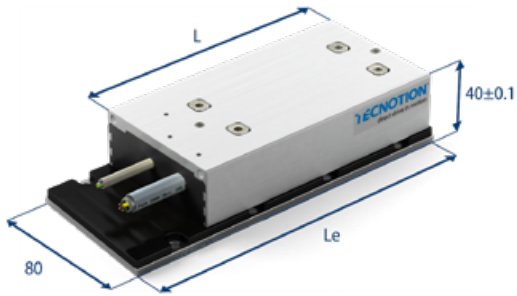


TL Series Iron Core



TL6 on 192mm magnet plate shown

Parameter	Remarks	Sym	Unit	TL6	TL9	TL12	TL15	TL18	TL24	TL48						
Winding type				N	S	N	S	N	S	N	S	N	S	Q		
Motor type, max voltage ph-ph				3-phase synchronous Iron core, 400V _{acrms} (565 V _{dc})												
Ultimate force @ 10°C/s increase	magnet @ 25°C	F _u	N	450	675	900	1125	1350	1800	3600						
Peak force @ 6°C/s increase	magnet @ 25°C	F _p	N	400	600	800	1000	1200	1600	3200						
Continuous force watercooled*	coils @ 100°C	F _{cw}	N	210	315	420	525	630	840	1680						
Continuous force	coils @ 100°C	F _c	N	200	300	400	500	600	800	1600						
Maximum speed**	@ 560 V	v _{max}	m/s	3.5	7	2.5	7	3.5	7	3.5	7	3.5	7	1.7		
Motor force constant	mount. sfc. @ 20°C	K	N/A _{rms}	93	46.5	140	46.5	93	46.5	112	46.5	93	44.9	93	46.5	180
Motor constant	coils @ 25°C	S	N ² /W	380	570	760	950	1140	1520	3040						
Ultimate current	magnet @ 25°C	I _u	A _{rms}	6.5	13.1	6.5	19.6	13.1	26.2	13.5	32.7	19.6	41	26.2	52	27.1
Peak current	magnet @ 25°C	I _p	A _{rms}	5.0	10.0	5.0	15.0	10.0	20.0	10.4	25.0	15.0	31.0	20.0	40.0	20.7
Continuous current watercooled*	coils @ 100°C	I _{cw}	A _{rms}	2.26	4.5	2.26	6.8	4.5	9.0	4.7	11.3	6.8	14.0	9.0	18.1	9.4
Back EMF phase-phase _{peak}		B _{emf}	V/m/s	76	38	114	38	76	38	92	38	76	38	76	38	147
Resistance per phase*	coils @ 25°C ex. cable	R _{ph}	Ω	7.2	1.80	10.8	1.21	3.6	0.90	4.3	0.72	2.41	0.59	1.81	0.46	3.45
Induction per phase	I < 0.6 I _p	L _{ph}	mH	54	14	81	9.0	27	7.0	32	5.4	18	4.4	14	3.4	25.9
Electrical time constant*	coils @ 25°C	τ _e	ms	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	
Maximum continuous power loss	all coils	P _c	W	150	225	300	375	450	600	1200						
Thermal resistance	coils to mount. sfc.	R _{th}	°C/W	0.48	0.32	0.24	0.19	0.16	0.12	0.06						
Thermal Time constant*	up to 63% max. coiltemp.	τ _{th}	s	77	77	77	77	77	77	77						
Watercooling flow	for ΔT=3K	Φ _w	l/min	0.7	1.1	1.4	1.8	2.2	2.9	5.7						
Watercooling pressure-drop	order of magnitude	ΔP _w	bar	1	1	2	2	3	7							
Temperature cut-off / sensor				PTC 1kΩ / KTY 83-122												
Coil unit weight	ex. cables	W	kg	1.5	2.0	2.6	3.2	3.8	5.2	9.75						
Coil unit length	ex. cables	L	mm	146	194	244	290	336	468	855						
Motor attraction force	rms @ 0 A	F _a	N	950	1325	1700	2075	2450	3400	6400						
Magnet pitch NN		τ	mm	24	24	24	24	24	24	24						
Cable mass		m	kg/m	0.18	0.18	0.18	0.18	0.18	0.30	0.18						
Cable type (power)	length 1 m	d	mm (AWG)	9.6 (18)						11.9 (14)		11.4 (14)				
Cable type (sensor)	length 1 m	d	mm (AWG)	4.3 (26)						4.3 (26)		4.3 (26)				

Water cooling

All TL motors feature integrated cooling channels that allow for the easy setup of a liquid cooled system, at no additional cost.

Magnet plate dimensions

Le (mm)	192	288
M5 bolts	8	12
Mass (kg/m)	3.8	

Magnet plates can be butted together.

Approvals

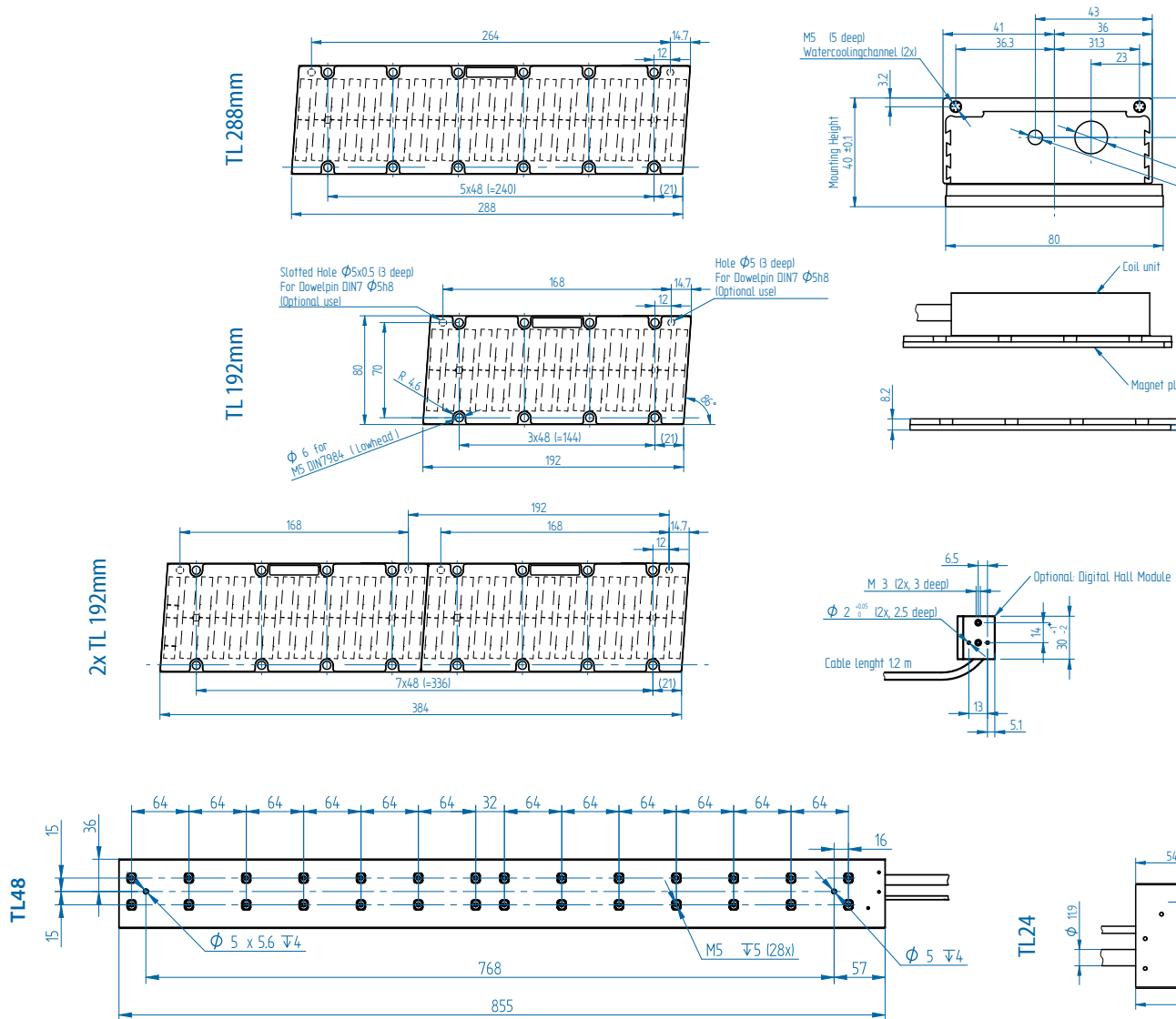


All specifications ±10%

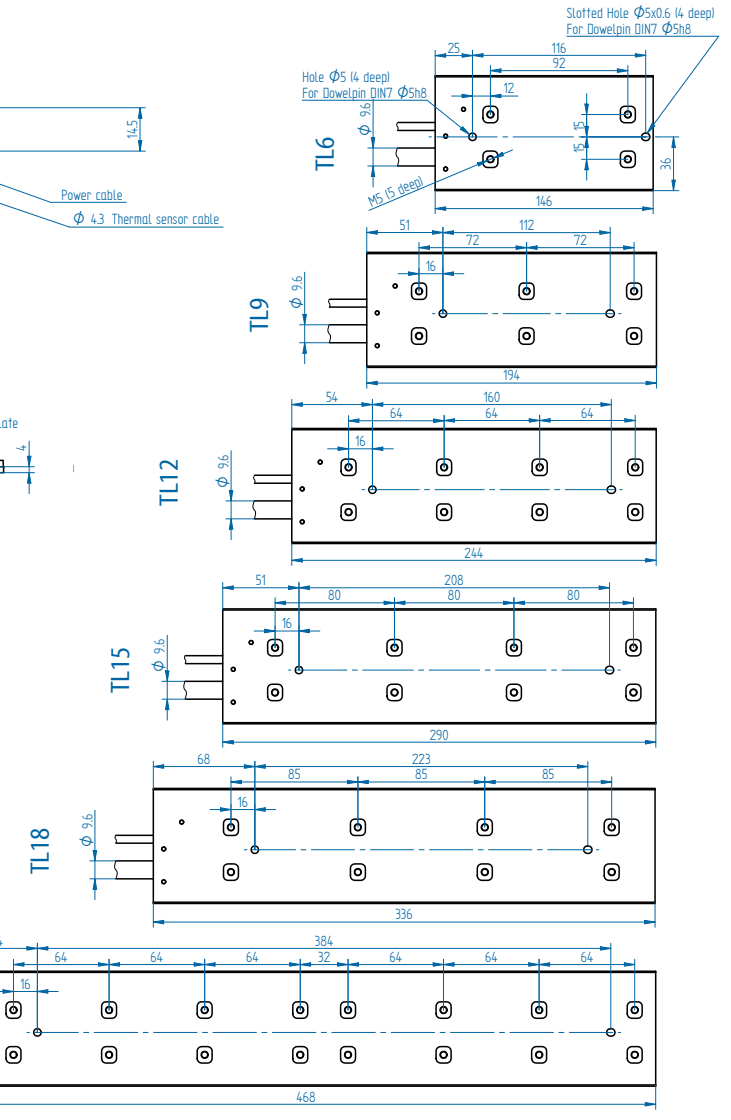
* These values are only applicable when the mounting surface is at 20°C and the motor is driven at maximum continuous current. If these values differ in your application, please check our simulation tool.

** Actual values depend on bus voltage. Please check the F/v diagram in our simulation tool.

Magnet plates



Coil units



Mounting instructions and flatness or parallelism requirements can be found in the iron core installation manual. CAD files, 3D models and the manual can be downloaded from our website.

* All sizes are in mm