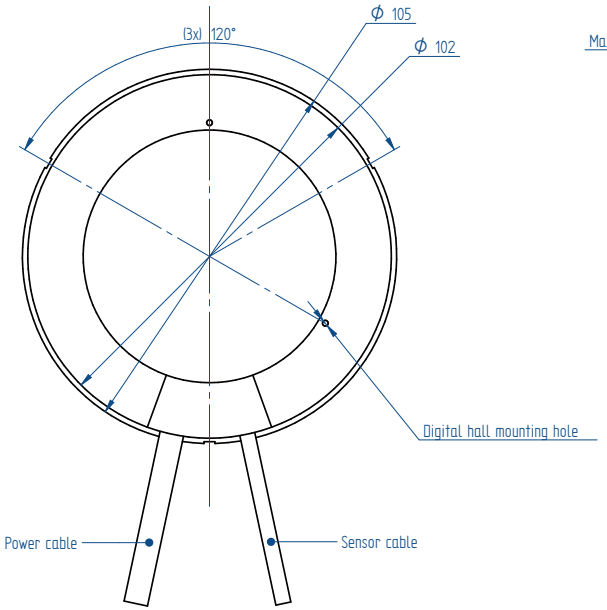
TECNOTION®

THE LINEAR MOTOR COMPANY

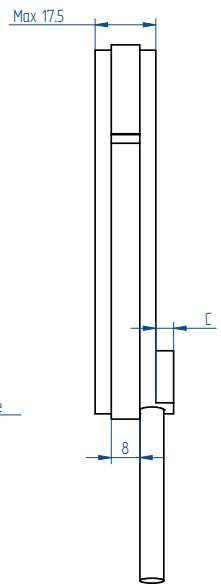
Frameless torque motor series

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 105-17



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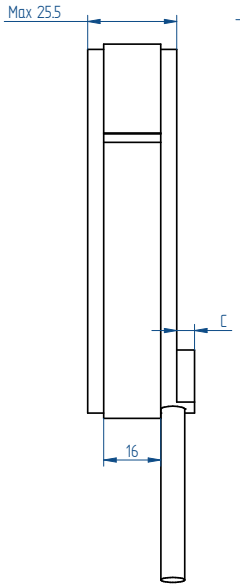

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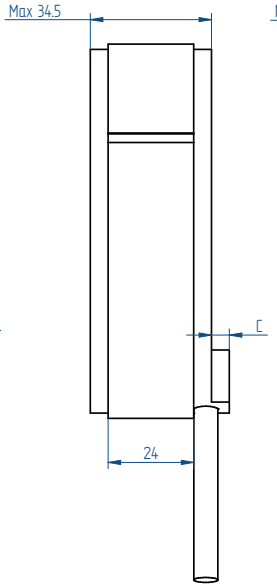

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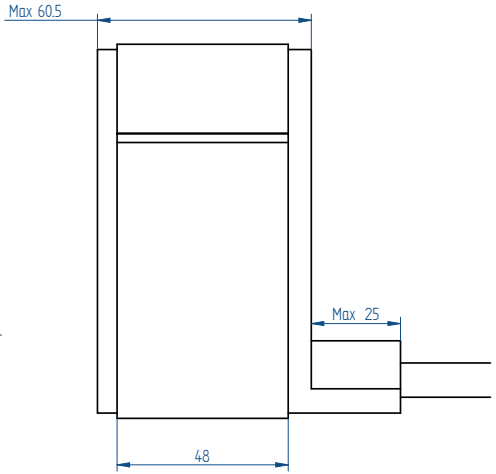
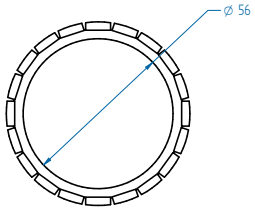
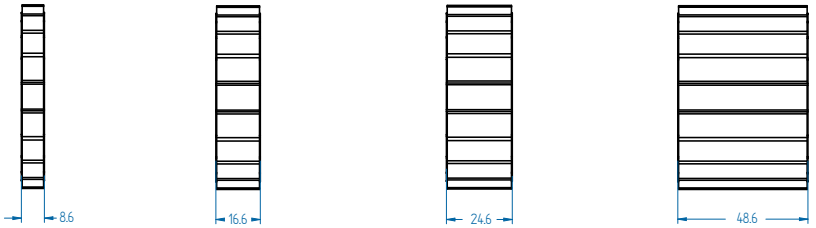


ROTOR





** All sizes are in mm*

winding	C (mm)
N	3.5
Y+Z	5.5

Torque QTR-A 105 series

	Parameter	Remarks	Symbol	Unit	QTR-A-105-17			QTR-A-105-25			QTR-A-105-34			QTR-A-105-60
Performance	Winding type				N	Y	Z	N	Y	Z	N	Y	Z	N
	Motortype max. voltage ph-ph	3-phase synchronous		$V_{ac\,rms}$ (V_{dc})	230 (300)									420 (600)
	Ultimate torque @ 20°C/s increase	magnet @ 25°C	T_u	Nm	2.9	3.3	3.3	6.1	7.5	6.9	10.6	11.3	10.4	28.4
	Peak torque @ 6°C/s increase	magnet @ 25°C	T_p	Nm	1.9	2.2	2.2	3.9	4.4	4.4	6.7	6.6	6.6	18.1
	Continuous torque	coil @ 100°C	T_c	Nm	1.4	1.4	1.4	3.2	3.3	3.3	5.4	5.2	5.2	12.0
	Maximum speed[3] @ 48 Volt	@ Tc	n_{max}	rpm	784	1761	3300	240	783	1623	0	444	1028	0
	Maximum speed @ max. voltage	@ Tc	n_{max}	rpm	6890	12286	16500	3625	6534	11399	1928	4439	7833	1455
	Motor torque constant	up to Ic	K_t	Nm/A_{rms}	0.30	0.17	0.10	0.60	0.33	0.19	1.07	0.50	0.29	2.86
	Motor constant	coils @ 25°C	K_m	$(Nm)^2/W$	0.021	0.022	0.022	0.061	0.065	0.065	0.127	0.115	0.120	0.40
Electrical	Ultimate current	magnet @ 25°C	I_u	A_{rms}	13.8	28.2	48.8	13.8	28.2	48.8	13.3	28.2	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	15.4	26.7	7.37
	Maximum continuous current[1]	coils @ 100°C	I_c	A_{rms}	4.6	8.5	14.7	5.3	9.8	17.0	5.1	10.3	17.9	4.2
	Back EMF phase-phase$_{peak}$		K_e	V/krpm	25	14	8	51	28	16	92	43	25	244
	Back EMF phase-phase$_{RMS}$		K_e	V/krpm	18	10	6	36	20	12	65	30	17	173
	Coil resistance per phase	coils @ 25°C ex. cable	R	Ω	1.38	0.43	0.14	1.93	0.57	0.19	3.02	0.74	0.24	6.84
	Coil induction per phase	I < 0.6 Ip	L	mH	2.58	0.83	0.28	4.05	1.29	0.43	7.93	1.75	0.59	25.3
	Electrical time constant	coils @ 25°C	τ_e	ms	1.9	2.0	1.9	2.1	2.3	2.2	2.6	2.4	2.4	3.7
	Poles		N_{mgn}	nr	20	20	20	20	20	20	20	20	20	20
Thermal	Continuous power loss	coils @ 100°C	P_c	W	115	115	115	214	214	214	300	300	300	469
	Thermal resistance[2]	coils to mount. sfc.	R_{th}	°C/W	0.65	0.65	0.65	0.35	0.35	0.35	0.25	0.25	0.25	0.16
	Thermal time constant	up to 63% max. coiltemp.	τ_{th}	s	21	25	25	16	18	18	17	17	17	25
	Temperature cut-off / sensor				PTC 1kΩ / KTY83-122									
Mechanical	Stator OD		OD_S	mm	105									
	Rotor ID		ID_R	mm	56									
	Motor height		H_{motor}	mm	17			25			34			60
	Lamination stack height		H_{arm}	mm	8			16			24			48
	Rotor inertia		J_R	$kg*m^2$	8.0E-05			1.5E-04			2.2E-04			4.3E-04
	Stator mass	excluding cables	M_S	g	299			472			746			1476
	Rotor mass		M_R	g	79			146			218			433
	Total mass	excluding cables	M_T	g	378			618			964			1909
	Cable mass	all cables	m	g	63	90	90	63	90	90	63	90	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)	6.7 (14)	9.6 (18)
	Cable type (sensor)	length 0.5 m	d	mm (AWG)	4.3 (26)									

QTR-A-105 Stator and rotor shown with a height of 17 mm

All specifications ±10%

1. *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.*
2. *Rth based on radial mounting of stator lamination stack.*
3. *MAXIMUM allowable speed for QTR-A 105 series motors is 16.500 rpm. If you plan a high speed application, please contact Tecnotion.*

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