



QTL-A-310-85 stator and rotor

QTL 310 series with cooling ring

Parameter	Remarks	Symbol	Unit	QTL-A-310-65	QTL-A-310-85	QTL-A-310-105
Performance				N	N	N
Winding type						
Motor type, max voltage ph-ph	3-phase synchronous	U_{max}	$V_{acrms} (V_{dc})$		480 (680)	
Ultimate torque @ 20 K/s increase	magnets @ 25°C	T_u	Nm	389	583	778
Peak torque @ 6 K/s increase	magnets @ 25°C	T_p	Nm	316	474	632
Continuous torque ¹	coils @ 100°C	T_c	Nm	151	241	331
Stall torque ¹	coils @ 100°C	T_s	Nm	107	170	234
Maximum speed ²	@ U_{max} @ T_c	n_{max}	rpm	298	182	124
Motor torque constant	$I \leq I_c$	K_t	Nm/A _{rms}	19.7	29.5	39.3
Motor constant	coils @ 25°C	K_m	(Nm) ² /W	27.0	45.5	64.7
Electrical						
Ultimate current	magnets @ 25°C	I_u	A _{rms}	22.0	22.0	22.0
Peak current	magnets @ 25°C	I_p	A _{rms}	16.9	16.9	16.9
Continuous current ¹	coils @ 100°C	I_c	A _{rms}	7.70	8.16	8.42
Stall current ¹	coils @ 100°C	I_s	A _{rms}	5.44	5.77	5.96
Back EMF ph-ph _{peak}		K_e	V/krpm	1681	2521	3362
Back EMF ph-ph _{rms}		K_e	V/krpm	1189	1783	2377
Resistance per phase	coils @ 25°C ex. cable	R_{ph}	Ω	4.77	6.37	7.96
Induction per phase	$I < 0.6 I_p$	L_{ph}	mH	23.9	34.7	45.5
Electrical time constant		τ_e	ms	5.0	5.5	5.7
Thermal						
Continuous power loss ¹	coils @ 100°C	P_c	W	1102	1653	2204
Thermal resistance	coils to mount. sfc.	R_{th}	K/W	0.073	0.048	0.036
Thermal time constant		τ_{th}	s	49	44	41
Water cooling flow	for $\Delta T=3K$	Φ_w	l/min	5.3	7.9	10.6
Water cooling pressure drop		ΔP_w	bar	1.0	1.4	2.0
Temperature sensor				PTC 1kΩ (3x) / Pt1000 (3x)		
Mechanical						
Stator OD		OD_s	mm		310	
Rotor ID		ID_r	mm		220	
Stator height		H_s	mm	65	85	105
Lamination stack height		H_{arm}	mm	40	60	80
Poles		N_{mgn}			38	
Rotor inertia		J_r	kg m ²	0.031	0.046	0.061
Stator mass	ex. cables	m_s	kg	7.4	10.1	12.9
Rotor mass		m_r	kg	2.3	3.5	4.7
Total mass	ex. cables	m	kg	9.7	13.6	17.6
Cable mass	all cables	m	g/m		250	
Cable type (power)	length 2 m	d	mm (AWG)		10.6 (13)	
Cable type (sensor)	length 2 m	d	mm (AWG)		6.4 (25)	

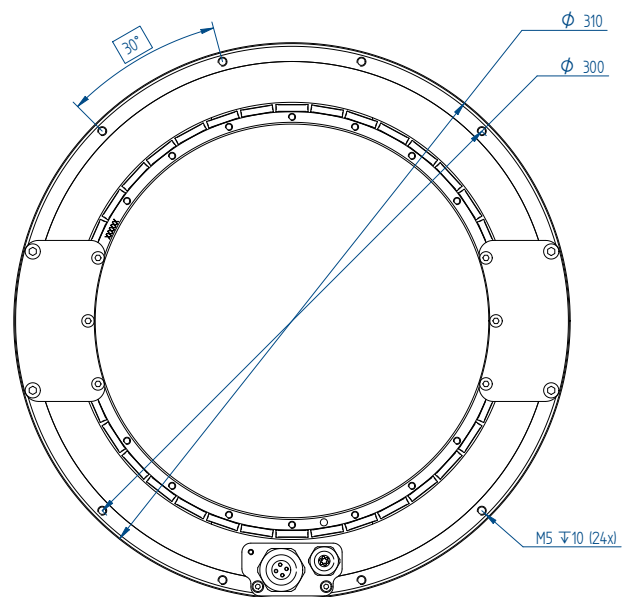
1. These values are only applicable when the mounting surface is at 20°C and the motor is driven at stall or continuous current. If these values differ in your application, please check our simulation tool.

2. Actual values depend on bus voltage. Please check the T/n diagram in our manual or online simulation tool.

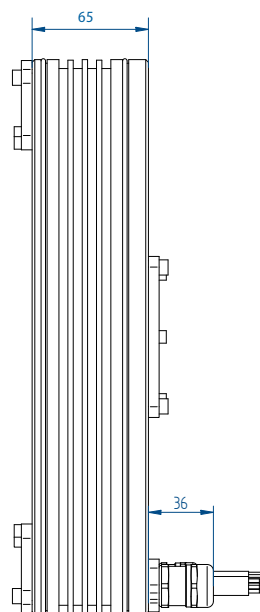
Series approvals



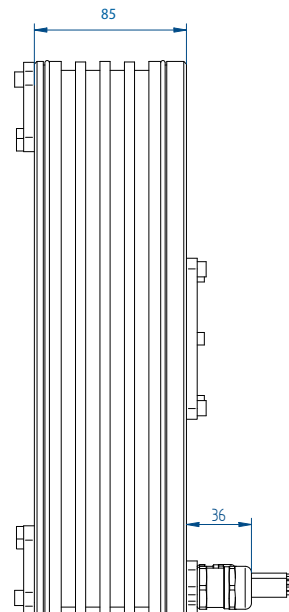
Stator



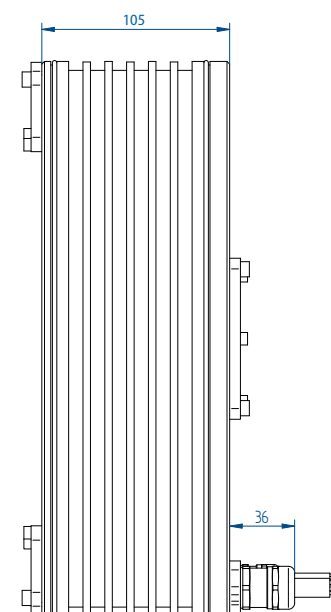
QTL-A-310-65



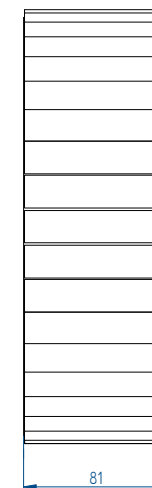
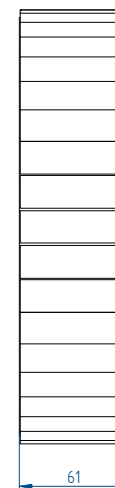
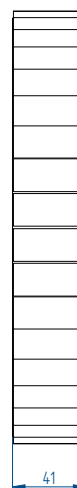
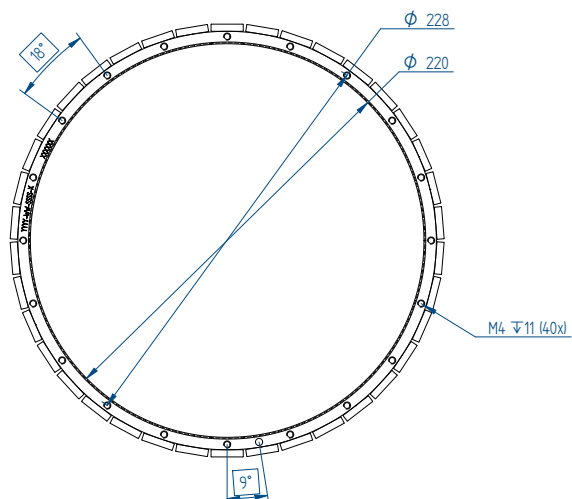
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QTL-A-310-105



Rotor



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

* All sizes are in mm