

TECNOTION®

direct drive in motion

FRAMELESS TORQUE MOTOR SERIES

Increased dynamic performance





WE DIRECT DRIVE YOUR MOTION TECHNOLOGY

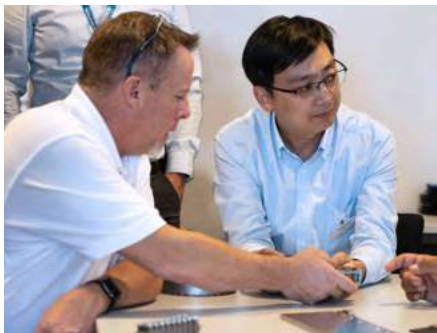
Direct drive motors from Tecnotion are seamlessly integrated into a wide range of applications, including semiconductors, machine tooling, robotics, display applications and printing. As an independent supplier of linear, torque and vacuum motors, we offer specialized motor technology to place in your motion solutions.

We have distinguished ourselves for almost 30 years with the exclusive development and production of direct drive linear and torque motors. As a result, we succeed in providing the best motor solution for your motion needs, whether it is a catalogue or a custom motor. Thanks to our extensive experience we are used to designing and building any motion requirement with unmatched quality & performance.

Support

At Tecnotion, we recognize that every use of our motors presents unique circumstances with different needs and challenges. Our team of Sales and Application Engineers have extensive experience in different application scenarios and work closely with our customers to find solutions that perfectly align with their requirements and objectives.

With our commitment to excellence and innovation, we remain steadfast in our mission to provide our customers with solutions that lead them to success in an ever-changing landscape.



Continuous innovation

At the heart of our company is an internal Research and Development (R&D) department that serves as an engine for innovation. This dedication to innovation not only fuels our deep knowledge of manufacturing processes, but also drives our commitment to excel in product design and performance, helping our customers meet the changing needs and expectations of their customers.

In addition to our extensive range of off-the-shelf standard motors, we custom design motors for applications that have more unique requirements. Our team works closely with customers to understand their specific challenges and objectives.



Modern manufacturing

Our manufacturing capabilities are strategically distributed between our facilities in China, Vietnam and the Netherlands, each of which plays a vital role in delivering first-class products to our customers worldwide. This distribution enables us to meet the demands of mass production.

Our competence centre and headquarters in the Netherlands are dedicated to advanced motor technology and are the epicentre of innovation and precision engineering. Custom motors are also built here in our special state-of-the-art clean room environment, with extreme precision and an eye for quality. Tecnotion prides itself on maintaining the strictest quality standards in all facets of our operations. Our plants are ISO 9001 certified.



Global logistics

We ensure that our most popular products are in stock in our warehouses. This setup gives us quick access to our stock, regardless of your location. Whether you are near our European headquarters or on the other side of the world, our efficient shipping network ensures that your orders are processed quickly.

Even during periods of increased market activity, our flexible supply chain allows us to maintain fast delivery times, so your products reach you quickly and reliably. With our unwavering commitment to customer satisfaction and operational excellence, we strive to provide seamless and efficient service throughout the supply chain.



Frameless torque motor series



See
P.12

QTR 65 and 78 series

The QTR 65 and 78 are the smallest motors from our torque range. The largest QTR 78 motor offers an ultimate torque of 10.85 Nm. Compact sizing and low voltage support makes the QTR 65 motor ideal for robotics applications. Small build-space and a large 29 mm inner diameter make the QTR 78 motor a favorite in semiconductor machinery. To provide maximum flexibility and integration the motor is equipped with flying leads instead of a power cable.

These motor series come in two diameters: 65 and 78 mm and four heights.



See
P.16

QTR 105-160 series

Our medium range motors are available with a range of options. Different winding types are available, optimizing back EMF. A digital Hall sensor can be used as a 'wake and shake' replacement, simplifying the startup of the QTR motor. The largest QTR motor, excels with 250.5 Nm ultimate torque. Various applications such as in medical, testing equipment, and factory automation benefit from the large inner diameter and the high peak torque of the series.

These motor series comes in three diameters: 105, 133 and 160 mm and six heights.



See
P.22

QTL series

The QTL motor series are our largest torque motors up to date, yet very compact for the generated torque. The QTL is frameless as all our QTR motors and therefore it can be integrated directly into the machine structure, while the spacious open inner diameter enables wire and cable feed through. The series are suitable for a variety of markets including rotary indexing tables, printing machinery and materials handling.

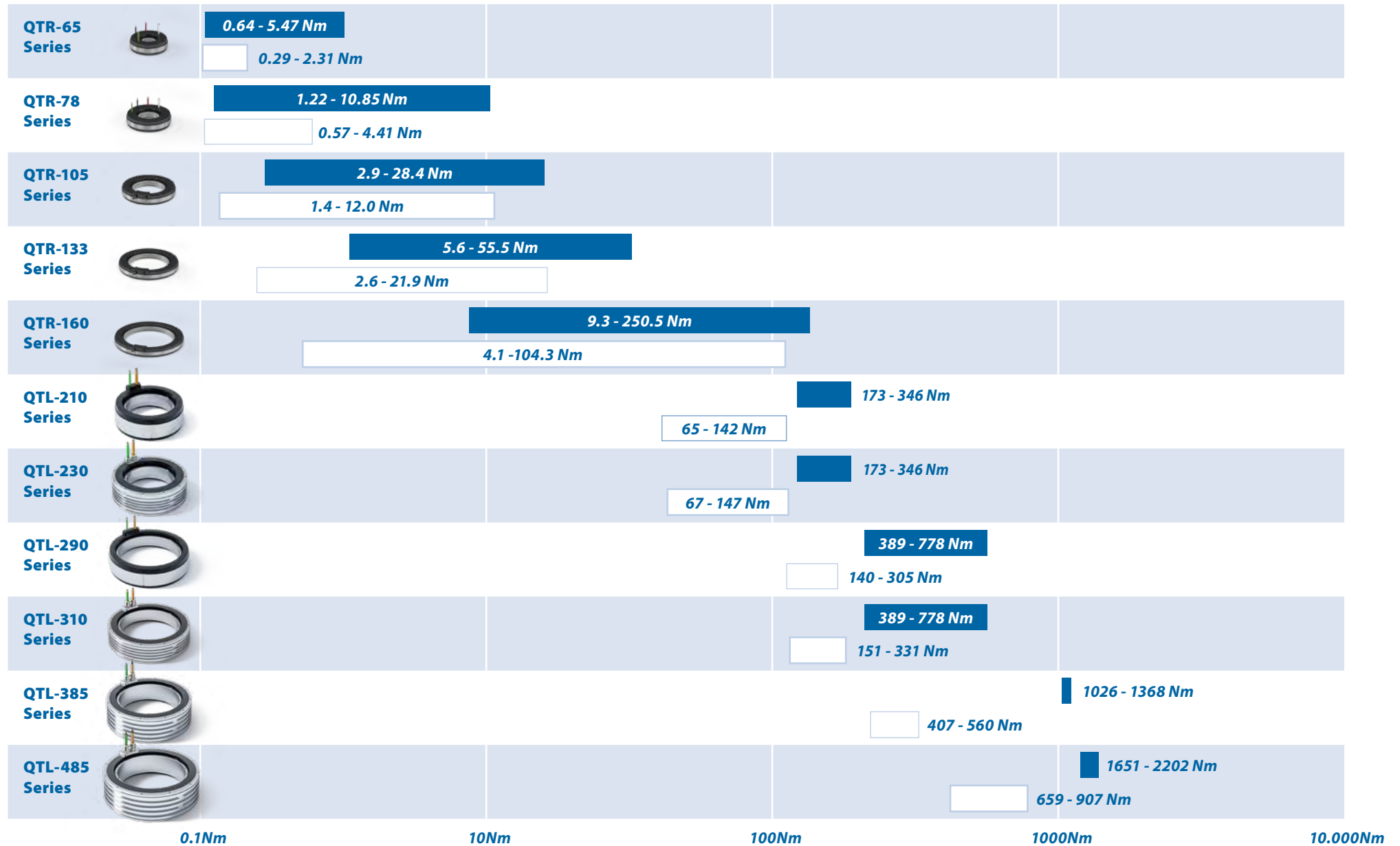
Available with or without cooling ring. The QTL motor series comes in six diameters and three heights.

QTR-A	105	17	N	QTR/QTL-A = Torque (A = rotor option)
				105 = Series type/outer diameter
				17 = Motor height
				N = Winding type

Motor torque range

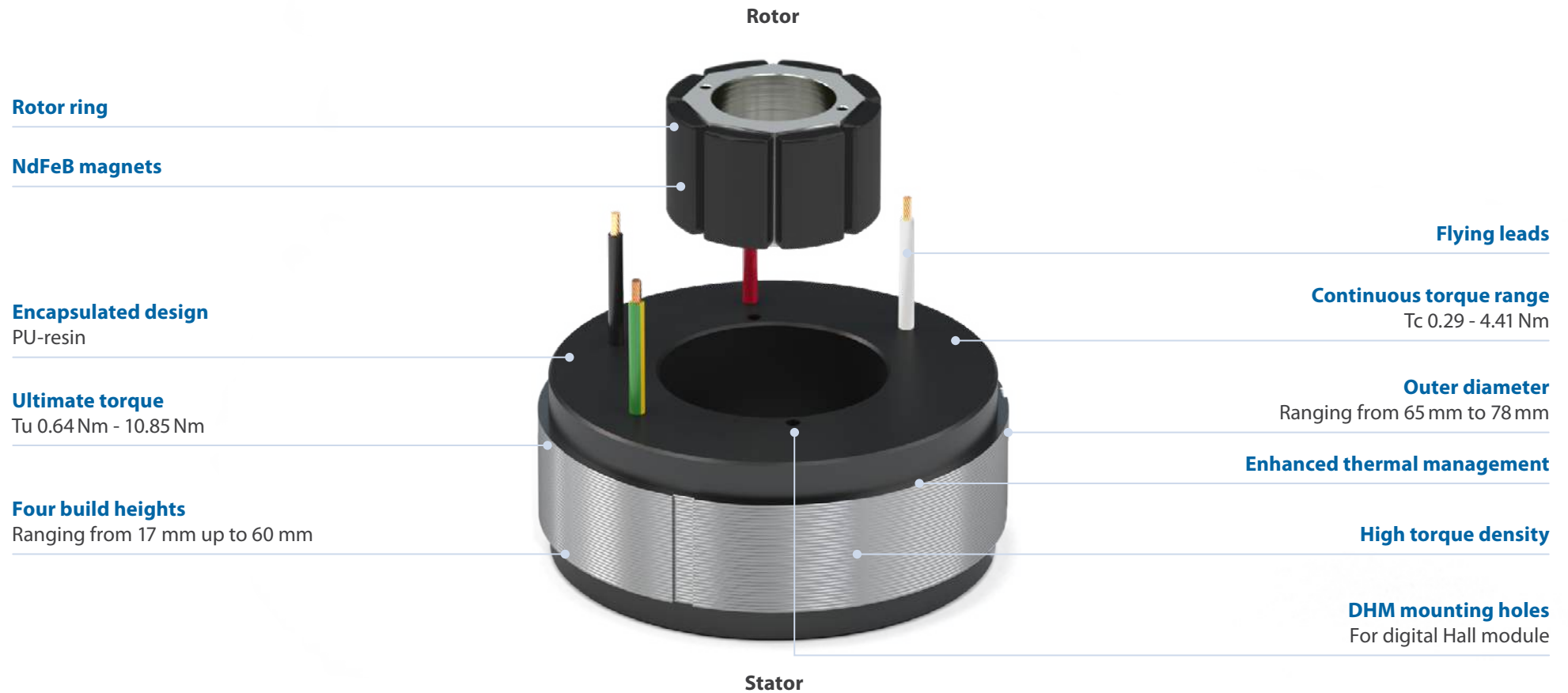
Ultimate torque

Continuous torque



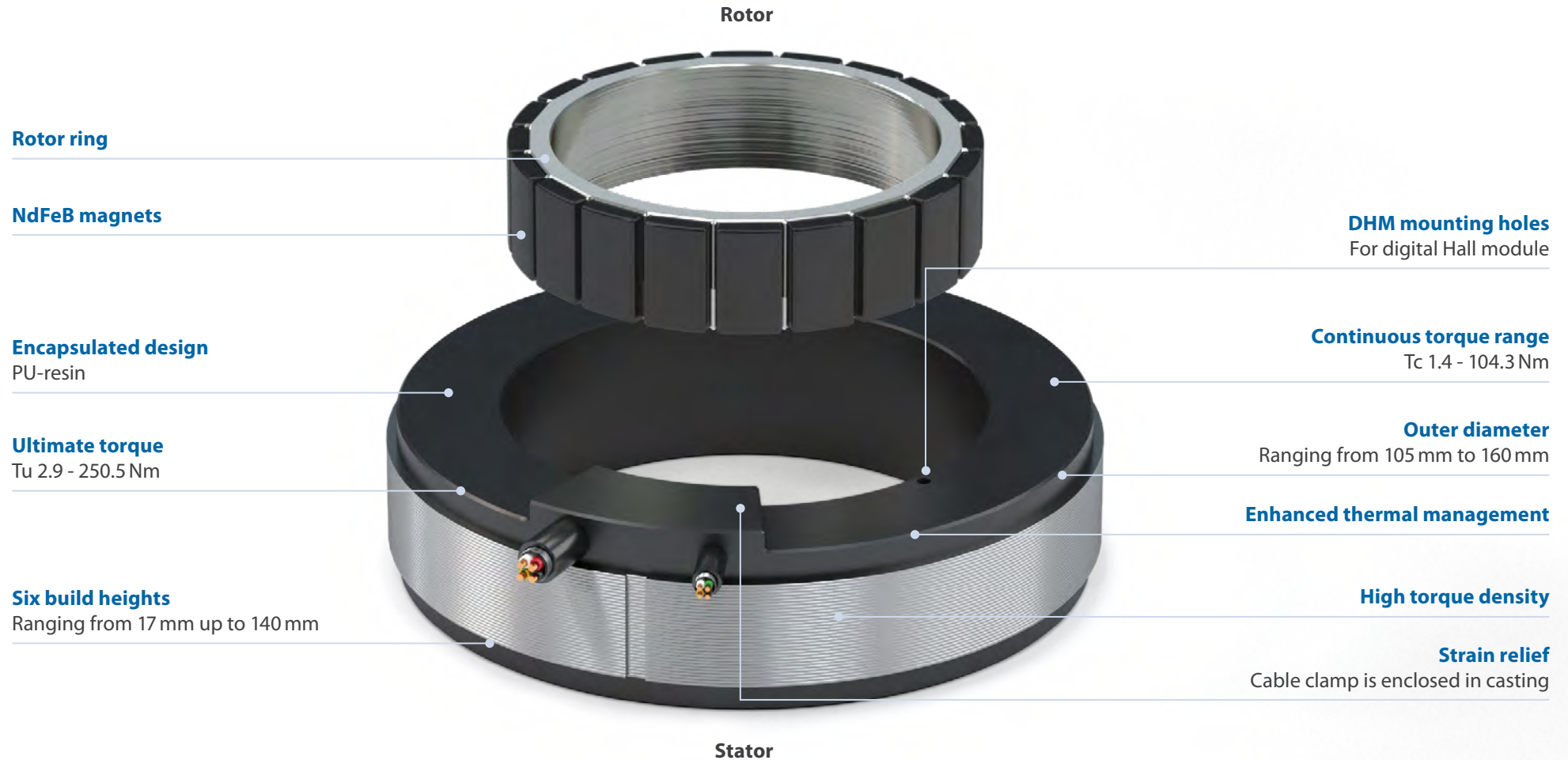
Torque QTR motor series

Properties QTR 65 and 78



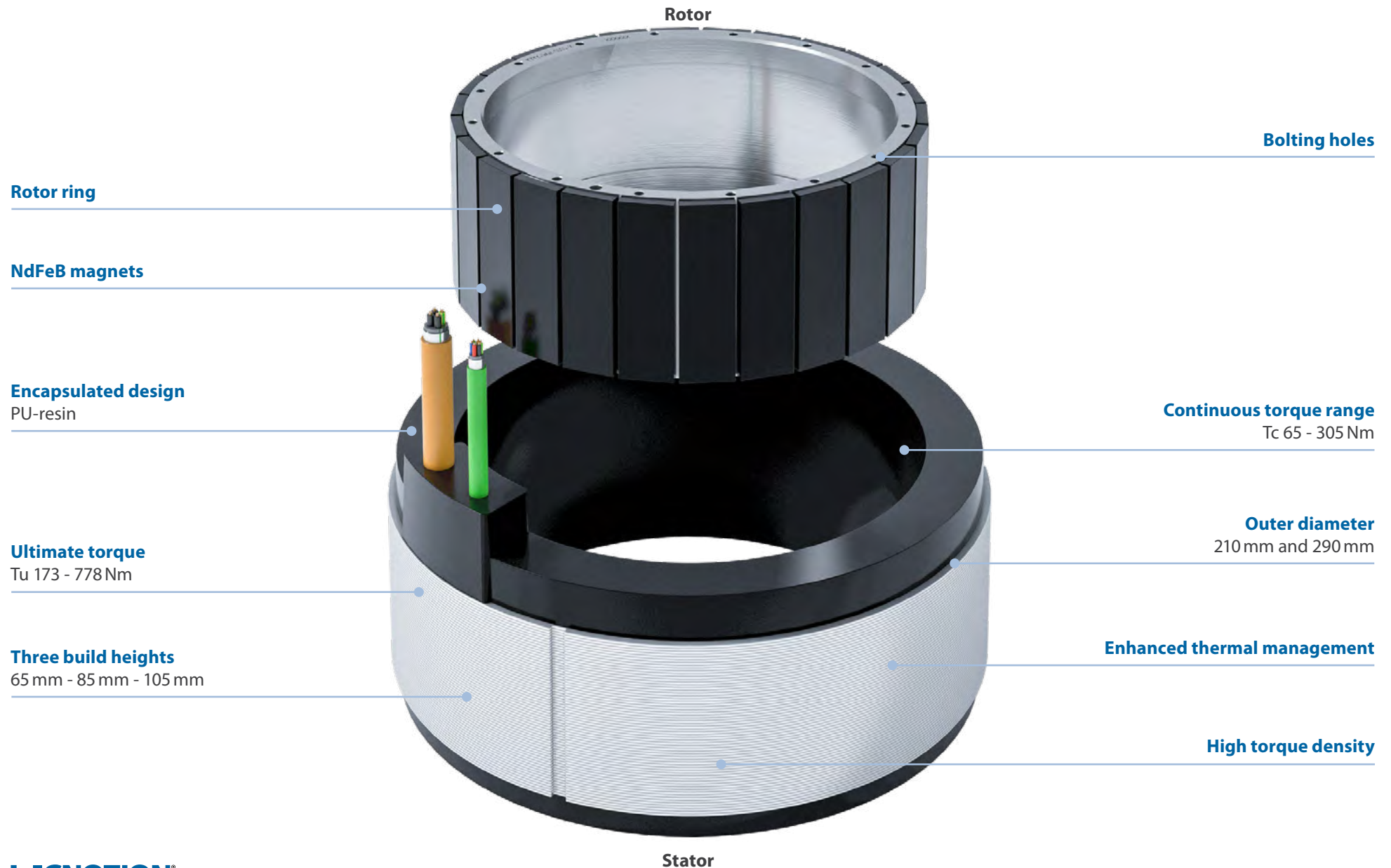
Torque QTR motor series

Properties QTR 105, 133 and 160



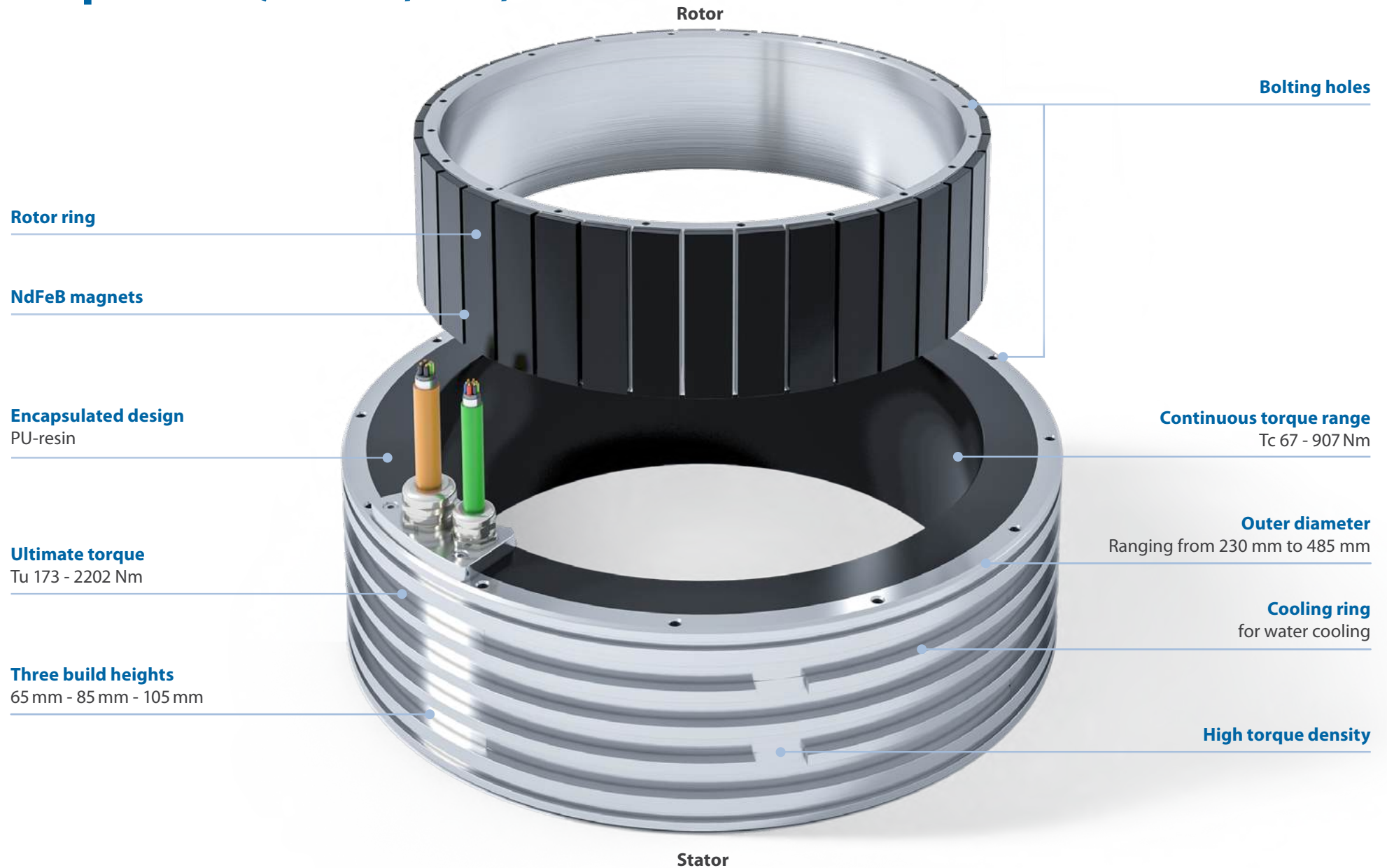
Torque QTL motor series

Properties QTL 210 and 290



Torque QTL motor series with cooling ring

Properties QTL 230, 310, 385 and 485



Features

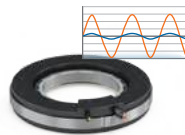
Tecnotion's torque motor performance advantages

The direct drive technology of brushless torque motors is a perfect way to enhance productivity, accuracy, and dynamic performance of applications. The technology lowers costs, makes designs slimmer, and reduce wear and tear. Torque motors eliminate the need for mechanical transmissions like gearboxes, belts and speed reducers. Between rotor and stator there is no contact, this means no mechanical wear.



Direct drive

Higher stiffness no backlash.



Low cogging value, low total harmonic distortion (THD)

For smooth motion and position accuracy in your application.



Large inner diameter

Allows easy integration of a large number of cables and hoses or allows large shaft fittings.



Ultra thin design

The lower build height allows to build a flatter axis, resulting in less tipping and settling time. Extraordinary flexibility in designing the motor into small spaces.



Encapsulated design

No open coil wires which can be damaged or that need to be covered up for safety reasons.



High voltage insulated, up to 300 VDC/600 VDC bus voltage

Enabling the use of a wide range of servo drives, and power supplies.



Tecnotion QTR has the highest torque density in the market

More torque in a smaller packing means lowering footprint.



Shielded cable with strain relief

No shielding EMC issues with loose wires. No risk to damage the motor by accidentally pulling the cable.



Good product repeatability

All motors have specifications with extremely little variation between them.



Low thermal resistance

Allowing good heat transfer, achieving an extremely high continuous torque when using a decent size heatsink or active cooling.



Low stator and rotor mass

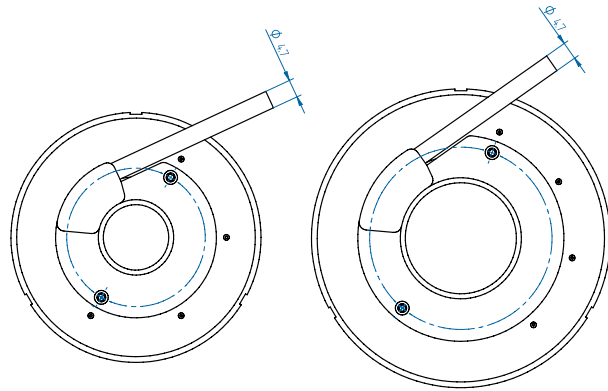
Lower masses increase the dynamics and response of the system by lowering the inertia. It hands the opportunity to improve entire stage designs. And as a result, lowering an applications cost of ownership.



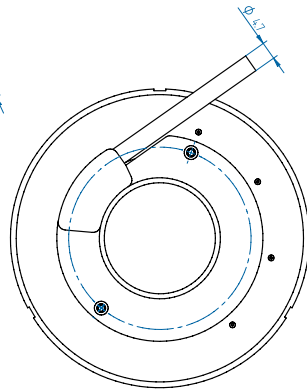
100% QC

All products are 100% mechanically and electrically tested.

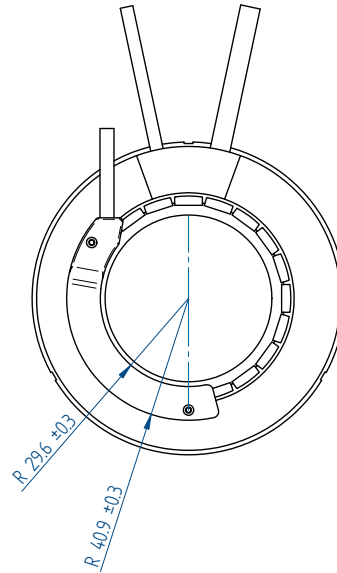
Torque QTR digital Hall module



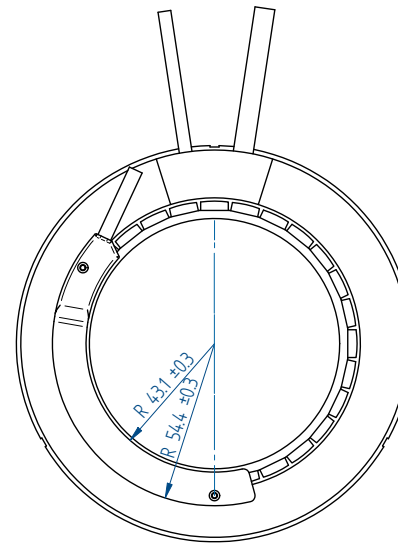
Digital Hall module mounted*
on QTR-A 65 series



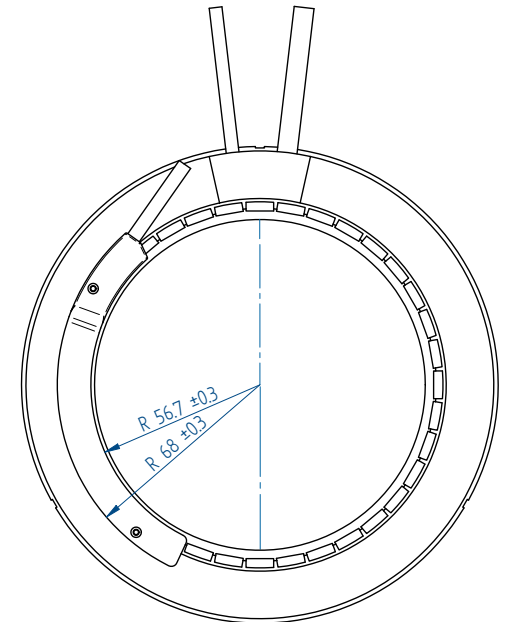
Digital Hall module mounted*
on QTR-A 78 series



Digital Hall module mounted*
on QTR-A 105 series



Digital Hall module mounted*
on QTR-A 133 series



Digital Hall module mounted*
on QTR-A 160 series



Tecnotion QTR motors can be equipped with a Tecnotion QTR digital Hall module. The module covers a small portion of the motor and measures just a little over 3 mm in thickness for the largest part. When a QTR stator is not powered the Tecnotion QTR digital Hall module can be used to determine the electrical position of the rotor. It is a 'wake and shake' replacement, simplifying the startup of the QTR motor. Digital Hall sensors are available for the QTR-A 65, 78, 105, 133 and 160 series.

Specifications

Input voltage: 5V....15Vdc

Output voltage: 3 phase TTL, max 2.5mA, 5Vdc
AquadB TTL, max 2.5mA, 5Vdc



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

Torque QTR 65 series



QTR-A 65 Stator and rotor shown with a height of 17 mm

Parameter	Remarks	Symbol	Unit	QTR-A 65-17	QTR-A 65-25	QTR-A 65-34	QTR-A 65-60
Winding type				N	N	Y	Y
Motor type max. voltage ph-ph	3-phase synchronous	U_{max}	$V_{ac rms} (V_{dc})$	420 (600)			
Ultimate torque @ 20 K/s increase	magnets @ 25°C	T_u	Nm	0.64	1.31	2.25	5.47
Peak torque @ 6 K/s increase	magnets @ 25°C	T_p	Nm	0.42	0.85	1.43	3.82
Continuous torque ¹	coils @ 100°C	T_c	Nm	0.29	0.66	1.08	2.31
Maximum speed ²	@ 48 V_{dc} @ T_c	n_{max}	rpm	5735	2673	3456	910
Maximum speed ²	@ U_{max} @ T_c	n_{max}	rpm	28000	28000	28000	16960
Motor torque constant	$I \leq I_c$	K_t	Nm/ A_{rms}	0.060	0.118	0.098	0.267
Motor constant	coils @ 25°C	K_m	(Nm) ² /W	0.0021	0.0058	0.0112	0.0321
Ultimate current	magnets @ 25°C	I_u	A_{rms}	13.84	13.84	27.98	24.99
Peak current	magnets @ 25°C	I_p	A_{rms}	7.58	7.58	15.32	15.05
Continuous current ¹	coils @ 100°C	I_c	A_{rms}	4.86	5.61	11.07	8.65
Back EMF ph-ph _{peak}		K_e	V/krpm	5.1	10.1	8.4	22.8
Back EMF ph-ph _{rms}		K_e	V/krpm	3.6	7.2	5.9	16.1
Resistance per phase	coils @ 25°C ex. cable	R_{ph}	Ω	0.575	0.799	0.287	0.741
Induction per phase	$I < 0.6 I_p$	L_{ph}	mH	0.86	1.62	0.69	2.10
Electrical time constant		τ_e	ms	1.5	2.0	2.4	2.8
Continuous power loss ¹	coils @ 100°C	P_c	W	53	99	138	217
Thermal resistance	coils to mount. sfc.	R_{th}	K/W	1.50	0.81	0.58	0.37
Thermal time constant		τ_{th}	s	21	16	16	38
Temperature sensor				none			
Stator OD		OD_s	mm	65			
Rotor ID		ID_r	mm	17			
Motor height		H_m	mm	18	26	35	62
Lamination stack height		H_{arm}	mm	8	16	24	48
Poles		N_{mgn}		8			
Rotor inertia		J_r	kg m ²	3.8E-06	7.5E-06	1.1E-05	2.3E-05
Stator mass	ex. cables	m_s	g	149	248	361	717
Rotor mass		m_r	g	27	54	80	160
Total mass	ex. cables	m	g	176	302	441	877
Cable mass	all cables	m	g/m	72			
Cable type (power)	length 0.5 m	d	mm (AWG)	2.06 (16)			

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. Maximum allowable speed for QTR-A-0xx series motors is 10,000 rpm. If you plan a high speed application, please contact Tecnotion.

All specifications ±10%

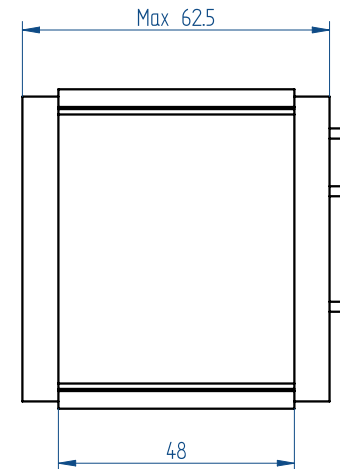
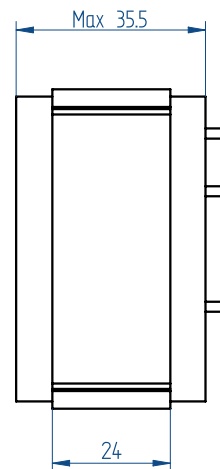
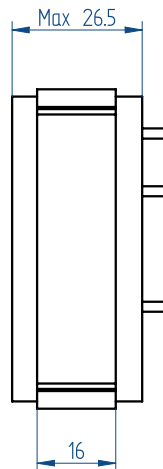
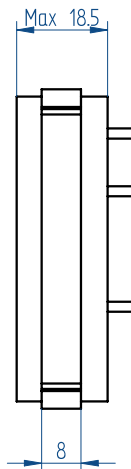
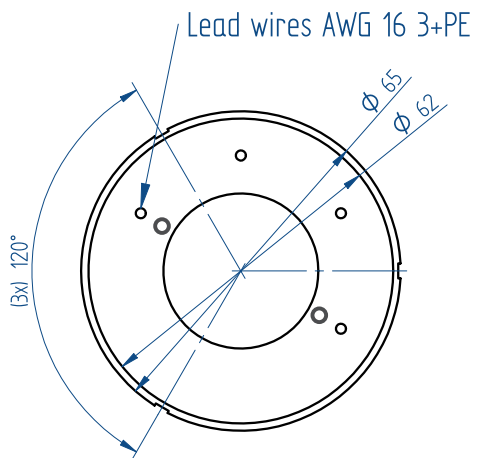
QTR-A 65-17

QTR-A 65-25

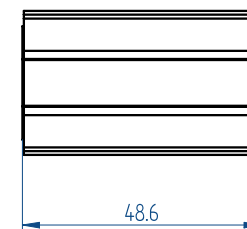
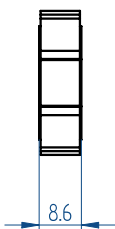
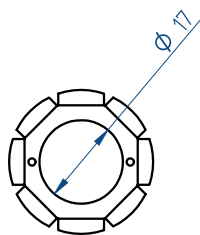
QTR-A 65-34

QTR-A 65-60

Stator



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

Torque QTR 78 series



QTR-A 78 Stator and rotor shown with a height of 17 mm

Parameter	Remarks	Symbol	Unit	QTR-A 78-17	QTR-A 78-25	QTR-A 78-34	QTR-A 78-60
Winding type				N	Y	Y	Y
Motor type max. voltage ph-ph	3-phase synchronous	U_{max}	$V_{ac rms} (V_{dc})$	420 (600)			
Ultimate torque @ 20 K/s increase	magnets @ 25°C	T_u	Nm	1.22	2.93	4.54	10.85
Peak torque @ 6 K/s increase	magnets @ 25°C	T_p	Nm	0.84	1.90	2.88	7.57
Continuous torque ¹	coils @ 100°C	T_c	Nm	0.57	1.38	2.19	4.41
Maximum speed ²	@ 48 V_{dc} @ T_c	n_{max}	rpm	2657	2360	1463	324
Maximum speed ²	@ U_{max} @ T_c	n_{max}	rpm	23000	23000	23000	8147
Motor torque constant	$l \leq l_c$	K_t	Nm/ A_{rms}	0.117	0.131	0.198	0.530
Motor constant	coils @ 25°C	K_m	(Nm) ² /W	0.0053	0.0167	0.0304	0.0843
Ultimate current	magnets @ 25°C	I_u	A_{rms}	13.84	27.98	27.98	24.99
Peak current	magnets @ 25°C	I_p	A_{rms}	7.58	15.32	15.32	15.05
Continuous current ¹	coils @ 100°C	I_c	A_{rms}	4.89	10.56	11.08	8.33
Back EMF ph-ph _{peak}		K_e	V/krpm	10.0	11.2	16.9	45.3
Back EMF ph-ph _{rms}		K_e	V/krpm	7.1	7.9	12.0	32.0
Resistance per phase	coils @ 25°C ex. cable	R_{ph}	Ω	0.857	0.342	0.430	1.111
Induction per phase	$l < 0.6 I_p$	L_{ph}	mH	1.35	0.76	1.04	3.4
Electrical time constant		τ_e	ms	1.6	2.2	2.4	3.1
Continuous power loss	coils @ 100°C	P_c	W	80	150	207	302
Thermal resistance	coils to mount. sfc.	R_{th}	K/W	0.99	0.53	0.39	0.26
Thermal time constant		τ_{th}	s	20	16	16	41
Temperature sensor				none			
Stator OD		OD_s	mm	78			
Rotor ID		ID_r	mm	29			
Motor height		H_m	mm	18	26	35	62
Lamination stack height		H_{arm}	mm	8	16	24	48
Poles		N_{mgn}		12			
Rotor inertia		J_r	kg m ²	1.3E-05	2.5E-05	3.8E-05	7.6E-05
Stator mass	ex. cables	m_s	g	208	353	501	1003
Rotor mass		m_r	g	42	84	126	243
Total mass	ex. cables	m	g	250	437	627	1246
Cable mass	all cables	m	g/m	72			
Cable type (power)	length 0.5 m	d	mm (AWG)	2.06 (16)			

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. Maximum allowable speed for QTR-A-0xx series motors is 9,000 rpm. If you plan a high speed application, please contact Tecnotion

All specifications ±10%

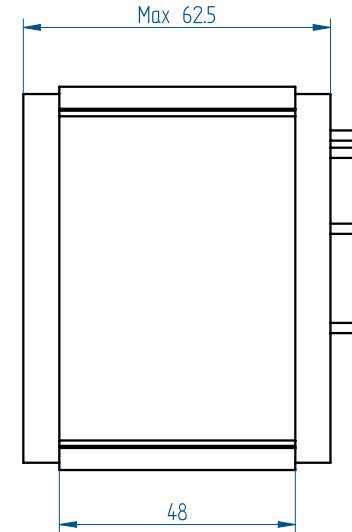
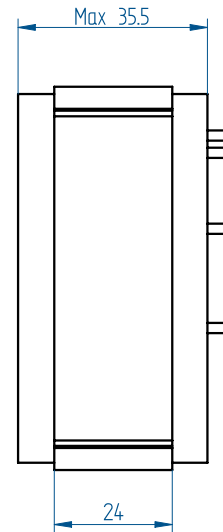
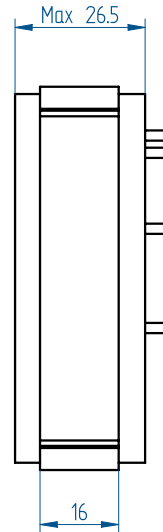
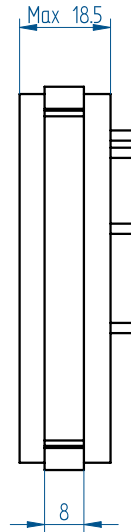
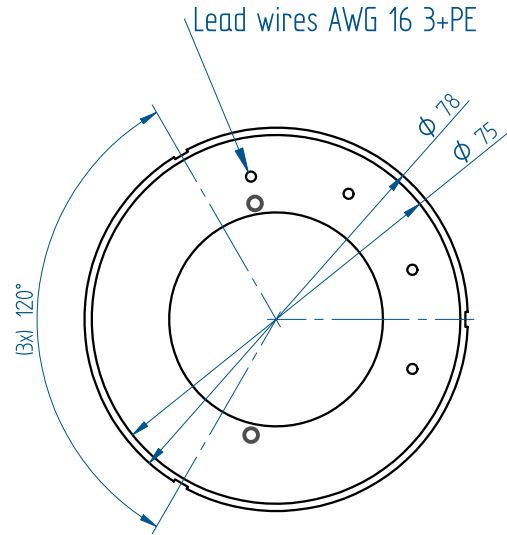
QTR-A 78-17

QTR-A 78-25

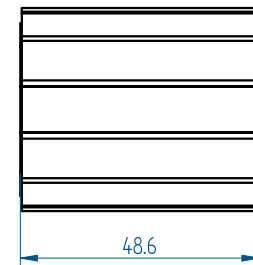
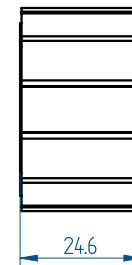
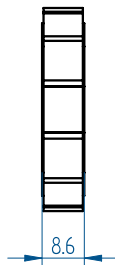
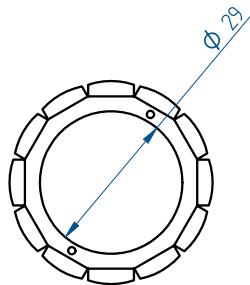
QTR-A 78-34

QTR-A 78-60

Stator



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

Torque QTR 105 series



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

Parameter	Remarks	Symbol	Unit	QTR-A-105-17			QTR-A-105-25			QTR-A-105-34			QTR-A-105-60		
				N	Y	Z	N	Y	Z	N	Y	Z	N		
Performance	Winding type			N	Y	Z	N	Y	Z	N	Y	Z	N		
	Motor type, max voltage ph-ph	3-phase synchronous	U_{max}	$V_{ac\ rms} (V_{dc})$										230 (325)	420 (600)
	Ultimate torque @ 20 K/s increase	magnets @ 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 K/s increase	magnets @ 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 ¹	coils @ 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 ²	@ 48 V_{dc} @ T_c	n_{max}	rpm	784	1761	3300	240	783	1623	0	444	1028	0	
	Maximum speed ²	@ U_{max} @ T_c	n_{max}	rpm	6890	12286	16500	3625	6534	11399	1928	4439	7833	1455	
	Motor torque constant	$I \leq I_c$	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	0.022	0.022	0.024	0.062	0.064	0.062	0.126	0.113	0.114	0.399	
Electrical	Ultimate current	magnets @ 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	magnets @ 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	
	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 ph-ph _{peak}		K_e	V/krpm	25	14	8	51	28	16	92	43	25	244	
	Back EMF ph-ph _{rms}		K_e	V/krpm	18	10	6	36	20	12	65	30	17	173	
	Resistance per phase	coils @ 25°C ex. cable	R_{ph}	Ω	1.38	0.43	0.14	1.93	0.57	0.19	3.02	0.74	0.24	6.84	
	Induction per phase	$I < 0.6 I_p$	L_{ph}	mH	2.58	0.83	0.28	4.05	1.29	0.43	7.93	1.75	0.59	25.3	
	Electrical time constant		τ_e	ms	1.9	2.0	1.9	2.1	2.3	2.2	2.6	2.4	2.4	3.7	
Thermal	Continuous power loss ¹	coils @ 100°C	P_c	W	115			214			300			469	
	Thermal resistance	coils to mount. sfc.	R_{th}	K/W	0.65			0.35			0.25			0.16	
	Thermal time constant		τ_{th}	s	21	25	25	16	18	18	17	17	17	25	
	Temperature sensor				PTC 1kΩ / KTY83-122										
Mechanical	Stator OD		OD_s	mm	105										
	Rotor ID		ID_r	mm	56										
	Motor height		H_m	mm	17			25			34			60	
	Lamination stack height		H_{arm}	mm	8			16			24			48	
	Poles		N_{mgn}		20										
	Rotor inertia		J_r	kg m ²	8.0E-05			1.5E-04			2.2E-04			4.3E-04	
	Stator mass	ex. cables	m_s	g	299			472			746			1476	
	Rotor mass		m_r	g	79			146			218			433	
	Total mass	ex. cables	m	g	378			618			964			1909	
	Cable mass	all cables	m	g/m	126	180	180	126	180	180	126	180	180	190	
	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)	4.5 (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. Maximum allowable speed for QTR-A-1xx series motors is 7,000 rpm. If you plan a high speed application, please contact Tecnotion.

All specifications ±10%

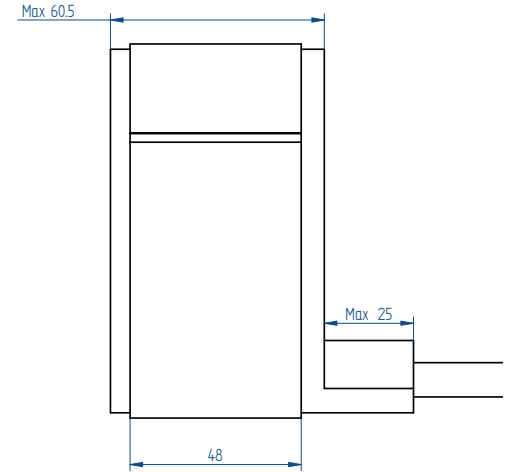
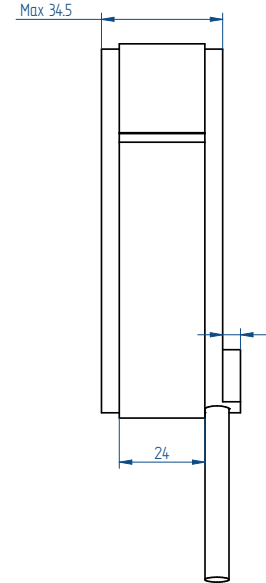
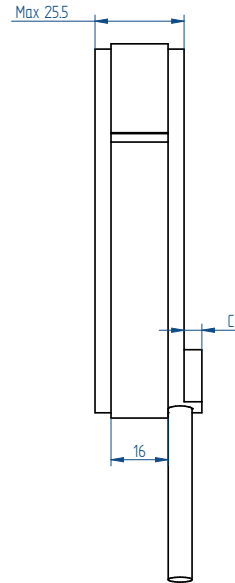
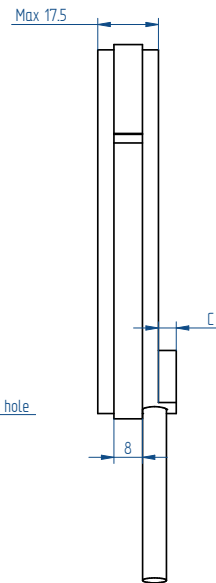
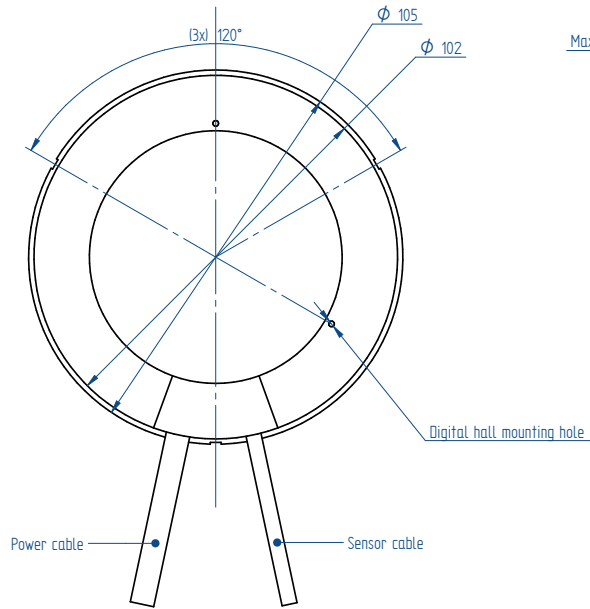
QTR-A 105-17

QTR-A 105-25

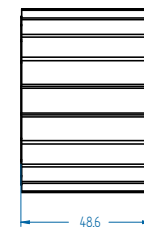
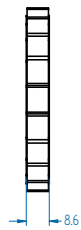
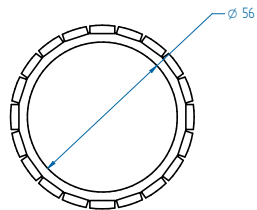
QTR-A 105-34

QTR-A 105-60

Stator



Rotor



Winding	C (mm)
N	3.5
Y+Z	5.5

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

Torque QTR 133 series



QTR-A-133 Stator and rotor shown with a height of 17 mm

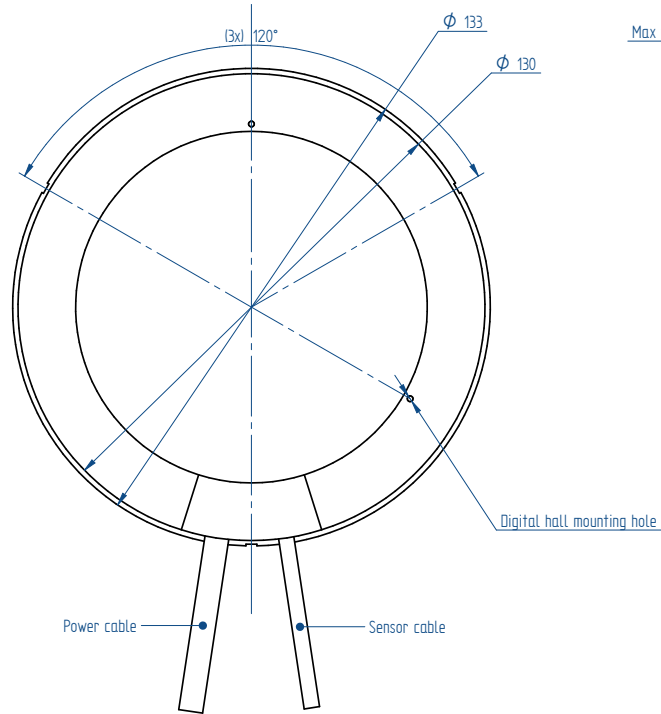
Parameter	Remarks	Symbol	Unit	QTR-A-133-17			QTR-A-133-25			QTR-A-133-34		QTR-A-133-60		
				N	Y	Z	N	Y	Z	N	Z	N		
Performance	Winding type			N	Y	Z	N	Y	Z	N	Z	N		
	Motor type, max voltage ph-ph	3-phase synchronous	U_{max}	$V_{ac\ rms} (V_{dc})$									230 (325)	420 (600)
	Ultimate torque @ 20 K/s increase	magnets @ 25°C	T_u	Nm	5.6	6.4	6.4	11.9	13.5	13.5	20.6	20.3	55.5	
	Peak torque @ 6 K/s increase	magnets @ 25°C	T_p	Nm	3.8	4.3	4.3	7.5	8.6	8.6	13.1	12.9	35.3	
	Continuous torque ¹	coils @ 100°C	T_c	Nm	2.6	2.6	2.6	5.9	6.0	6.0	10.0	9.5	21.9	
	Maximum speed ²	@ 48 V_{dc} @ T_c	n_{max}	rpm	317	839	1641	33	345	788	0	478	0	
	Maximum speed ²	@ U_{max} @ T_c	n_{max}	rpm	3514	6340	10807	1825	3389	5930	946	4040	724	
	Motor torque constant	$I \leq I_c$	K_t	Nm/A _{rms}	0.58	0.33	0.19	1.16	0.65	0.38	2.09	0.56	5.57	
	Motor constant	coils @ 25°C	K_m	(Nm) ² /W	0.058	0.063	0.062	0.166	0.176	0.178	0.344	0.307	1.080	
Electrical	Ultimate current	magnets @ 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	magnets @ 25°C	I_p	A _{rms}	7.56	15.40	26.70	7.56	15.40	26.70	7.31	26.70	7.37	
	Continuous current ¹	coils @ 100°C	I_c	A _{rms}	4.43	8.10	14.00	5.05	9.30	16.10	4.77	16.90	3.93	
	Back EMF ph-ph _{peak}		K_e	V/krpm	50	28	16	99	56	32	179	48	476	
	Back EMF ph-ph _{rms}		K_e	V/krpm	35	20	11	70	39	23	126	34	337	
	Resistance per phase	coils @ 25°C ex. cable	R_{ph}	Ω	1.93	0.58	0.20	2.70	0.80	0.27	4.23	0.34	9.58	
	Induction per phase	$I < 0.6 I_p$	L_{ph}	mH	3.74	1.20	0.40	5.87	1.87	0.62	11.50	0.85	36.6	
	Electrical time constant		τ_e	ms	1.9	2.1	2.0	2.2	2.4	2.3	2.7	2.5	3.8	
Thermal	Continuous power loss ¹	coils @ 100°C	P_c	W	147			268			375		577	
	Thermal resistance	coils to mount. sfc.	R_{th}	K/W	0.51			0.28			0.20		0.13	
	Thermal time constant		τ_{th}	s	23	27	27	18	21	21	19	19	29	
	Temperature sensor				PTC 1kΩ / KTY83-122									
Mechanical	Stator OD		OD_s	mm	133									
	Rotor ID		ID_r	mm	84									
	Motor height		H_m	mm	17			25			34	60		
	Lamination stack height		H_{arm}	mm	8			16			24	48		
	Poles		N_{mgn}		28									
	Rotor inertia		J_r	kg m ²	2.1E-04			4.2E-04			6.2E-04	1.2E-03		
	Stator mass	ex. cables	m_s	g	414			717			1037	2090		
	Rotor mass		m_r	g	106			208			309	613		
	Total mass	ex. cables	m	g	520			925			1346	2703		
	Cable mass	all cables	m	g/m	125	180	180	126	180	180	126	180	190	
	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)	4.5 (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

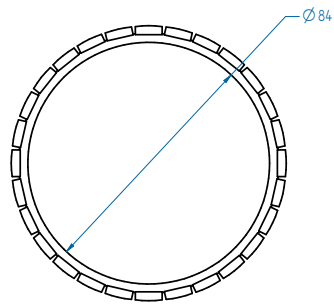
2. Maximum allowable speed for QTR-A-1xx series motors is 5,000 rpm. If you plan a high speed application, please contact Tecnotion.

All specifications ±10%

Stator



Rotor

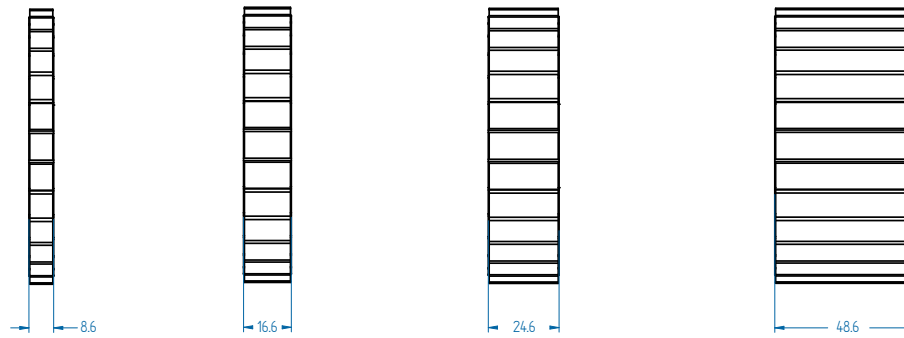
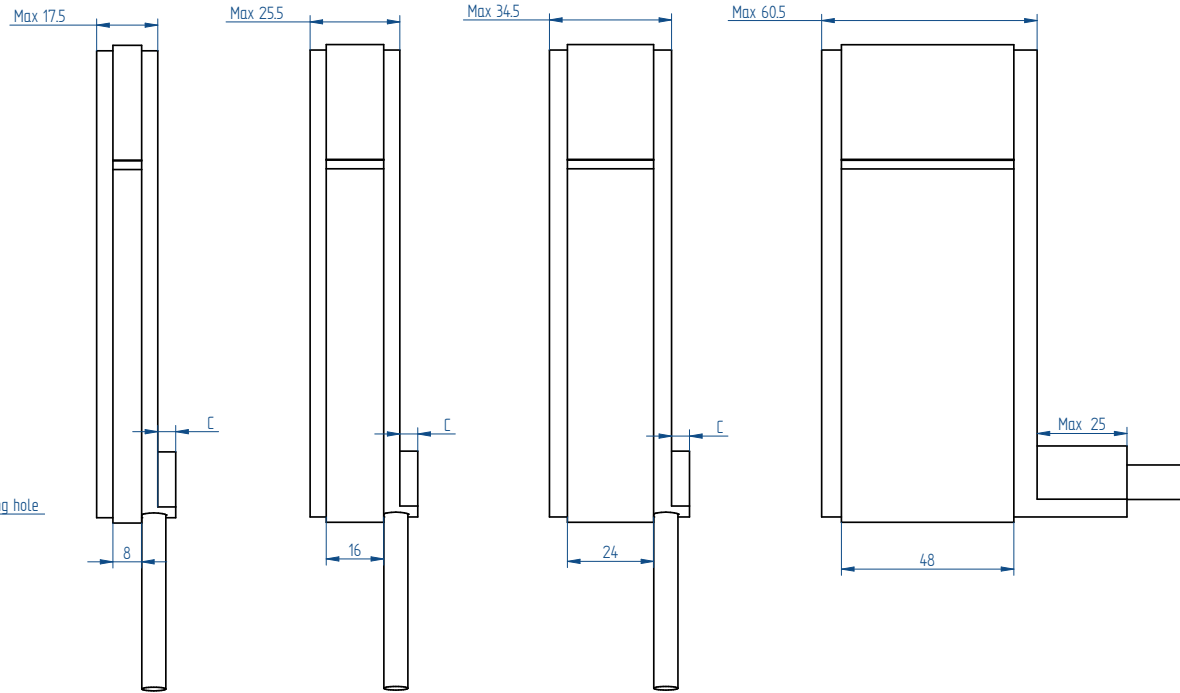


QTR-A 133-17

QTR-A 133-25

QTR-A 133-34

QTR-A 133-60



Winding	C (mm)
N	3.5
Y+Z	5.5

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

Torque QTR 160 series



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

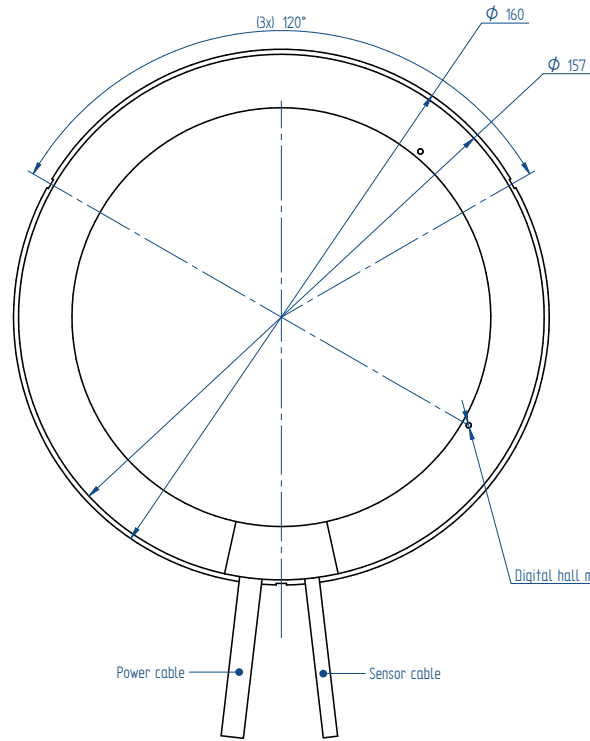
Parameter	Remarks	Sym	Unit	QTR-A-160-17			QTR-A-160-25			QTR-A-160-34		QTR-A-160-60	QTR-A-160-114	QTR-X-160-140	
				N	Y	Z	N	Y	Z	N	Z	N	N	N	
Performance	Winding type			N	Y	Z	N	Y	Z	N	Z	N	N	N	
	Motor type, max voltage ph-ph	3-phase synchronous	U_{max} $V_{ac rms}$ (V _{dc})	230 (325)									420 (600)	400 (560)	
	Ultimate torque @ 20 K/s increase	magnets @ 25°C	T_u Nm	9.3	10.6	10.6	19.6	22.4	22.4	34.1	33.6	91.6	184.4	250.5	
	Peak torque @ 6 K/s increase	magnets @ 25°C	T_p Nm	6.2	7.1	7.1	12.5	14.2	14.2	21.7	21.4	58.3	116.9	158.8	
	Continuous torque ¹	coils @ 100°C	T_c Nm	4.1	4.2	4.2	9.4	9.7	9.7	15.7	15.0	36.3	76.6	104.3	
	Maximum speed ²	@ 48 V _{dc} @ T _c	n_{max} rpm	142	467	965	0	165	441	0	259	0	0	0	
	Maximum speed ²	@ U _{max} @ T _c	n_{max} rpm	2145	3871	6663	1084	2039	3604	555	2464	411	656	482	
	Motor torque constant	$I \leq I_c$	K_t Nm/A _{rms}	0.96	0.54	0.31	1.92	1.07	0.62	3.45	0.93	9.20	6.16	8.37	
	Motor constant	coils @ 25°C	K_m (Nm) ² /W	0.12	0.13	0.13	0.35	0.37	0.37	0.73	0.66	2.29	5.25	7.79	
Electrical	Ultimate current	magnets @ 25°C	I_u A _{rms}	13.8	28.2	48.8	13.8	28.2	48.8	13.3	48.8	13.5	40.7	40.7	
	Peak current	magnets @ 25°C	I_p A _{rms}	7.6	15.4	26.7	7.6	15.4	26.7	7.3	26.7	7.4	22.1	22.1	
	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	12.4	12.5	
	Back EMF ph-ph _{peak}		K_e V/krpm	82	46	26	164	92	53	295	79	787	527	715	
	Back EMF ph-ph _{rms}		K_e V/krpm	58	32	19	116	65	37	209	56	556	372	506	
	Resistance per phase	coils @ 25°C ex. cable	R_{ph} Ω	2.47	0.75	0.25	3.47	1.03	0.35	5.45	0.44	12.30	2.41	3.00	
	Induction per phase	$I < 0.6 I_p$	L_{ph} mH	4.89	1.57	0.52	7.68	2.45	0.82	15.0	1.11	47.9	10.02	12.57	
	Electrical time constant		τ_e ms	2.0	2.1	2.1	2.2	2.4	2.4	2.8	2.5	3.9	4.16	4.19	
Thermal	Continuous power loss ¹	coils @ 100°C	P_c W	174			326			441		750	1453	1817	
	Thermal resistance	coils to mount. sfc.	R_{th} K/W	0.43			0.23			0.17		0.10	0.052	0.041	
	Thermal time constant		τ_{th} s	25	29	29	19	22	22	21	21	29	29	29	
	Temperature sensor			PTC 1kΩ / KTY83-122											
Mechanical	Stator OD		OD _s mm	160											
	Rotor ID		ID _r mm	111											
	Motor height		H _m 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	6.38E-03	8.10E-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)	2.06 (16) LW		
	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.

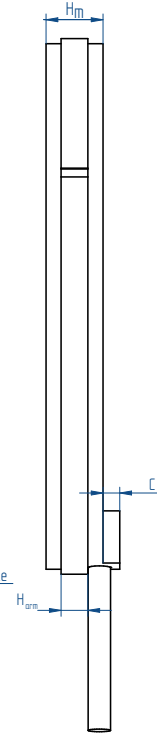
2. Maximum allowable speed for QTR-A-1xx series motors is 4,000 rpm. If you plan a high speed application, please contact Tecnotion.

All specifications ±10%

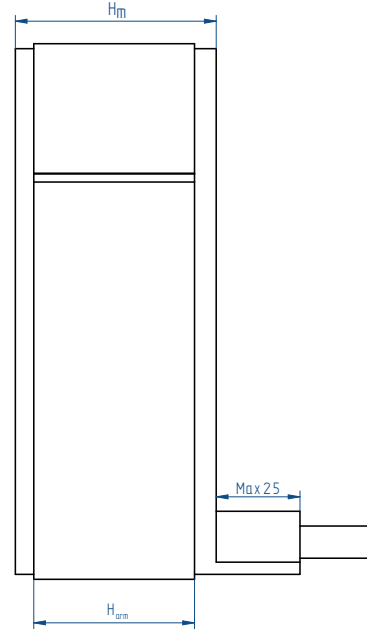
Stator



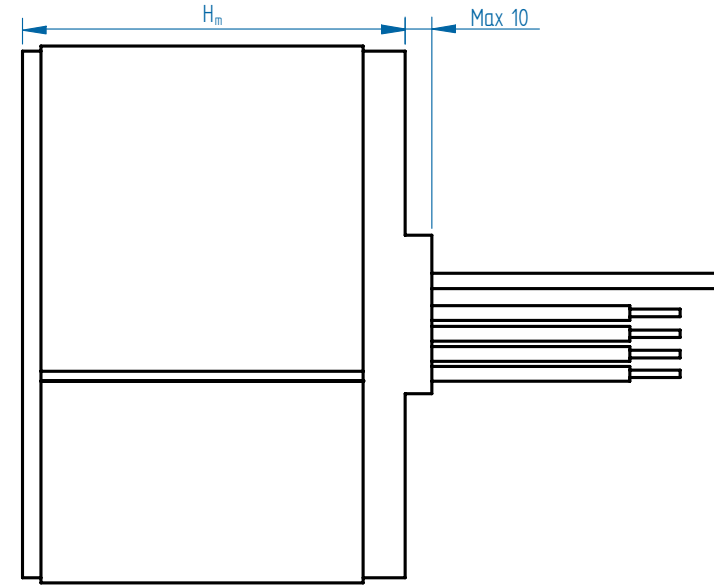
QTR-A 160-17



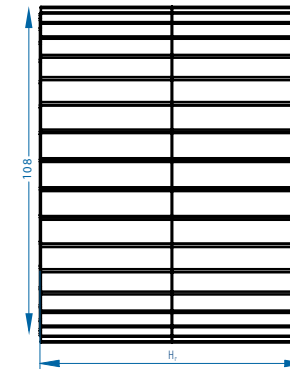
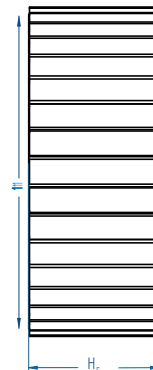
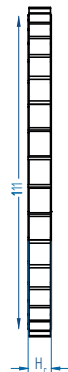
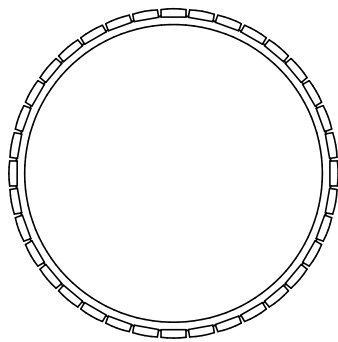
QTR-A 160-60



QTR-A 160-114



Rotor



Winding	C (mm)
N	3.5
Y+Z	5.5

Rotor type	H_r
160-17	8.6
160-25	16.6
160-34	24.6
160-60	48.6
160-114	96.6
160-138	120.6

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

Torque QTL 210 series



QTL 210 series,
with a height of 65mm

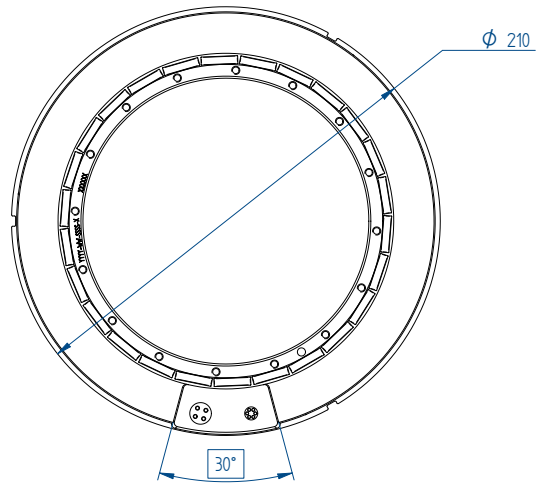
Parameter	Remarks	Symbol	Unit	QTL-A 210-65	QTL-A 210-85	QTL-A 210-105
Performance				N	N	N
Winding type						
Motor type max. voltage ph-ph	3-phase synchronous	U_{max}	$V_{ac,rms} (V_{dc})$		480 (680)	
Ultimate torque @ 20 K/s increase	magnets @ 25°C	T_u	Nm	173	259	346
Peak torque @ K/s increase	magnets @ 25°C	T_p	Nm	140	211	281
Continuous torque ¹	coils @ 100°C	T_c	Nm	65	103	142
Stall torque ¹	coils @ 100°C	T_s	Nm	46	73	100
Maximum speed ²	@ U_{max} @ T_c	n_{max}	rpm	716	457	326
Motor torque constant	$I \leq I_c$	K_t	Nm/A _{rms}	8.7	13.1	17.5
Motor constant	coils @ 25°C	K_m	(Nm) ² /W	7.9	13.5	19.2
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}	7.45	7.88	8.11
Stall current ¹	coils @ 100°C	I_s	A _{rms}	5.27	5.57	5.74
Back EMF ph-ph _{peak}		K_e	V/krpm	747	1121	1494
Back EMF ph-ph _{rms}		K_e	V/krpm	528	793	1057
Resistance per phase	coils @ 25°C ex. cable	R_{ph}	Ω	3.18	4.25	5.31
Induction per phase	$I < 0.6 I_p$	L_{ph}	mH	16.0	22.3	28.7
Electrical time constant		τ_e	ms	5.0	5.3	5.4
Thermal						
Continuous power loss ¹	coils @ 100°C	P_c	W	690	1028	1363
Thermal resistance	coils to mount. sfc.	R_{th}	K/W	0.116	0.078	0.059
Thermal time constant		τ_{th}	s	53	47	45
Temperature sensor				PTC 1kΩ (3x) / Pt1000 (3x)		
Mechanical						
Stator OD		OD_s	mm		210	
Rotor ID		ID_r	mm		140	
Motor height		H_m	mm	65	85	105
Lamination stack height		H_{arm}	mm	40	60	80
Poles		N_{mgn}			26	
Rotor inertia		J_r	kg m ²	0.009	0.014	0.019
Stator mass	ex. cables	m_s	kg	4.2	5.9	7.5
Rotor mass		m_r	kg	1.6	2.4	3.2
Total mass	ex. cables	m	kg	5.8	8.3	10.7
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.

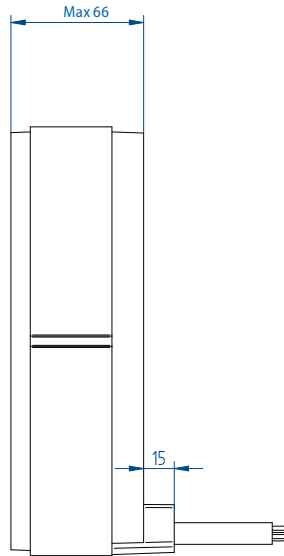
2. Actual values depend on bus voltage. Please check the T/n diagram in our manual or online simulation tool.

All specifications ±10%

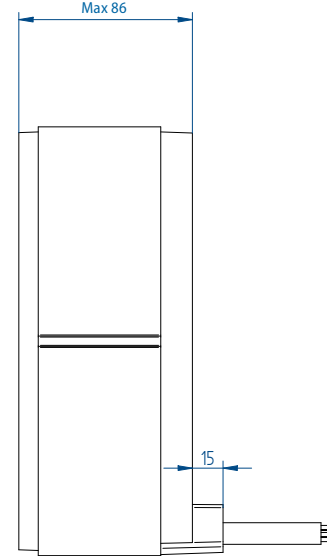
Stator



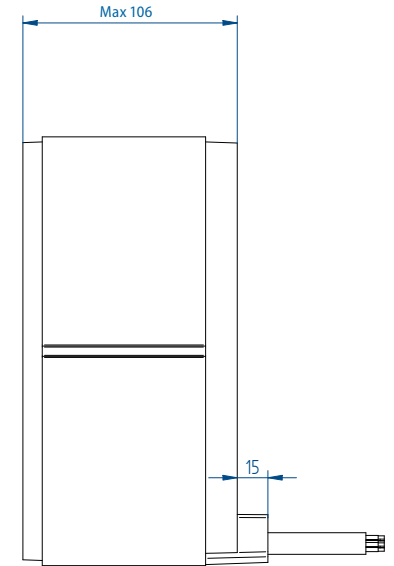
QTL-A 210-65



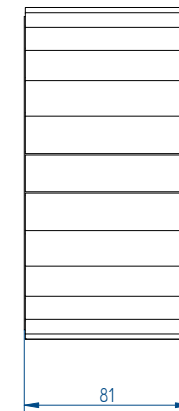
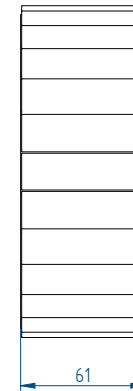
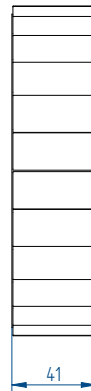
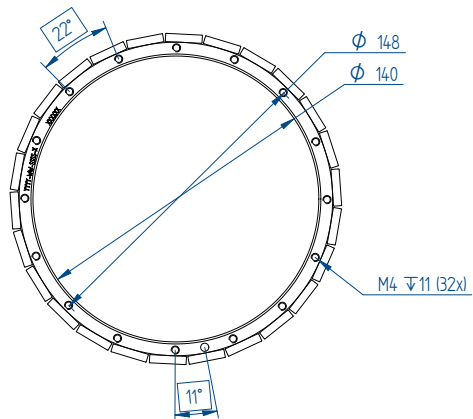
QTL-A 210-85



QTL-A 210-105



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

Torque QTL 230 series with cooling ring



QTL 230 series,
with a height of 85 mm

Parameter	Remarks	Symbol	Unit	QTL-A 230-65	QTL-A 230-85	QTL-A 230-105
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	173	259	346
Peak torque @ 6 K/s increase	magnets @ 25°C	T_p	Nm	140	211	281
Continuous torque ¹	coils @ 100°C	T_c	Nm	67	107	147
Stall torque ¹	coils @ 100°C	T_s	Nm	48	76	104
Maximum speed ²	@ U_{max} @ T_c	n_{max}	rpm	709	451	321
Motor torque constant	$I \leq I_c$	K_t	Nm/A _{rms}	8.7	13.1	17.5
Motor constant	coils @ 25°C	K_m	(Nm) ² /W	7.9	13.5	19.2
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}	7.69	8.16	8.42
Stall current ¹	coils @ 100°C	I_s	A _{rms}	5.44	5.77	5.95
Back EMF ph-ph _{peak}		K_e	V/krpm	747	1121	1494
Back EMF ph-ph _{rms}		K_e	V/krpm	528	793	1057
Resistance per phase	coils @ 25°C ex. cable	R_{ph}	Ω	3.18	4.25	5.31
Induction per phase	$I < 0.6 I_p$	L_{ph}	mH	16.0	22.3	28.7
Electrical time constant		τ_e	ms	5.0	5.3	5.4
Thermal						
Continuous power loss ¹	coils @ 100°C	P_c	W	735	1102	1469
Thermal resistance	coils to mount. sfc.	R_{th}	K/W	0.109	0.073	0.054
Thermal time constant		τ_{th}	s	49	44	41
Water cooling flow	for $\Delta T=3K$	Φ_w	l/min	3.5	5.3	7.0
Water cooling pressure drop		ΔP_w	bar	0.7	1.0	1.5
Temperature sensor				PTC 1kΩ (3x) / Pt1000 (3x)		
Mechanical						
Stator OD		OD_s	mm		230	
Rotor ID		ID_r	mm		140	
Motor height		H_m	mm	65	85	105
Lamination stack height		H_{arm}	mm	40	60	80
Poles		N_{mgn}			26	
Rotor inertia		J_r	kg m ²	0.009	0.014	0.019
Stator mass	ex. cables	m_s	kg	5.2	7.2	9.0
Rotor mass		m_r	kg	1.6	2.4	3.2
Total mass	ex. cables	m	kg	6.8	9.6	12.2
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.

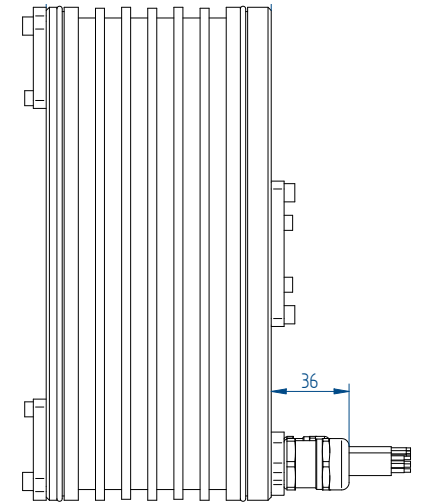
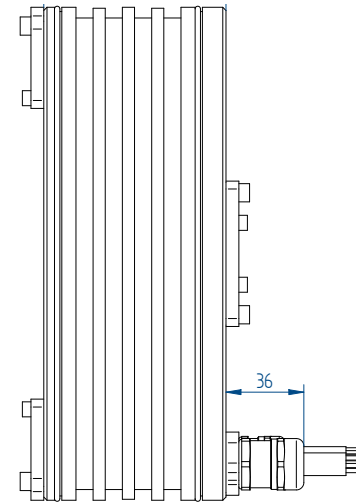
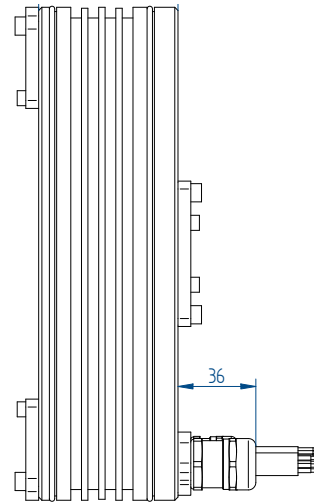
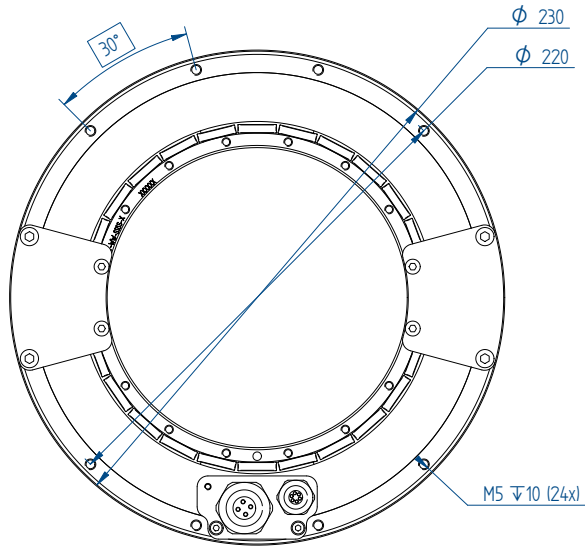
All specifications ±10%

QTL-A 230-65

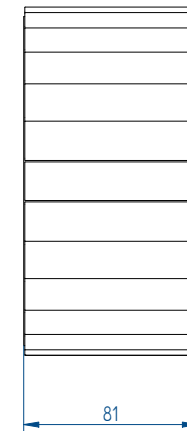
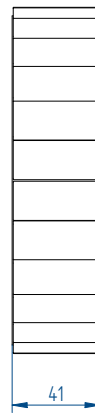
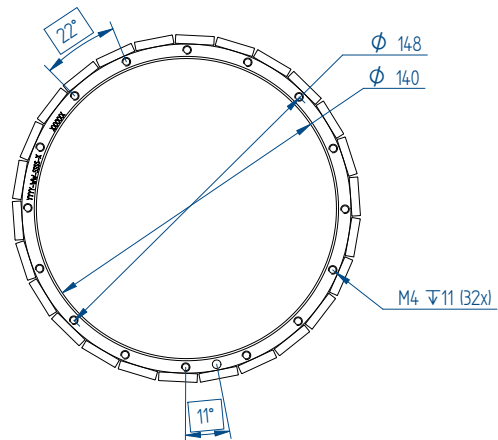
QTL-A 230-85

QTL-A 230-105

Stator



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

Torque QTL 290 series



QTL 290 series,
with a height of 65 mm

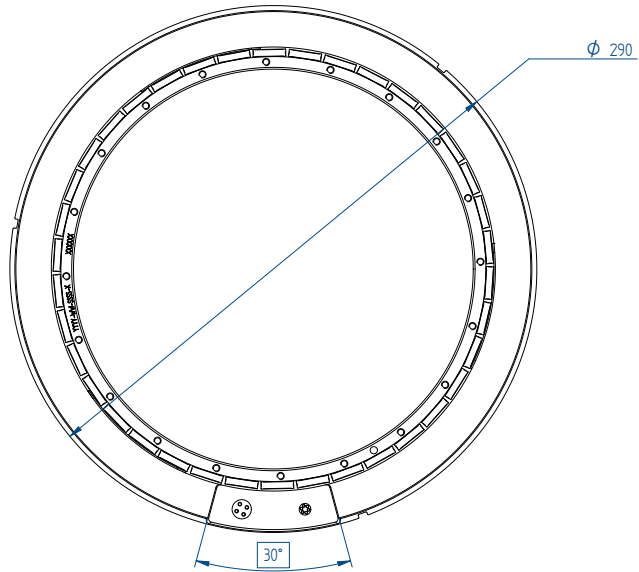
Parameter	Remarks	Symbol	Unit	QTL-A 290-65	QTL-A 290-85	QTL-A 290-105
Performance	Winding type			N	N	N
	Motor type max. voltage ph-ph	3-phase synchronous	U_{max}	$V_{ac,rms}$ (V_{dc})	480 (680)	
	Ultimate torque @ 20 K/s increase	magnets @ 25°C	T_u	Nm	389	583
	Peak torque @ 6 K/s increase	magnets @ 25°C	T_p	Nm	316	474
	Continuous torque ¹	coils @ 100°C	T_c	Nm	140	222
	Stall torque ¹	coils @ 100°C	T_s	Nm	99	157
	Maximum speed ²	@ U_{max} @ T_c	n_{max}	rpm	306	189
	Motor torque constant	$I \leq I_c$	K_t	Nm/ A_{rms}	19.7	29.5
	Motor constant	coils @ 25°C	K_m	(Nm) ² /W	27.1	45.5
Electrical	Ultimate current	magnets @ 25°C	I_u	A_{rms}	22.0	22.0
	Peak current	magnets @ 25°C	I_p	A_{rms}	16.9	16.9
	Continuous current ¹	coils @ 100°C	I_c	A_{rms}	7.14	7.54
	Stall current ¹	coils @ 100°C	I_s	A_{rms}	5.05	5.33
	Back EMF ph-ph _{peak}		K_e	V/krpm	1681	2521
	Back EMF ph-ph _{rms}		K_e	V/krpm	1189	1783
	Resistance per phase	coils @ 25°C ex. cable	R_{ph}	Ω	4.77	6.37
	Induction per phase	$I < 0.6 I_p$	L_{ph}	mH	23.9	34.7
	Electrical time constant		τ_e	ms	5.0	5.5
Thermal	Continuous power loss ¹	coils @ 100°C	P_c	W	948	1410
	Thermal resistance	coils to mount. sfc.	R_{th}	K/W	0.084	0.057
	Thermal time constant		τ_{th}	s	57	52
	Temperature sensor				PTC 1k Ω (3x) / PT1000 (3x)	
Mechanical	Stator OD		OD_s	mm		290
	Rotor ID		ID_r	mm		220
	Motor height		H_m	mm	65	85
	Lamination stack height		H_{arm}	mm	40	60
	Poles		N_{mgn}			80
	Rotor inertia		J_r	kg m ²	0.031	0.046
	Stator mass	ex. cables	m_s	kg	6.0	8.3
	Rotor mass		m_r	kg	2.3	3.5
	Total mass	ex. cables	m	kg	8.3	11.8
	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..

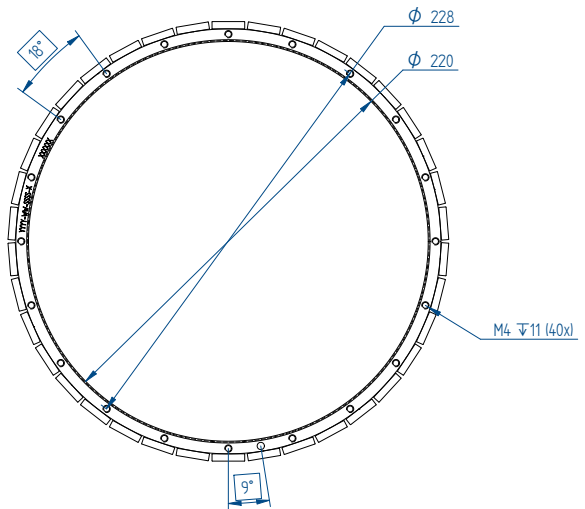
2. Actual values depend on bus voltage. Please check the T/n diagram in our manual or online simulation tool.

All specifications $\pm 10\%$

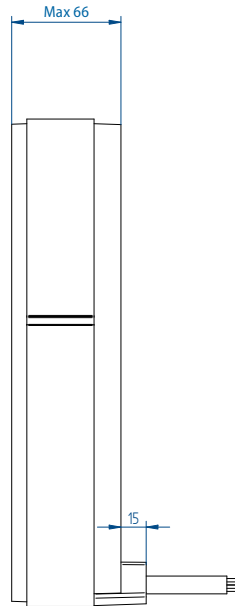
Stator



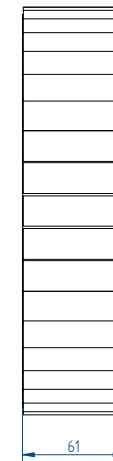
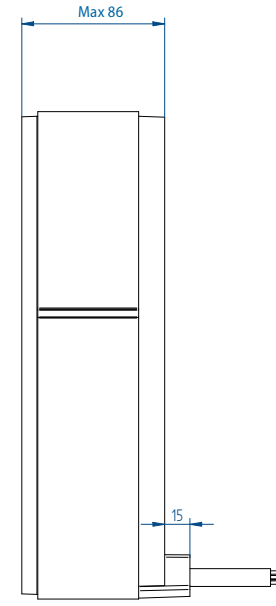
Rotor



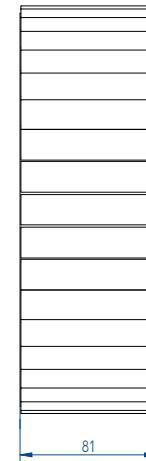
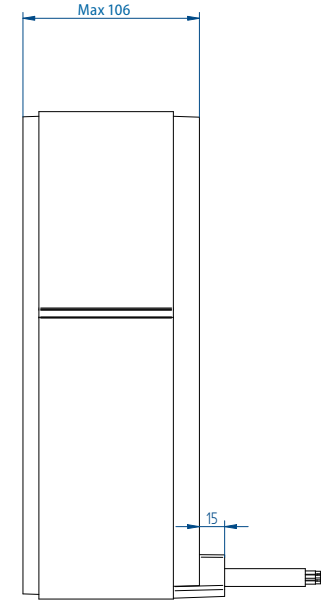
QTL-A 290-65



QTL-A 290-85



QTL-A 290-105



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

Torque QTL 310 series with cooling ring



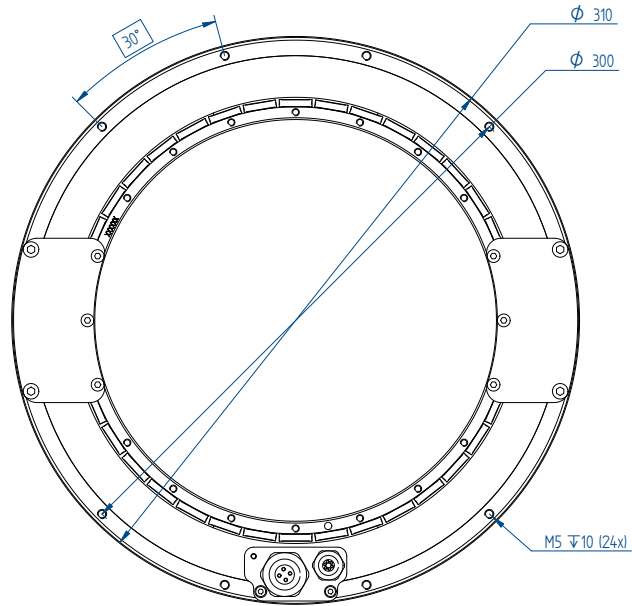
QTL 310 series,
with a height of 85 mm

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	27.1	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	10.5
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	
Motor height		H_m	mm	65	85	105
Lamination stack height		H_{arm}	mm	40	60	80
Poles		N_{mgn}				
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)	

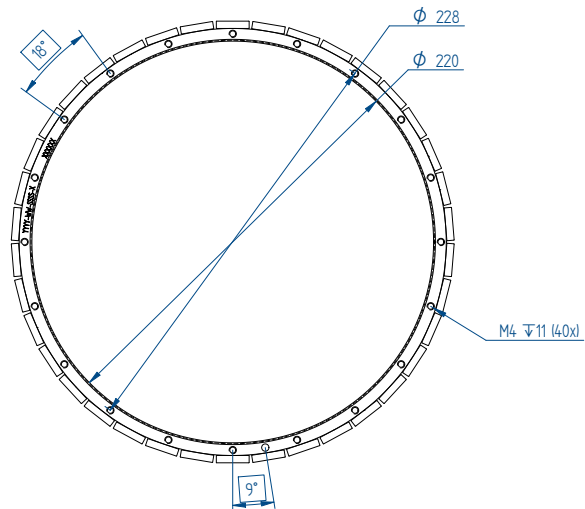
1. These values are only applicable when the mounting surface is at 20°C and the motor is driven at stall or continuous current. If these values differ in your application, please check our simulation tool.
2. Actual values depend on bus voltage. Please check the T/n diagram in our manual or online simulation tool.

All specifications ±10%

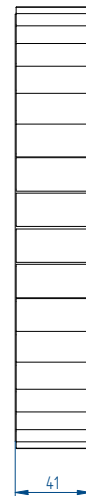
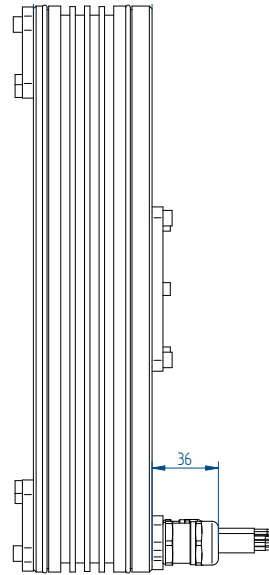
Stator



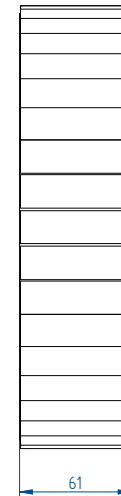
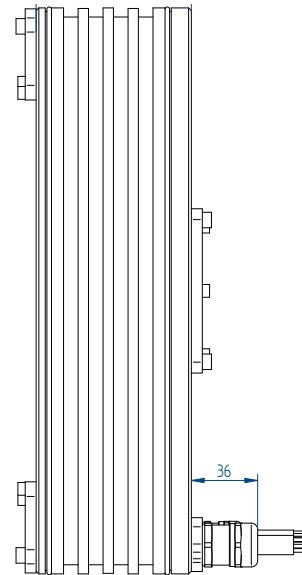
Rotor



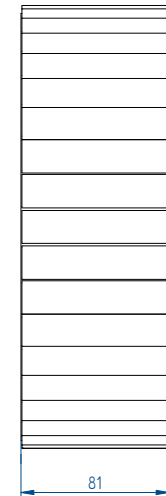
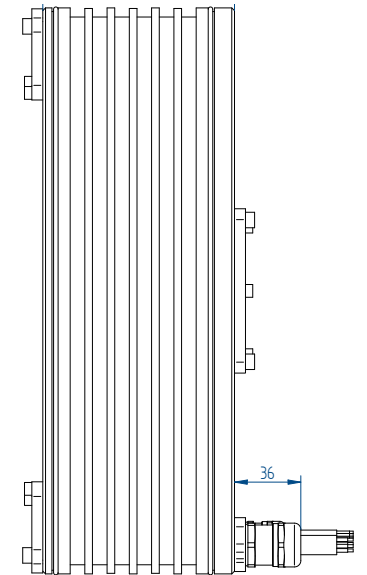
QTL-A 310-65



QTL-A 310-85



QTL-A 310-105



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

Torque QTL 385 series with cooling ring



QTL 385 series,
with a height of 85 mm

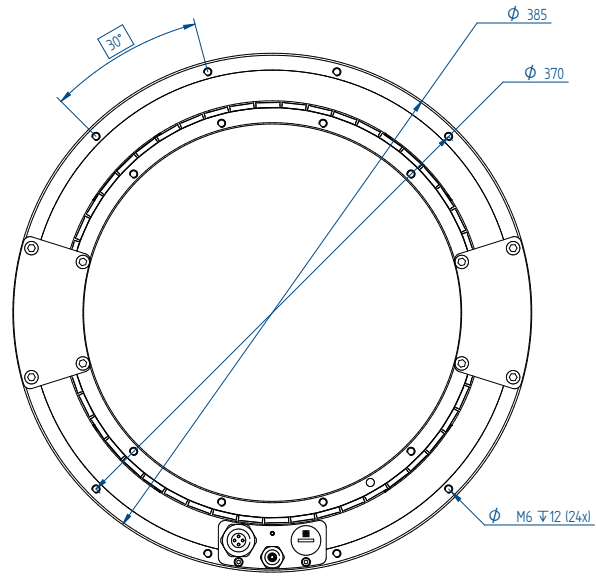
Parameter	Remarks	Symbol	Unit	QTL-A 385-85	QTL-A 385-105
Performance	Winding type			I	I
	Motor type max. voltage ph-ph	3-phase synchronous	U_{max}	$V_{ac,rms} (V_{dc})$	480 (680)
	Ultimate torque @ 20 K/s increase	magnets @ 25°C	T_u	Nm	1026
	Peak torque @ 6 K/s increase	magnets @ 25°C	T_p	Nm	833
	Continuous torque ¹	coils @ 100°C	T_c	Nm	407
	Stall torque ¹	coils @ 100°C	T_s	Nm	288
	Maximum speed ²	@ U_{max} @ T_c	n_{max}	rpm	231
	Motor torque constant	$I \leq I_c$	K_t	Nm/A _{rms}	25.9
	Motor constant	coils @ 25°C	K_m	(Nm) ² /W	105.0
Electrical	Ultimate current	magnets @ 25°C	I_u	A _{rms}	44.0
	Peak current	magnets @ 25°C	I_p	A _{rms}	33.8
	Continuous current ¹	coils @ 100°C	I_c	A _{rms}	15.7
	Stall current ¹	coils @ 100°C	I_s	A _{rms}	11.1
	Back EMF ph-ph _{peak}		K_e	V/krpm	2217
	Back EMF ph-ph _{rms}		K_e	V/krpm	1567
	Resistance per phase	coils @ 25°C ex. cable	R_{ph}	Ω	2.13
	Induction per phase	$I < 0.6 I_p$	L_{ph}	mH	11.6
	Electrical time constant		τ_e	ms	5.4
Thermal	Continuous power loss ¹	coils @ 100°C	P_c	W	2044
	Thermal resistance	coils to mount. sfc.	R_{th}	K/W	0.039
	Thermal time constant		τ_{th}	s	48
	Water cooling flow	for $\Delta T=3K$	Φ_w	l/min	9.8
	Temperature sensor			PTC 1kΩ (3x)/ Pt1000 (3x)	
Mechanical	Stator OD		OD_s	mm	385
	Rotor ID		ID_r	mm	280
	Motor height		H_m	mm	85
	Lamination stack height		H_{arm}	mm	60
	Poles		N_{mgn}		50
	Rotor inertia		J_r	kg m ²	0.146
	Stator mass	ex. cables	m_s	kg	12.75
	Rotor mass		m_r	kg	6.68
	Total mass	ex. cables	m	kg	19.43
	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.

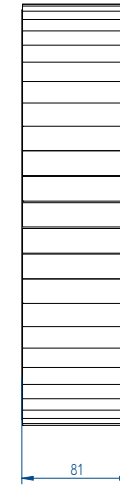
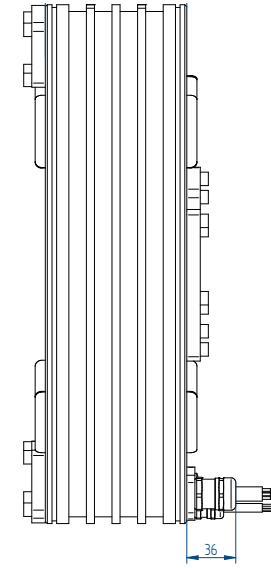
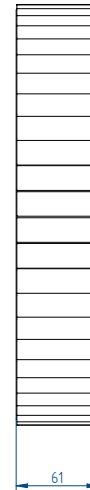
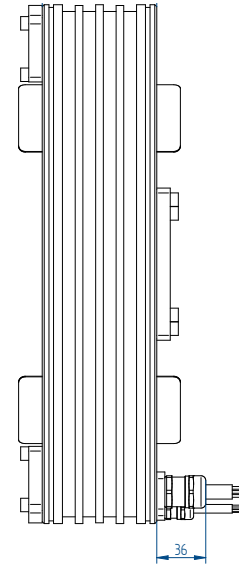
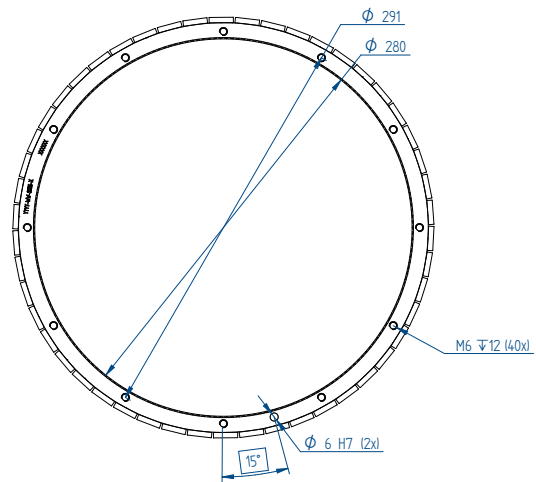
2. Actual values depend on bus voltage. Please check the T/n diagram in our manual or online simulation tool.

All specifications ±10%

Stator



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



QTL 485 series,
with a height of 85 mm

Torque QTL 485 series with cooling ring

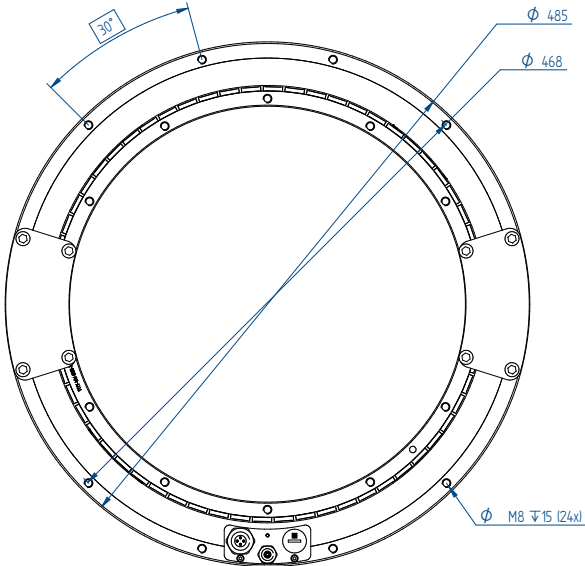
Parameter	Remarks	Symbol	Unit	QTL-A 485-85	QTL-A 485-105
Performance				I	I
Winding type				480 (680)	
Motor type max. voltage ph-ph	3-phase synchronous	U_{max}	$V_{ac,rms}$ (V _{dc})		
Ultimate torque @ 20 K/s increase	magnets @ 25°C	T_u	Nm	1651	2202
Peak torque @ 6 K/s increase	magnets @ 25°C	T_p	Nm	1342	1789
Continuous torque ¹	coils @ 100°C	T_c	Nm	659	907
Stall torque ¹	coils @ 100°C	T_s	Nm	466	642
Maximum speed ²	@ U_{max} @ T_c	n_{max}	rpm	138	96
Motor torque constant	$I \leq I_c$	K_t	Nm/A _{rms}	41.7	55.6
Motor constant	coils @ 25°C	K_m	(Nm) ² /W	217.9	310.4
Electrical					
Ultimate current	magnets @ 25°C	I_u	A _{rms}	44.0	44.0
Peak current	magnets @ 25°C	I_p	A _{rms}	33.8	33.8
Continuous current ¹	coils @ 100°C	I_c	A _{rms}	15.8	16.3
Stall current ¹	coils @ 100°C	I_s	A _{rms}	11.2	11.5
Back EMF ph-ph _{peak}		K_e	V/krpm	3569	4758
Back EMF ph-ph _{rms}		K_e	V/krpm	2523	3364
Resistance per phase	coils @ 25°C ex. cable	R_{ph}	Ω	2.66	3.32
Induction per phase	$I < 0.6 I_p$	L_{ph}	mH	14.5	19.0
Electrical time constant		τ_e	ms	5.4	5.7
Thermal					
Continuous power loss ¹	coils @ 100°C	P_c	W	2584	3444
Thermal resistance	coils to mount. sfc.	R_{th}	K/W	0.031	0.023
Thermal time constant		τ_{th}	s	47	44
Water cooling flow	for $\Delta T=3K$	Φ_w	l/min	12.4	16.5
Temperature sensor				PTC 1kΩ (3x)/ Pt1000 (3x)	
Mechanical					
Stator OD		OD_s	mm	485	
Rotor ID		ID_r	mm	366	
Motor height		H_m	mm	85	105
Lamination stack height		H_{arm}	mm	60	80
Poles		N_{mgn}		62	
Rotor inertia		J_r	kg m ²	0.357	0.476
Stator mass	exc. cables	m_s	kg	18.75	25
Rotor mass		m_r	kg	9.68	12.9
Total mass	exc. cables	m	kg	28.43	37.9
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

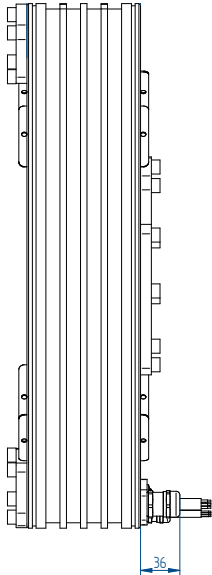
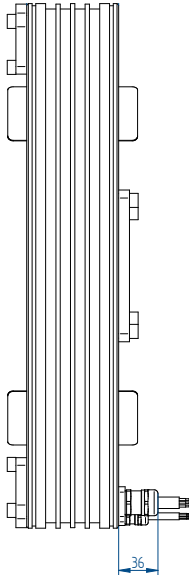
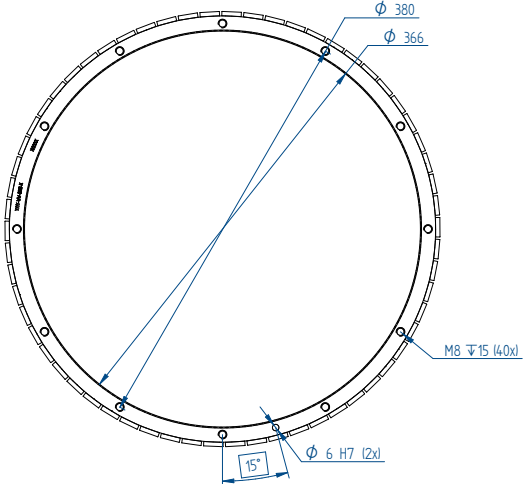
2. Actual values depend on bus voltage. Please check the T/n diagram in our manual or online simulation tool.

All specifications ±10%

Stator



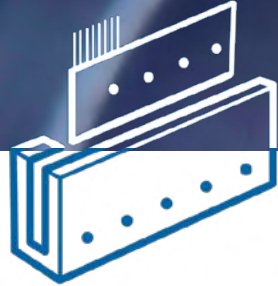
Rotor



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

We direct drive your motion technology



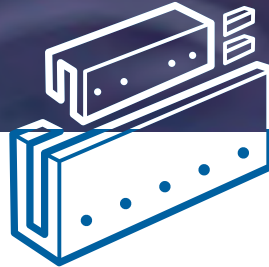
Vacuum linear motors

F_p 100-4020 N F_c 22-698 N

Vacuum Generation 2 motors for powerful and precise processes
Generation 2 vacuum ironless linear motor series is designed with the unique challenges of vacuum applications in mind and based on years of collaboration with high-end semiconductor manufacturers.

Optimal thermal properties, added safety, excellent RGA performance, lower outgassing and flexibility to install make the Generation 2 vacuum motor series the benchmark for motion in vacuum applications.

www.tecnotion.com/vacuum



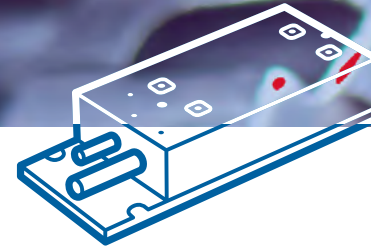
Ironless linear motors

F_p 36-4200 N F_c 10-846 N

Superior precision with accurate force constant and speed
In contrast to iron core motors, these motors feature an ironless coil unit, therefore no attraction force or cogging between the coil unit and the magnet track. This gives ironless motors their light weight, superior precision, a linear force constant, and extremely dynamic velocity, acceleration, and deceleration.

Perfect for many industries, such as semiconductor, display, inspection, medical, automation, and optics.

www.tecnotion.com/ironless



Iron core linear motors

F_u 120-6750 N F_c 60-3000 N

Extremely high force in a modular compact design
Designed and constructed with an iron core, these series offer an high continuous force for their size, starting at 60 N for the small TM, up to 3000 N for the water cooled TBW. Peak forces are even higher, reaching up to 6000 N.

A small footprint, modular design, and high force density enable very flexible application designs, using iron core linear motors. Suitable for many applications such as printing, digital cutting, and machine tooling.

www.tecnotion.com/ironcore



Motor simulation tool

Analyze your application

Size your application with the motor selection and simulation tool
Online motor simulation software helps you find the best motor for the application and generate reports within seconds, without having to make time consuming calculations by hand.

The motor sizing simulation tool helps to select the right torque or linear motor, using your application characteristics. The tool will provide you with diagrams for position, velocity, acceleration, jerk, torque, power, voltage, current, temperature and torque vs. velocity.

www.tecnotion.com/simtool

Article numbers

Series	Article	Article code
QTR	TORQUE KIT QTR-A-65-17 N	10 8062
QTR	TORQUE KIT QTR-A-65-25 N	10 8393
QTR	TORQUE KIT QTR-A-65-34 Y	10 8394
QTR	TORQUE KIT QTR-A-65-60 Y	10 8395
QTR	TORQUE KIT QTR-A-78-17 N	10 8397
QTR	TORQUE KIT QTR-A-78-25 Y	10 8399
QTR	TORQUE KIT QTR-A-78-34 Y	10 8400
QTR	TORQUE KIT QTR-A-78-60 Y	10 8401
QTR	TORQUE KIT QTR-A-105-17-N	4022 368 6120
QTR	TORQUE KIT QTR-A-105-17-Y	10 8848
QTR	TORQUE KIT QTR-A-105-17-Z	10 8158
QTR	TORQUE KIT QTR-A-105-25-N	4022 368 6121
QTR	TORQUE KIT QTR-A-105-25-Y	10 9393
QTR	TORQUE KIT QTR-A-105-25-Z	10 9398
QTR	TORQUE KIT QTR-A-105-34-N	4022 368 6122
QTR	TORQUE KIT QTR-A-105-34-Y	10 9394
QTR	TORQUE KIT QTR-A-105-34-Z	10 9399
QTR	TORQUE KIT QTR-A-105-60-N	4022 368 6123
QTR	TORQUE KIT QTR-A-133-17-N	4022 368 6140
QTR	TORQUE KIT QTR-A-133-17-Y	10 9395

Series	Article	Article code
QTR	TORQUE KIT QTR-A-133-17-Z	10 9400
QTR	TORQUE KIT QTR-A-133-25-N	4022 368 6141
QTR	TORQUE KIT QTR-A-133-25-Y	10 9396
QTR	TORQUE KIT QTR-A-133-25-Z	10 8159
QTR	TORQUE KIT QTR-A-133-34-N	4022 368 6142
QTR	TORQUE KIT QTR-A-133-34-Z	10 9401
QTR	TORQUE KIT QTR-A-133-60-N	4022 368 6143
QTR	TORQUE KIT QTR-A-160-17-N	4022 368 6160
QTR	TORQUE KIT QTR-A-160-17-Y	4022 368 5589
QTR	TORQUE KIT QTR-A-160-17-Z	10 9402
QTR	TORQUE KIT QTR-A-160-25-N	4022 368 6161
QTR	TORQUE KIT QTR-A-160-25-Y	10 9397
QTR	TORQUE KIT QTR-A-160-25-Z	10 9403
QTR	TORQUE KIT QTR-A-160-34-N	4022 368 6162
QTR	TORQUE KIT QTR-A-160-34-Z	10 8160
QTR	TORQUE KIT QTR-A-160-60-N	4022 368 6163
QTR	TORQUE KIT QTR-A-160-114-N	11 9309
QTR	TORQUE KIT QTR-A-160-140-N	11 1328
QTR	DIGITAL HALL MODULE QTR 65	10 8781
QTR	DIGITAL HALL MODULE QTR 78	10 8782

Series	Article	Article code
QTR	DIGITAL HALL MODULE QTR 105	10 8233
QTR	DIGITAL HALL MODULE QTR 133	10 8234
QTR	DIGITAL HALL MODULE QTR 160	10 8235
QTL	TORQUE KIT QTL-A-210-65-N	11 1171
QTL	TORQUE KIT QTL-A-210-85-N	11 1173
QTL	TORQUE KIT QTL-A-210-105-N	11 1175
QTL	TORQUE KIT QTL-A-230-65-N	11 1127
QTL	TORQUE KIT QTL-A-230-85-N	11 1145
QTL	TORQUE KIT QTL-A-230-105-N	11 1153
QTL	TORQUE KIT QTL-A-290-65-N	11 1177
QTL	TORQUE KIT QTL-A-290-85-N	11 1180
QTL	TORQUE KIT QTL-A-290-105-N	11 1182
QTL	TORQUE KIT QTL-A-310-65-N	11 1078
QTL	TORQUE KIT QTL-A-310-85-N	11 1061
QTL	TORQUE KIT QTL-A-310-105-N	11 1100
QTL	TORQUE KIT QTL-A-385-85-I	11 1733
QTL	TORQUE KIT QTL-A-385-105-I	11 1732
QTL	TORQUE KIT QTL-A-485-85-I	11 1712
QTL	TORQUE KIT QTL-A-485-105-I	11 1711

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