

# T STANDALONE AXIS

ASME-RTMBi1401003R#S0000

Data sheet

Version 2.0





#### **Table of contents**

- 1) RTMBi140-100 with connectors and AccurET Modular 300VDC
- 2) RTMBi140-100-3RAS with free leads and AccurET Modular 400/600VDC or third party controller 300/600VDC
- 3) RTMBi140-100-3RBS with free leads and AccurET Modular 400/600VDC or third party controller 300/600VDC



## PRECISION INDEXING ROTARY TABLE



AXIS DESIGNATION					
Number of controlled axes		1			
Axes name		The			
Thrust transmitter: DD (direct drive) or ID (indirect drive)	2)	DD			
Thrust transmitter. DD (uncer three) or 1D (indirect three)					
TESTING CONDITIONS	UNIT				
Position controller	-	AccurET Modula	ar 300 07/15A		
Motion controller	-	nor	ne		
Rated payload	kg	2.3	3		
Rated inertia	kg.m <sup>2</sup>	0.02	25		
Tool point position	mm	centered on the table. 18.4 i	mm above rotor's interface		
Ambient temperature	°C	22±	±1		
DIMENSIONAL DATA	UNIT	1			
		4/	,		
Outside diameter Inside diameter	mm	16			
Height	mm mm	16:			
Total stroke	•	Unlim			
Total mass (without payload)	kg	15.			
Rotor inertia (without payload)	kg.m <sup>2</sup>	3.36E			
TORQUE CAPABILITIES (1)	UNIT	RTMBi140-100-3RAS	RTMBi140-100-3RBS		
Peak torque	Nm	104	76.3		
Continuous torque (2)	Nm	26.3	26.3		
Standstill torque	Nm	19.9	19.9		
Max. detent torque (average to peak)	Nm	0.96	0.96		
Static friction (maximal value)	Nm	0.65	0.65		
Dynamic friction (maximal value)	Nm/(rad/s)	0.012	0.012		
LOAD CAPACITIES	UNIT				
Maximum moment load (3)	Nm	15			
Maximum axial load	N	120	0		
Maximum axial load in upside down configuration	N	12	0		
DYNAMIC PERFORMANCE	UNIT				
Maximum speed (4)	rad/s	62.			
Maximum acceleration	rad/s <sup>2</sup>	1000			
Typical position stability at 2kHz (5)	arcsec	±1.	5		
STAGE ACCURACY	UNIT	1			
		±2	0		
Positioning accuracy (without mapping) Positioning accuracy (with mapping)	arcsec	±2 ±6			
Unidirectional repeatability	arcsec arcsec	±2			
Bidirectional repeatability	arcsec	±3			
Radial runout	μm	20			
Total axial error at 41 [mm] radius	μm	20	)		
FNOODER CHARACTERISTICS					
ENCODER CHARACTERISTICS	UNIT				
Encoder and signal type	-	Optical - Inc			
Output signal Line count	noriod/+····	1 V <sub>1</sub>			
Reference mark	period/turn	5000			
Power supply	V	5±10%			
		311			
WORKING ENVIRONMENT					
IP protection grade		IP4	0		
Standard compliance		SEMI S22			

 $\ensuremath{^{\circledcirc}}$  ETEL S.A. - Subject to modification without previous notice

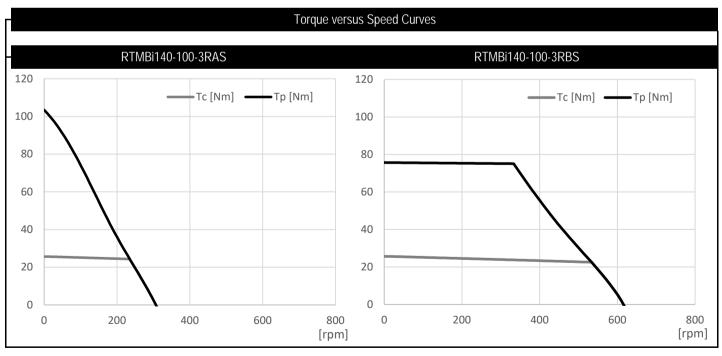
_	ELECTRICAL SPECIFICATIONS (1)	UNIT	T	
	Motor type	-	Ironcore	Ironcore
	Motor model	-	TMB0140-100-3RAS	TMB0140-100-3RBS
	Number of phases	-	3	3
Kt	Force constant	Nm/Arms	12.1	6.03
Ku	Back EMF constant (6)	Vrms/(rad/s)	6.97	3.48
Km	Motor constant	Nm/√W	2.37	2.37
R20	Electrical resistance at 20°C (6)	Ohm	17.3	4.33
Ld/Ld	Electrical inductance (6)	mH	101 / 112	25.2 / 28.0
lp	Peak current	Arms	11.5	15.0
Ic	Continuous current (2)	Arms	2.40	4.81
ls	Standstill current	Arms	1.82	3.64
ns	Standstill speed	rad/s	0.0019	0.0019
Udc	Nominal input voltage	VDC	326	326
Pc	Max. cont. power dissipation (2)	W	196	196
2p	Number of poles	-	22	22

GUIDING ELEMENTS	
Туре	Ball bearing
MATERIAL AND FINISH	
	Stainless steel
Baseplate Shaft	Stainless steel

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. Unless stated otherwise, all measurements are made within the testing conditions.

- (1) Tolerances on electrical parameters are available on request.
- (2) Coils at 100°C with additional surface of 0.012m² fixed on the base and 0.018m² on the rotor made of black anodized aluminum.
- (3) At the fastening holes of the rotor.
- (4) See torque vs speed curve to check if the specification can be reached based on selected winding.
- (5) 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.
- (6) Terminal to terminal.





## PRECISION INDEXING ROTARY TABLE



AXIS DESIGNATION					
Number of controlled axes			1		
Axes name		The	eta		
Thrust transmitter: DD (direct drive) or ID (indirect drive)		DI	)		
TESTING CONDITIONS	UNIT	1			
Position controller	-	AccurET Modular 400 15/40A	AccurET Modular 600 15/40A	Third party 300 VDC no current limit	Third party 600 VDC no current limit
Motion controller	-	15/40/	noi		no current iiniit
Rated payload	kg		2.		
Rated inertia	kg.m <sup>2</sup>		0.0		
Tool point position Ambient temperature	°C	C	entered on the table. 18.4		e
		1			
DIMENSIONAL DATA	UNIT		1/	,	
Outside diameter Inside diameter	mm mm		16 2!		
Height	mm		16		
Total stroke	•		Unlim		
Total mass (without payload)  Rotor inertia (without payload)	kg kg.m²		15 3.36I		
Notor menta (without payloau)	Kg.III		5.501	03	
TORQUE CAPABILITIES (1)	UNIT				
Peak torque	Nm	118	131	98.4	131
Continuous torque (2) Standstill torque	Nm Nm		19		
Max. detent torque (average to peak)	Nm	0.96			
Static friction (maximal value)	Nm	0.65 0.012			
Dynamic friction (maximal value)	Nm/(rad/s)		0.0	12	
LOAD CAPACITIES	UNIT				
Maximum moment load (3)	Nm	15			
Maximum axial load  Maximum axial load in upside down configuration	N N	120			
		1			
DYNAMIC PERFORMANCE	UNIT		57		
Maximum speed (4)  Maximum acceleration	rad/s rad/s <sup>2</sup>		100		
Typical position stability at 2kHz (5)	arcsec		±1		
STAGE ACCURACY	UNIT			0	
Positioning accuracy (without mapping) Positioning accuracy (with mapping)	arcsec arcsec		±2 ±0		
Unidirectional repeatability	arcsec				
Bidirectional repeatability	arcsec		±,		
Radial runout Total axial error at 41 [mm] radius	μm μm	20 20			
	μιιι			,	
ENCODER CHARACTERISTICS	UNIT				
Encoder and signal type Output signal	-		Optical - In		
Line count	period/turn	1 Vpp 5000			
Reference mark	-	1			
Power supply	V	5±10%			
WORKING ENVIRONMENT		T			
IP protection grade			IP4		
Standard compliance			SEMI	S22	

 $\ensuremath{^{\odot}}$  ETEL S.A. - Subject to modification without previous notice

	ELECTRICAL SPECIFICATIONS (1)	UNIT	AccurET Modular 400 15/40A	AccurET Modular 600 15/40A	Third party 300 VDC no current limit	Third party 600 VDC no current limit
	Motor type	-	- Ironcore			
	Motor model	-		TMB0140	-100-3RAS	
	Number of phases	-			3	
Kt	Force constant	Nm/Arms	12.1	12.1	12.1	12.1
Ku	Back EMF constant (6)	Vrms/(rad/s)	6.97	6.97	6.97	6.97
Km	Motor constant	Nm/√W	2.37	2.37	2.37	2.37
R20	Electrical resistance at 20°C (6)	Ohm	17.3	17.3	17.3	17.3
Ld/Lo	Electrical inductance (6)	mH	101 / 112	101 / 112	101 / 112	101 / 112
lp	Peak current	Arms	13.9	16.9	10.6	16.9
lc	Continuous current (2)	Arms	2.40	2.40	2.40	2.40
ls	Standstill current	Arms	1.82	1.82	1.82	1.82
ns	Standstill speed	rad/s	0.0019	0.0019	0.0019	0.0019
Udc	Nominal input voltage	VDC	395	565	300	600
Pc	Max. cont. power dissipation (2)	W	196	196	196	196
2p	Number of poles	-	22			

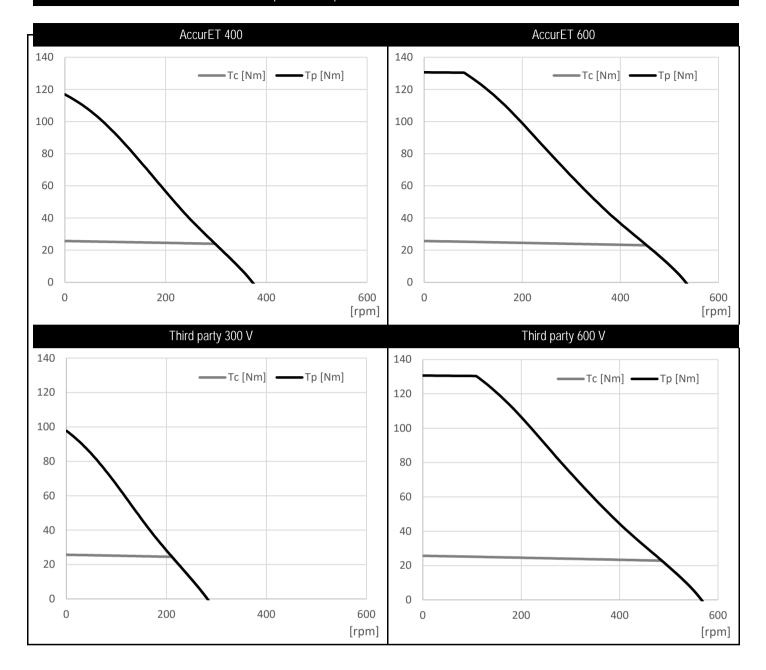
GUIDING ELEMENTS	
Туре	Ball bearing
MATERIAL AND FINISH	
Baseplate	Stainless steel
Shaft	Stainless steel

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. Unless stated otherwise, all measurements are made within the testing conditions.

- (1) Tolerances on electrical parameters are available on request.
- (2) Coils at 100°C with additional surface of 0.12m<sup>2</sup> fixed on the base and 0.018m<sup>2</sup> on the rotor made of black anodized aluminum.
- (3) At the fastening holes of the rotor.
- (4) See torque vs speed curve to check if the specification can be reached based on selected DC bus voltage limitation.
- (5) 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.
- (6) Terminal to terminal.

#### Torque versus Speed Curves for RTMBi140-100-3RAS





## PRECISION INDEXING ROTARY TABLE



AXIS DESIGNATION					
Number of controlled axes					
Axes name		The	eta		
Thrust transmitter: DD (direct drive) or ID (indirect drive)		D	D		
TESTING CONDITIONS	UNIT	T			
Position controller		AccurET Modular 400	AccurET Modular 600	Third party 300 VDC	Third party 600 VDC
	-	15/40A	15/40A	no current limit	no current limit
Motion controller Rated payload	kg				
Rated inertia	kg.m <sup>2</sup>		0.0		
Tool point position	mm	C	entered on the table. 18.4		e
Ambient temperature	°C		22	±1	
DIMENSIONAL DATA	UNIT				
Outside diameter	mm		16		
Inside diameter	mm		2 		
Height Total stroke	mm °		Unlin		
Total mass (without payload)	kg		15		
Rotor inertia (without payload)	kg.m <sup>2</sup>		3.36	E-03	
TORQUE CAPABILITIES (1)	UNIT	T			
Peak torque	Nm		13	31	
Continuous torque (2)	Nm		26		
Standstill torque  Max. detent torque (average to peak)	Nm	19.9 0.96			
Static friction (maximal value)	Nm Nm	0.96			
Dynamic friction (maximal value)	Nm/(rad/s)	0.012			
LOAD CAPACITIES	UNIT	1			
Maximum moment load (3)	Nm	15			
Maximum axial load	N	120			
Maximum axial load in upside down configuration	N	120			
DYNAMIC PERFORMANCE	UNIT				
Maximum speed (4)	rad/s		11	7.2	
Maximum acceleration	rad/s <sup>2</sup>		100		
Typical position stability at 2kHz (5)	arcsec		±1	.5	
STAGE ACCURACY	UNIT				
Positioning accuracy (without mapping)	arcsec		±ź	20	
Positioning accuracy (with mapping)	arcsec		±		
Unidirectional repeatability Bidirectional repeatability	arcsec arcsec		±		
Radial runout	μm	±3 20			
Total axial error at 41 [mm] radius	μm	20			
ENCODER CHARACTERISTICS	UNIT	1			
Encoder and signal type	-	Optical - Incremental			
Output signal	-	1 Vpp			
Line count Reference mark	period/turn	5000			
Power supply	V	5±10%			
	<u> </u>	•			
WORKING ENVIRONMENT			In	40	
IP protection grade Standard compliance		IP40 SEMI S22			
Titalia di di lipiano			JEIWI		

	ELECTRICAL SPECIFICATIONS (1)	UNIT	AccurET Modular 400 15/40A	AccurET Modular 600 15/40A	Third party 300 VDC no current limit	Third party 600 VDC no current limit	
	Motor type	-		Ironcore			
	Motor model	-		TMB0140	-100-3RBS		
	Number of phases	-			3		
Kt	Force constant	Nm/Arms	6.03	6.03	6.03	6.03	
Ku	Back EMF constant (6)	Vrms/(rad/s)	3.48	3.48	3.48	3.48	
Km	Motor constant	Nm/√W	2.37	2.37	2.37	2.37	
R20	Electrical resistance at 20°C (6)	Ohm	4.33	4.33	4.33	4.33	
Ld/Lo	Electrical inductance (6)	mH	25.2 / 28.0	25.2 / 28.0	25.2 / 28.0	25.2 / 28.0	
lp	Peak current	Arms	33.8	33.8	33.8	33.8	
lc	Continuous current (2)	Arms	4.81	4.81	4.81	4.81	
ls	Standstill current	Arms	3.64	3.64	3.64	3.64	
ns	Standstill speed	rad/s	0.0019	0.0019	0.0019	0.0019	
Udc	Nominal input voltage	VDC	395	565	300	600	
Pc	Max. cont. power dissipation (2)	W	196	196	196	196	
2p	Number of poles	-	22				

GUIDING ELEMENTS	
Туре	Ball bearing
MATERIAL AND FINISH	
Baseplate	Stainless steel
Shaft	Stainless steel

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. Unless stated otherwise, all measurements are made within the testing conditions.

- (1) Tolerances on electrical parameters are available on request.
- (2) Coils at 100°C with additional surface of 0.12m<sup>2</sup> fixed on the base and 0.018m<sup>2</sup> on the rotor made of black anodized aluminum.
- (3) At the fastening holes of the rotor.
- (4) See torque vs speed curve to check if the specification can be reached based on selected DC bus voltage limitation.
- (5) 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.
- (6) Terminal to terminal.

#### Torque versus Speed Curves for RTMBi140-100-3RBS

