

QTR 160 series



QTR-A-160-17 stator and rotor

	Parameter	Remarks	Sym	Unit	QTR-A-160-17			QTR-A-160-25			QTR-A-160-34		QTR-A-160-60	QTR-A-160-114	QTR-X-160-140
Performance	Winding type				N	Y	Z	N	Y	Z	N	Z	N	N	N
	Motor type, max voltage ph-ph	3-phase synchronous	U _{max}	V _{ac rms} (V _{dc})	230 (325)								400 (565)		
	Ultimate torque @ 20 K/s increase	magnets @ 25°C	T _u	Nm	9.3	10.6	10.6	19.5	22.4	22.6	34.2	34.0	92.2	184.4	244.8
	Peak torque @ 6 K/s increase	magnets @ 25°C	T _p	Nm	6.2	7.1	7.0	12.4	14.1	14.2	21.9	21.4	58.5	116.9	155.3
	Continuous torque ¹	coils @ 100°C	T _c	Nm	4.1	4.2	4.2	9.4	9.6	9.6	15.9	15.3	36.5	77.4	103.9
	Maximum speed ²	@ 48 V _{dc} @ T _c	n _{max}	rpm	149	480	989	39	170	450	149	260	125	109	111
	Maximum speed ²	@ U _{max} @ T _c	n _{max}	rpm	2419	4000	4000	1215	2287	4000	619	2734	387	641	474
	Motor torque constant	I ≤ I _c	K _t	Nm/A _{rms}	0.96	0.54	0.31	1.92	1.08	0.62	3.46	0.93	9.24	6.16	8.18
	Motor constant	coils @ 25°C	K _m	(Nm) ² /W	0.12	0.13	0.13	0.36	0.37	0.37	0.73	0.67	2.33	5.25	7.48
Electrical	Ultimate current	magnets @ 25°C	I _u	A _{rms}	13.9	28.3	48.9	13.9	28.3	48.9	13.3	48.9	13.6	40.7	40.7
	Peak current	magnets @ 25°C	I _p	A _{rms}	7.5	15.3	26.5	7.5	15.3	26.5	7.3	26.5	7.4	22.1	22.1
	Continuous current ¹	coils @ 100°C	I _c	A _{rms}	4.3	7.8	13.4	4.9	8.9	15.5	4.6	16.4	3.9	12.6	12.7
	Back EMF ph-ph _{peak}		K _e	V/krpm	82	46	27	165	92	53	296	80	790	527	699
	Back EMF ph-ph _{rms}		K _e	V/krpm	58	33	19	116	65	38	209	56	559	372	494
	Resistance per phase	coils @ 25°C ex. cable	R _{ph}	Ω	2.48	0.74	0.25	3.46	1.03	0.34	5.45	0.43	12.20	2.41	2.98
	Induction per phase	I < 0.6 I _p	L _{ph}	mH	4.93	1.55	0.52	7.68	2.41	0.80	15.03	1.09	47.87	10.02	12.57
	Electrical time constant		τ _e	ms	2.0	2.1	2.1	2.2	2.3	2.3	2.8	2.5	3.9	4.2	4.2
Thermal	Continuous power loss ¹	coils @ 100°C	P _c	W	175			323			450		742	1483	1874
	Thermal resistance	coils to mount. sfc.	R _{th}	K/W	0.43			0.23			0.17		0.10	0.05	0.04
	Thermal time constant		τ _{th}	s	22	26	26	17	20	20	19	18	27	24	24
	Temperature sensor				PTC 1kΩ / KTY83-122										
Mechanical	Stator OD		OD _s	mm	160										
	Rotor ID		ID _r	mm	111										108
	Stator height		H _s	mm	17			25			34		60	114	140
	Lamination stack height		H _{arm}	mm	8			16			24		48	96	122
	Poles		N _{mgn}		36										
	Rotor inertia		J _r	kg m ²	4.7E-04			9.2E-04			1.4E-03		2.6E-03	6.4E-03	8.1E-03
	Stator mass	ex. cables	m _s	g	527			875			1212		2555	4928	6228
	Rotor mass		m _r	g	138			269			401		754	1916	2435
	Total mass	ex. cables	m	g	665			1144			1613		3309	6844	8663
	Cable mass	all cables	m	g/m	126	180	180	126	180	180	126	180	190	36	
	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)	4x 2.06 (16)	
	Cable type (sensor)	length 0.5 m	d	mm (AWG)	4.5 (26)										

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

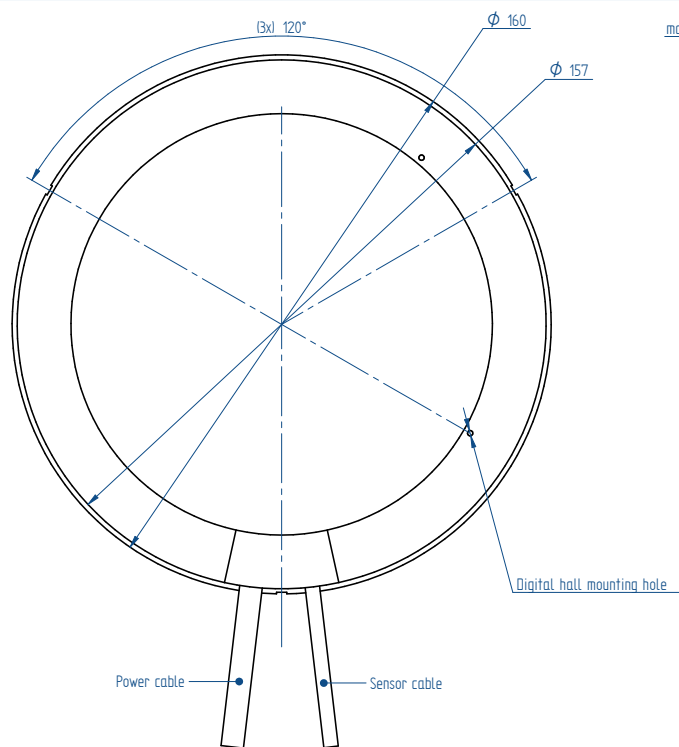
² Actual values depend on bus voltage. Please check the T/n diagram in our manual or online simulation tool.

Series approvals

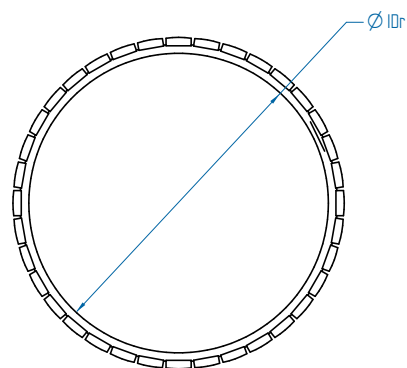


*N-windings approved, full approval pending.

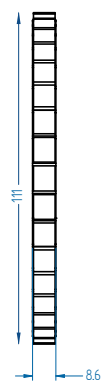
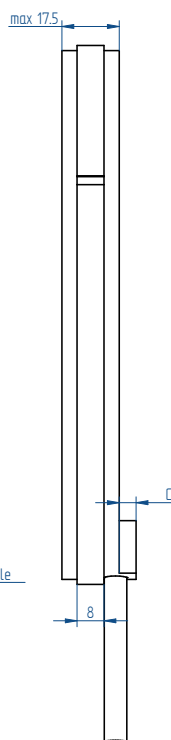
Stator



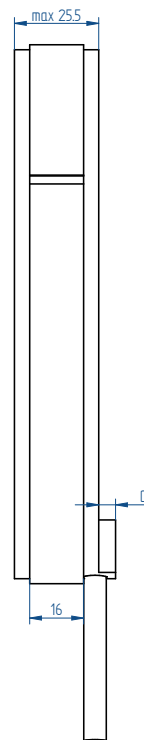
Rotor



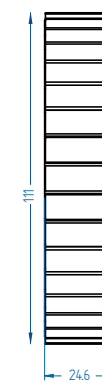
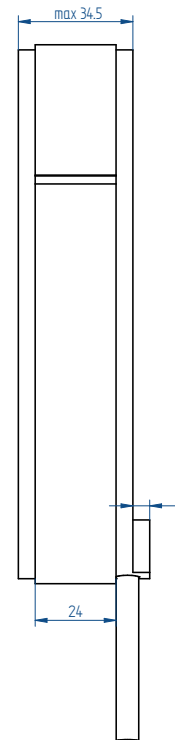
QTR-A-160-17



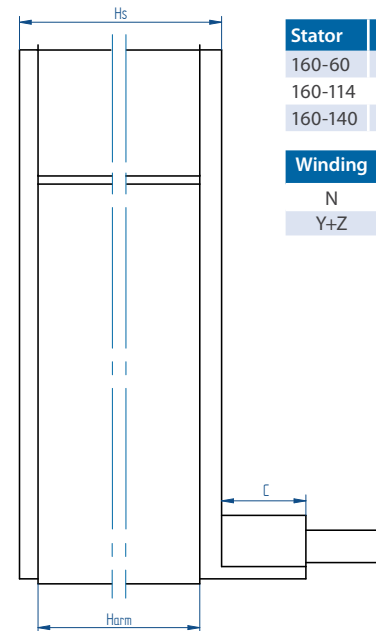
QTR-A160-25



QTR-A-160-34



QTR-x-160-60/114/140



Stator	H _s	H _{arm}	C
160-60	60	48	max 25
160-114	114	96	max 18
160-140	140	122	max 10

Winding	C (mm)
N	max 3.5
Y+Z	max 5.5

Rotor	H _r	ID _r
160-60	48.6	111
160-114	96.6	108
160-140	122.6	108

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