

TECNOTION[®]

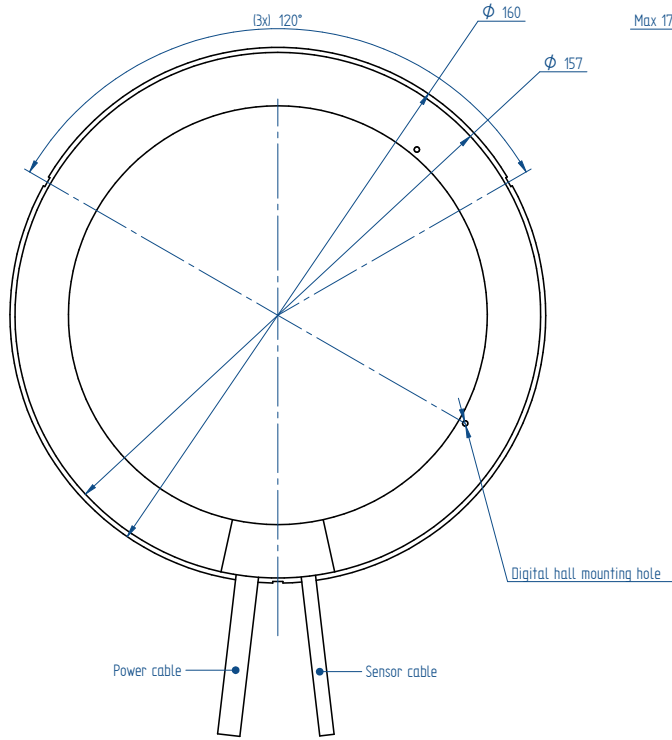
THE LINEAR MOTOR COMPANY

Frameless torque motor series

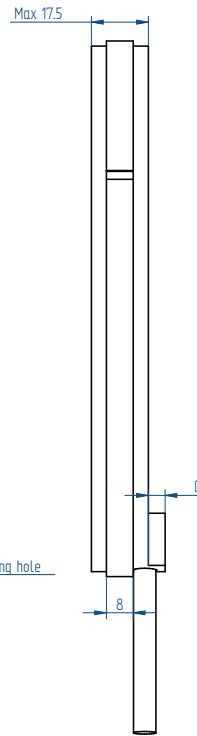


Mounting instructions and tolerances can be found in the torque installation manual. Manuals and 3D CAD files can be downloaded from our website.

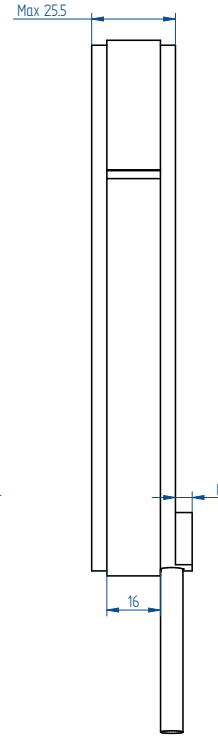
STATOR



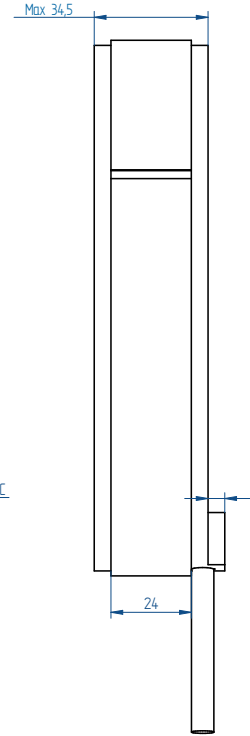
QTR-A 160-17



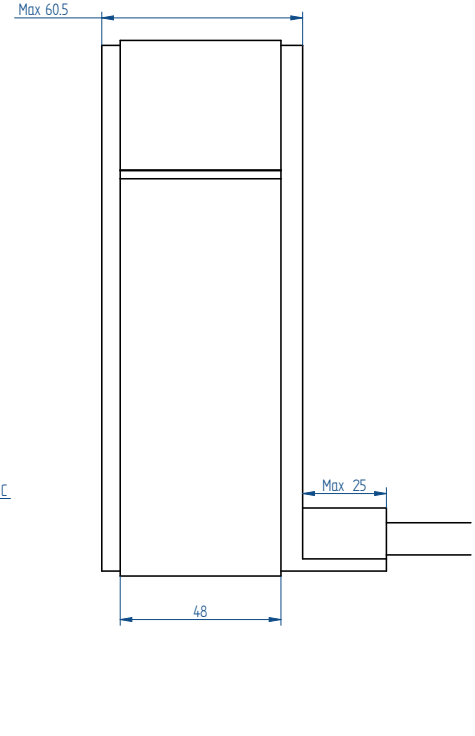
QTR-A 160-25



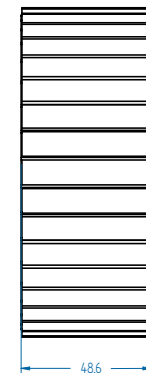
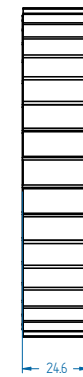
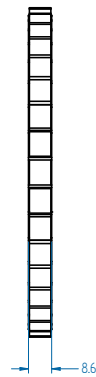
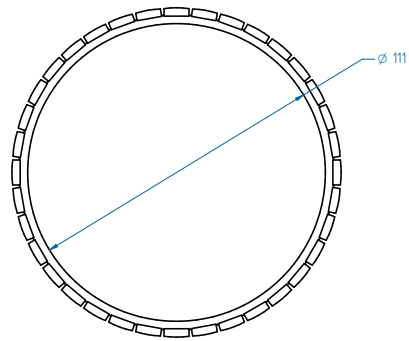
QTR-A 160-34



QTR-A 160-60



ROTOR



* All sizes are in mm

winding	C (mm)
N	3.5
Y+Z	5.5

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	Parameter	Remarks	Symbol	Unit	QTR-A-160-17			QTR-A-160-25			QTR-A-160-34		QTR-A-160-60
					N	Y	Z	N	Y	Z	N	Z	N
Performance	Winding type				N	Y	Z	N	Y	Z	N	Z	N
	Motortype max. voltage ph-ph	3-phase synchronous		$V_{acrms} (V_{dc})$	230 (300)								420 (600)
	Ultimate torque @ 20°C/s increase	magnet @ 25°C	T_u	Nm	9.3	10.6	10.6	19.6	22.4	22.4	34.1	33.6	91.6
	Peak torque @ 6°C/s increase	magnet @ 25°C	T_p	Nm	6.2	7.1	7.1	12.5	14.2	14.2	21.7	21.4	58.3
	Continuous torque	coil @ 100°C	T_c	Nm	4.1	4.2	4.2	9.4	9.7	9.7	15.7	15.0	36.3
	Maximum speed ⁽³⁾ @ 48 Volt	@ T_c	n_{max}	rpm	142	467	965	0	165	441	0	259	0
	Maximum speed @ max. voltage	@ T_c	n_{max}	rpm	2145	3871	6663	1084	2039	3604	555	2464	411
	Motor torque constant	up to I_c	K_t	Nm/A _{rms}	0.96	0.54	0.31	1.92	1.07	0.62	3.45	0.93	9.20
	Motor constant	coils @ 25°C	K_m	(Nm) ² /W	0.12	0.13	0.13	0.35	0.38	0.38	0.73	0.67	2.29
Electrical	Ultimate current	magnet @ 25°C	I_u	A _{rms}	13.8	28.2	48.8	13.8	28.2	48.8	13.3	48.8	13.5
	Peak current	magnet @ 25°C	I_p	A _{rms}	7.6	15.4	26.7	7.6	15.4	26.7	7.3	26.7	7.4
	Maximum continuous current ⁽¹⁾	coils @ 100°C	I_c	A _{rms}	4.3	7.8	13.4	4.9	9.0	15.7	4.6	16.2	3.9
	Back EMF phase-phase _{peak}		K_e	V/krpm	82	46	26	164	92	53	295	79	787
	Back EMF phase-phase _{rms}		K_e	V/krpm	58	32	19	116	65	37	209	56	556
	Coil resistance per phase	coils @ 25°C ex. cable	R	Ω	2.47	0.75	0.25	3.47	1.03	0.35	5.45	0.44	12.30
	Coil induction per phase	$l < 0.6 l_p$	L	mH	4.89	1.57	0.52	7.68	2.45	0.82	15.0	1.11	47.9
	Electrical time constant	coils @ 25°C	τ_e	ms	2.0	2.1	2.1	2.2	2.4	2.4	2.8	2.5	3.9
	Poles		N_{mgn}	nr	36	36	36	36	36	36	36	36	36
Thermal	Continuous power loss	coils @ 100°C	P_c	W	174	174	174	326	326	326	441	441	750
	Thermal resistance ⁽²⁾	coils to mount. sfc.	R_{th}	°C/W	0.43	0.43	0.43	0.23	0.23	0.23	0.17	0.17	0.10
	Thermal time constant	up to 63% max. coiltemp	τ_{th}	s	25	29	29	19	22	22	21	21	29
	Temperature cut-off / sensor				PTC 1kΩ / KTY83-122								
Mechanical	Stator OD		OD_s	mm	160								
	Rotor ID		ID_r	mm	111								
	Motor height		H_{motor}	mm	17			25			34		60
	Lamination stack height		H_{arm}	mm	8			16			24		48
	Rotor inertia		J_r	kg*m ²	4.7E-04			9.2E-04			1.4E-03		2.6E-03
	Stator mass	excluding cables	M_s	g	527			875			1212		2555
	Rotor mass		M_r	g	138			269			401		754
	Total mass	excluding cables	M_T	g	665			1144			1613		3309
	Cable mass	all cables	m	g	63	90	90	63	90	90	63	90	95
	Cable type (power)	length 0.5 m	d	mm (AWG)	6.5 (20)	6.7 (14)	6.7 (14)	6.5 (20)	6.7 (14)	6.7 (14)	6.5 (20)	6.7 (14)	9.6 (18)
Cable type (sensor)	length 0.5 m	d	mm (AWG)	4.3 (26)									



QTR-A-160 Stator and rotor shown with a height of 17 mm

- All specifications ±10%
- These values are only applicable when the mounting surface is at 20°C and the motor is driven at maximum continuous current. If these values differ in your application, please check our simulation tool or manual.
 - R_{th} based on radial mounting of stator lamination stack.
 - MAXIMUM allowable speed for QTR-A 160 series motors is 12,000 rpm. If you plan a high speed application, please contact Tecnotion.

This catalogue is offered to you by:

Tecnotion Headquarters

Twentepoort West 15
7609 RD Almelo
The Netherlands

Tel. +31 (0)546 536 300
Fax +31 (0)546 536 380
sales@tecnotion.com

Tecnotion GmbH

Elsenheimerstraße 59
80687 München
Deutschland

Tel. +49 89 381537-400
Fax +49 89 381537-409
info@tecnotion.de

Tecnotion Sp. z o.o.

Ul. Ryżowa 49
02-495 Warszawa
Poland

Tel. +48 606 544 046
info@tecnotion.pl

Tecnotion Rep. of Korea

Room #409,
Seoul Forest Halla Eco Valley
25, Ttukseom-ro 1-gil
04778 Seongdong-gu,
Seoul South Korea

Tel. +82 (0)10 4540 5599
korea@tecnotion.com

Tecnotion USA

200 Broad Hollow Rd -
Suite 207
Melville, NY, 11747
United States

Tel.+01 (631) 983-2833
sales@tecnotion.com