speed curve to check if the specifications can be reached based on selected winding and DC bus voltage limitation.
(2) Coils at 100°C with additional surface of 0.070m^2 fixed on the base and 0.016m^2 on the rotor made of black anodized aluminum.
(3) At the fastening holes of the rotor.
(4) Specification given at encoder level without any additional load fixed to the customer interface. This specification is reduced when an additional mass is fixed to the customer interface.
(5) Terminal to terminal.

RTMBi

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Data sheet

Version 1.1

ETEL MOTION TECHNOLOGY

TESTING CONDITIONS	UNIT	
Position controller	-	AccurET modular 300 or 400
Rated inertia	$kg.m^2$	0.025
Tool point position	mm	Centered on the table. 18.4 mm above the rotor's interface
Ambient temperature	°C	22 ±1

DIMENSIONAL DATA		UNIT	
OD	Outside diameter	mm (in)	166 (6.53)
	Table height	mm (in)	165 (6.49)
ID	Inside diameter	mm (in)	Ø 25 (Ø 0.98)
	Total mass (without payload)	kg (lbs)	15.5 (34.17)
J	Rotor inertia (without payload)	$kg.m^2$	3.36E-03

TORQUE CAPABILITIES		UNIT	
Tp	Peak torque (1)	Nm	131
Tc	Continuous torque (1) (2)	Nm	26.6
Ts	Stall torque	Nm	20.3
Td	Max. detent torque (average to peak)	Nm	0.96
Tfrs	Static friction (maximal value)	Nm	0.65
Tfrd	Dynamic friction (maximal value)	Nm/(rad/s)	0.012

LOAD CAPACITIES	UNIT	
Moment load (3)	Nm	15
Axial load	kg (lbs)	12 (26.45)
Upside down load	kg (lbs)	12 (26.45)

DYNAMIC PERFORMANCE	UNIT	
Maximum speed (1)	rad/s (rpm)	115.1 (1'100)
Maximum acceleration	rad/s^2	10'000
Typical position stability (4)	arcsec	± 1.5

STAGE ACCURACY	UNIT	
Positioning accuracy (w/o mapping)	arcsec	± 20
Positioning accuracy (w/ mapping)	arcsec	± 6
Unidirectional repeatability	arcsec	± 2
Bidirectional repeatability	arcsec	± 3
Radial runout	µm	20
Total axial error	µm	20 measured on Ø82mm

ENCODER CHARACTERISTICS	UNIT	
Encoder and signal type	-	Optical - incremental
Output signal	-	1 Vpp
Line count	Period/turn	5'000
Reference mark	-	1
Power supply	V	5 ±10%

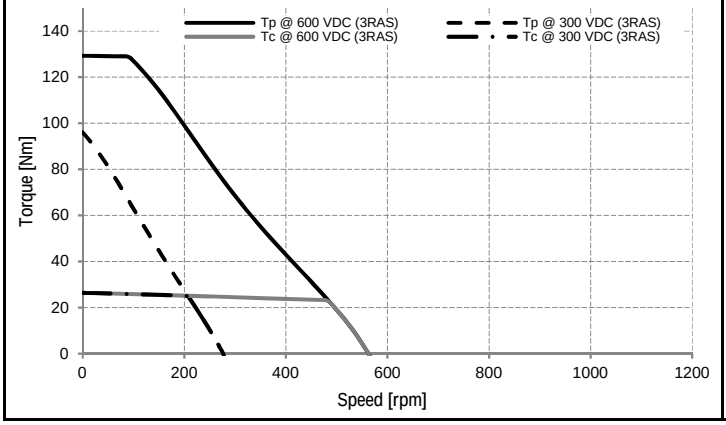
WORKING ENVIRONMENT	
IP protection grade	IP40

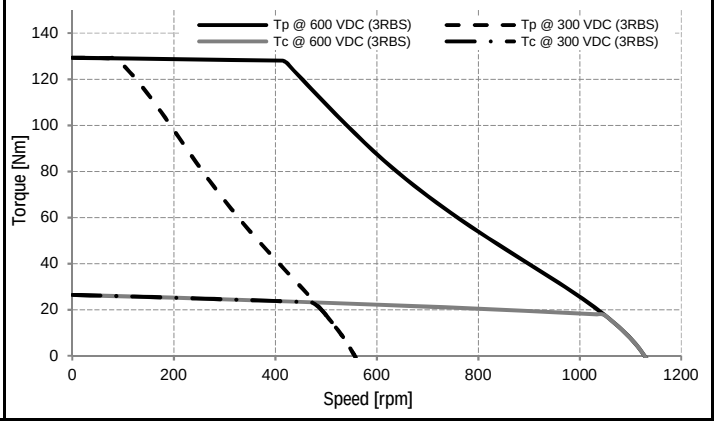
ELECTRICAL SPECIFICATIONS		UNIT		
	Motor type	-	Ironcore	Ironcore
	Motor model	-	TMB0140-100-3RAS	TMB0140-100-3RBS
	Number of phases	-	3	3
Kt	Torque constant	Nm/Arms	12.1	6.03
Ku	Back EMF constant (5)	Vrms/(rad/s)	6.97	3.48
R20	Electrical resistance at 20°C (5)	Ohm	17.3	4.32
L1	Electrical inductance (5)	mH	112	28.0
Ip	Peak current	Arms	16.8	33.6
Ic	Continuous current (2)	Arms	2.32	4.63
Is	Stall current	Arms	1.76	3.51
ns	Stall speed	rpm	0.025	0.025
Udc	Nominal input voltage	VDC	600	600
Pc	Max. cont. power dissipation (2)	W	183	183
2p	Number of poles	-	22	22

GUIDING ELEMENTS	
Type	Ball bearing

MATERIALS AND FINISH	
Baseplate	Stainless steel
Shaft	Stainless steel

Torque = f (Speed)





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Notes: The specifications given may be mutually exclusive. Hypothesis, tolerances and definition are in ETEL systems documentation.
(1) See torque vs speed curve to check if the specifications can be reached based on selected winding and DC bus voltage limitation.
(2) Coils at 100°C with additional surface of 0.12m^2 fixed on the base and 0.018m^2 on the rotor made of black anodized aluminum.
(3) At the fastening holes of the rotor.
(4) Specification given at encoder level without any additional load fixed to the customer interface. This specification is reduced when an additional mass is fixed to the customer interface.
(5) Terminal to terminal.

RTMBi

T STANDALONE AXIS

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Data sheet

Version 1.1

ETEL MOTION TECHNOLOGY

TESTING CONDITIONS	UNIT	
Position controller	-	AccurET modular 300 or 400
Rated inertia	$kg.m^2$	0.025
Tool point position	mm	Centered on the table. 18.4 mm above the rotor's interface
Ambient temperature	°C	22 ±1

DIMENSIONAL DATA		UNIT	
OD	Outside diameter	mm (in)	166 (6.53)
	Table height	mm (in)	215 (8.46)
ID	Inside diameter	mm (in)	Ø 25 (Ø 0.98)
	Total mass (without payload)	kg (lbs)	20.2 (44.53)
J	Rotor inertia (without payload)	$kg.m^2$	4.64E-03

TORQUE CAPABILITIES		UNIT	
Tp	Peak torque (1)	Nm	197
Tc	Continuous torque (1) (2)	Nm	36.4
Ts	Stall torque	Nm	27.7
Td	Max. detent torque (average to peak)	Nm	1.40
Tfrs	Static friction (maximal value)	Nm	1.00
Tfrd	Dynamic friction (maximal value)	Nm/(rad/s)	0.020

LOAD CAPACITIES	UNIT	
Moment load (3)	Nm	15
Axial load	kg (lbs)	20 (44.09)
Upside down load	kg (lbs)	20 (44.09)

DYNAMIC PERFORMANCE	UNIT	
Maximum speed (1)	rad/s (rpm)	115.1 (1'100)
Maximum acceleration	rad/s^2	10'000
Typical position stability (4)	arcsec	± 1.5

STAGE ACCURACY	UNIT	
Positioning accuracy (w/o mapping)	arcsec	± 20
Positioning accuracy (w/ mapping)	arcsec	± 6
Unidirectional repeatability	arcsec	± 2
Bidirectional repeatability	arcsec	± 3
Radial runout	µm	20
Total axial error	µm	20 measured on Ø82mm

ENCODER CHARACTERISTICS	UNIT	
Encoder and signal type	-	Optical - incremental
Output signal	-	1 Vpp
Line count	Period/turn	5'000
Reference mark	-	1
Power supply	V	5 ±10%

WORKING ENVIRONMENT	
IP protection grade	IP40

ELECTRICAL SPECIFICATIONS

		UNIT			
	Motor type	-	Ironcore	Ironcore	Ironcore
	Motor model	-	TMB0140-150-3RAS	TMB0140-150-3RBS	TMB0140-150-3TBS
	Number of phases	-	3	3	3
Kt	Torque constant	Nm/Arms	18.1	9.06	5.96
Ku	Back EMF constant (5)	Vrms/(rad/s)	10.5	5.23	3.44
R20	Electrical resistance at 20°C (5)	Ohm	24.6	6.15	2.53
L1	Electrical inductance (5)	mH	168	42.1	18.2
Ip	Peak current	Arms	16.5	32.9	50.0
Ic	Continuous current (2)	Arms	2.11	4.21	6.57
Is	Stall current	Arms	1.60	3.19	4.98
ns	Stall speed	rpm	0.021	0.021	0.021
Udc	Nominal input voltage	VDC	600	600	600
Pc	Max. cont. power dissipation (2)	W	215	215	215
2p	Number of poles	-	22	22	22

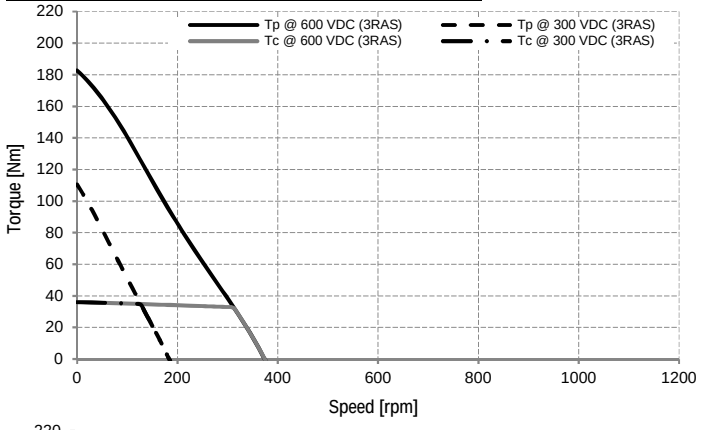
GUIDING ELEMENTS

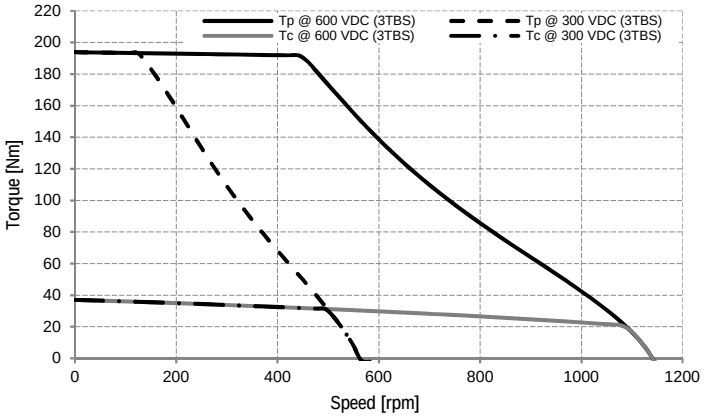
Type	Ball bearing

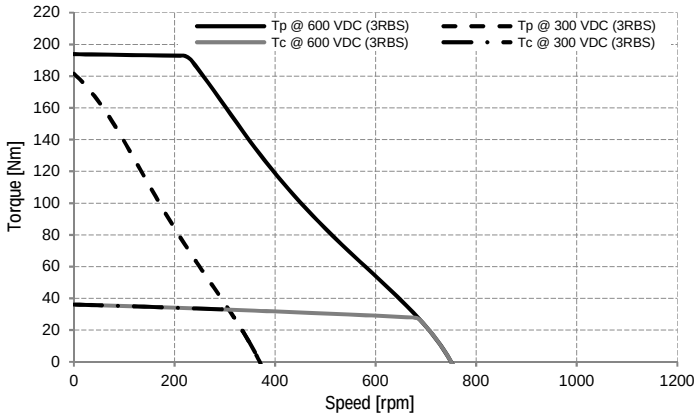
MATERIALS AND FINISH

Baseplate	Stainless steel
Shaft	Stainless steel

Torque = f (Speed)







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Notes: The specifications given may be mutually exclusive. Hypothesis, tolerances and definition are in ETEL systems documentation.
(1) See torque vs speed curve to check if the specifications can be reached based on selected winding and DC bus voltage limitation.
(2) Coils at 100°C with additional surface of 0.12m^2 fixed on the base and 0.022m^2 on the rotor made of black anodized aluminum.
(3) At the fastening holes of the rotor.
(4) Specification given at encoder level without any additional load fixed to the customer interface. This specification is reduced when an additional mass is fixed to the customer interface.
(5) Terminal to terminal.