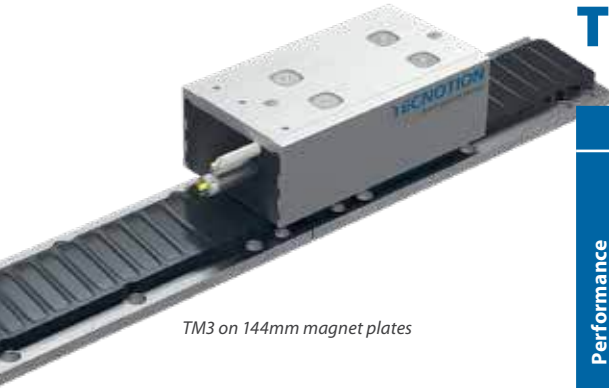


TMX series



TM3 on 144mm magnet plates

Parameter	Remarks	Symbol	Unit	TMX3	TMX6	TMX12	TMX18			
Winding type				S	Z	S	Z	S	N	S
Motor type, max voltage ph-ph	3-phase synchronous	U_{max}	$V_{ac,rms} (V_{dc})$	400 (565)						
Ultimate force @ 10 K/s increase	magnets @ 25°C	F_u	N	141	283	565	848			
Peak force @ 6 K/s increase	magnets @ 25°C	F_p	N	124	247	495	742			
Continuous force ¹	coils @ 100°C	F_c	N	71	141	283	424			
Maximum speed ²	@ U_{max} @ F_c	v_{max}	m/s	10	32	10	32	10	5.1	10
Motor force constant	$I \leq I_c$	K_f	N/A _{rms}	46	15	46	15	46	93	46
Motor constant	coils @ 25°C	S	N ² /W	130	137	261	275	522	802	827
Ultimate current	magnets @ 25°C	I_u	A _{rms}	4.1	12.6	8.2	25.1	16.4	12.3	25.1
Peak current	magnets @ 25°C	I_p	A _{rms}	3.1	9.5	6.2	18.9	12.4	9.2	18.9
Continuous current ¹	coils @ 100°C	I_c	A _{rms}	1.5	4.7	3.0	9.3	6.0	4.5	9.3
Back EMF ph-ph _{peak}		K_e	V _{dc} /m/s	38	13	38	13	38	77	38
Resistance per phase	coils @ 25°C ex. cable	R_{ph}	Ω	5.4	0.56	2.7	0.28	1.35	3.6	0.85
Induction per phase	$I < 0.6 I_p$	L_{ph}	mH	36.1	3.8	17.5	1.9	9.0	24	5.7
Electrical time constant		τ_e	ms	6.7						
Continuous power loss ¹	coils @ 100°C	P_c	W	49	99	197	296			
Thermal resistance	coils to mount. sfc.	R_{th}	K/W	1.5	0.75	0.38	0.25			
Thermal time constant		τ_{th}	s	75						
Temperature sensor				PTC 1kΩ / KTY 83-122						
Coil unit mass	ex. cables	m	kg	0.6	0.9	1.6	2.3			
Coil unit length	ex. cables	L	mm	93	143	241	336			
Motor attraction force	rms @ 0 A	F_a	N	400	700	1250	1800			
Magnet pitch NN		τ	mm	24						
Cable mass	all cables		kg/m	0.18						
Cable type (power FLEX)	length 3 m	d	mm (AWG)	8.3 (18)						
Cable type (sensor)	length 3 m	d	mm (AWG)	4.7 (26)						
Cable life (power FLEX) ³	minimum		cycles	5,000,000						
Bending radius static (power FLEX)	minimum			4x cable diameter						
Bending radius dynamic (power FLEX)	minimum			10x cable diameter						

FLEX cable

The TM series comes standard with a 3m long FLEX power cable.

Magnet plate dimensions

Le (mm)	96	144	384
M5 bolts	4	6	16
Mass (kg/m)	2.3		

Magnet plates can be butted together.

Approvals



* Expected in 2025.

All specifications ±10%

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.

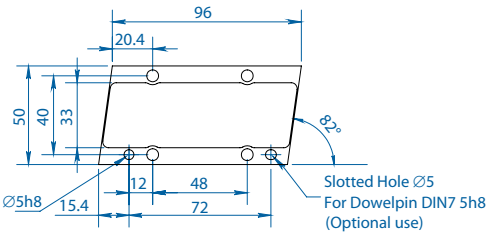
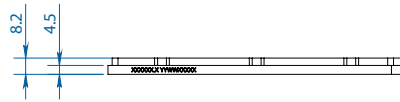
² Actual values depend on bus voltage. Please check the F/v diagram in our simulation tool.

³ Depending on bending radius, velocity and acceleration.

Magnet plates

Coil units

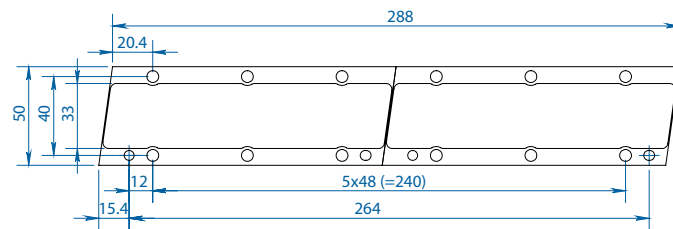
TMX 96 mm



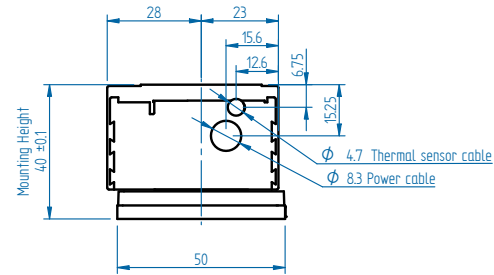
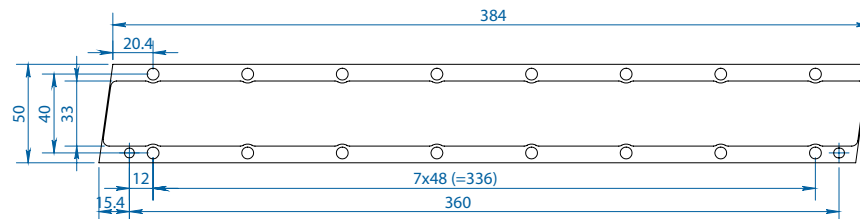
Hole Ø5
For Dowelpin DIN7 Ø5h8
(Optional use)

Slotted Hole Ø5
For Dowelpin DIN7 5h8
(Optional use)

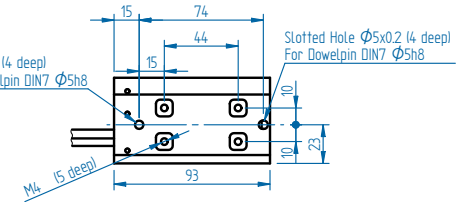
2x TMX 144 mm



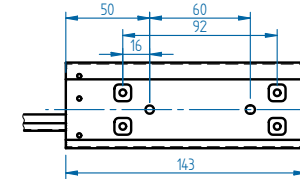
TMX 384 mm



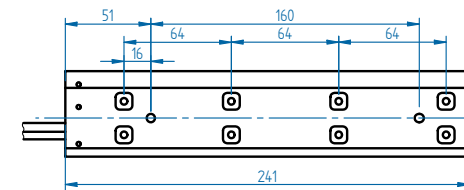
TM 3



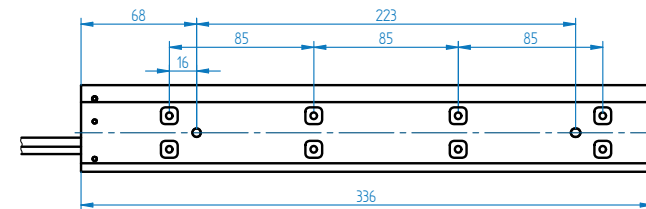
TM 6



TM 12

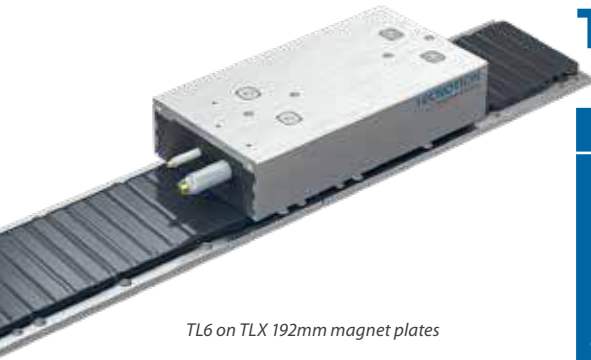


TM 18



Mounting instructions and flatness or parallelism can be found in the iron core installation manual, and are not different from the standard magnet plate. CAD files, 3D models and the manual can be downloaded from our website.

* All sizes are in mm



TL6 on TLX 192mm magnet plates

TLX series

Parameter	Remarks	Sym	Unit	TLX6		TLX9		TLX12		TLX15		TLX18		TLX24		TLX48
				N	S	N	S	N	S	N	S	N	S	N	S	Q
Winding type				N S N S N S N S N S N S N S Q												
Motor type, max voltage ph-ph	3-phase synchronous	U_{max}	$V_{ac,rms} (V_{dc})$	400 (565)												
Ultimate force @ 10 K/s increase	magnets @ 25°C	F_u	N	530	795	1060	1325	1590	2120	4241						
Peak force @ 6 K/s increase	magnets @ 25°C	F_p	N	471	707	942	1178	1414	1885	3770						
Continuous force water cooled ¹	coils @ 100°C	F_{cw}	N	247	371	495	618	742	990	1979						
Continuous force ¹	coils @ 100°C	F_c	N	236	353	471	589	707	942	1885						
Maximum speed ²	@ U_{max} @ F_c	v_{max}	m/s	4.4	8.8	2.9	8.8	4.4	8.8	3.6	8.8	4.4	9.2	4.4	8.8	2.1
Motor force constant	$I \leq I_c$	K_f	N/A _{rms}	110	55	165	55	110	55	132	55	110	53	110	55	212
Motor constant	coils @ 25°C	S	N ² /W	556	556	839	827	1111	1111	1349	1389	1660	1581	2210	2174	4344
Ultimate current	magnets @ 25°C	I_u	A _{rms}	6.5	13.1	6.5	19.6	13.1	26.2	13.5	32.7	19.6	41.0	26.2	52.0	27.1
Peak current	magnets @ 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 water cooled ¹	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 ph-ph _{peak}		K_e	V _{dc} /m/s	90	45	134	45	90	45	108	45	90	45	90	45	173
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	56	14.4	83	9.3	28	7.2	33	5.6	18.5	4.5	14.4	3.5	27
Electrical time constant		τ_e	ms	7.7												
Continuous power loss ¹	coils @ 100°C	P_c	W	150	225	300	375	450	600	1200						
Thermal resistance	coils to mount. sfc.	R_{th}	K/W	0.48	0.32	0.24	0.19	0.16	0.12	0.06						
Thermal time constant		τ_{th}	s	77												
Water cooling flow	for $\Delta T=3K$	Φ_w	l/min	0.7	1.1	1.4	1.8	2.2	2.9	5.7						
Water cooling pressure drop		ΔP_w	bar	1			2			3		7				
Temperature sensor				PTC 1kΩ / KTY 83-122												
Coil unit mass	ex. cables	m	kg	1.5	2.0	2.6	3.2	3.8	5.2	9.8						
Coil unit length	ex. cables	L	mm	146	194	244	290	336	468	855						
Motor attraction force	rms @ 0 A	F_a	N	1300	1800	2350	2850	3350	4650	8750						
Magnet pitch NN		τ	mm	24												
Cable mass	all cables		kg/m	0.18						0.3						
Cable type (power)	length 1 m	d	mm (AWG)	9.6 (18)						11.4 (14)						
Cable type (sensor)	length 1 m	d	mm (AWG)	4.7 (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) 4.0

Magnet plates can be butted together.

Approvals

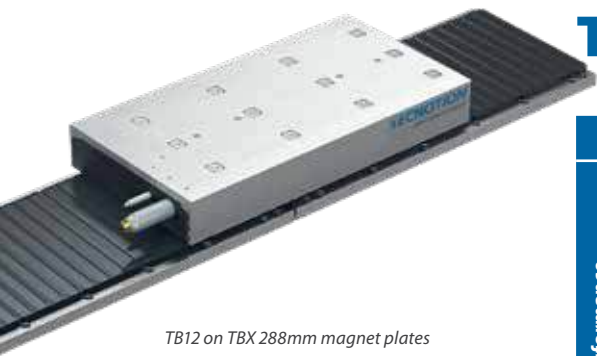


* Expected in 2025.

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 F/v diagram in our simulation tool.

All specifications ±10%



TB12 on TBX 288mm magnet plates

TBX series

Parameter	Remarks	Sym	Unit	TBX12		TBX15		TBX18	TBX24	TBX30			
				N	S	N	S	N	N	N	S		
Performance	Winding type												
	Motor type, max voltage ph-ph	3-phase synchronous	U_{max}	$V_{ac,rms}$ (V _{dc})		400 (565)							
	Ultimate force @ 10 K/s increase	magnets @ 25°C	F_u	2065		2581		3097	4129	5162			
	Peak force @ 6 K/s increase	magnets @ 25°C	F_p	1835		2294		2753	3670	4588			
	Continuous force ¹	coils @ 100°C	F_c	872		1090		1308	1743	2179			
	Maximum speed ²	@ U_{max} @ F_c	v_{max}	m/s	2.2	4.7	1.8	4.7	2.2	1.7	1.8	4.7	
	Motor force constant	$I \leq I_c$	K_f	N/A _{rms}		213	107	258	107	213	266	258	107
	Motor constant	coils @ 25°C	S	N ² /W		2408	2371	2921	2921	3613	4721	5842	5835
Electrical	Ultimate current	magnets @ 25°C	I_u	A _{rms}		13.0	26	13.5	33	20	21	27	66
	Peak current	magnets @ 25°C	I_p	A _{rms}		10.0	20	10.0	25	15	16	20	50
	Continuous current ¹	coils @ 100°C	I_c	A _{rms}		4.1	8.2	4.2	10.2	6.1	6.6	8.5	20.5
	Back EMF ph-ph _{peak}		K_e	V _{dc} /m/s		174	87	210	87	174	217	210	87
	Resistance per phase	coils @ 25°C ex. cable	R_{ph}	Ω		6.3	1.6	7.6	1.3	4.2	5.0	3.8	0.65
	Induction per phase	$I < 0.6 I_p$	L_{ph}	mH		53	13.4	62	10.3	35	41	31	5.3
	Electrical time constant		τ_e	ms		8.2							
Thermal	Continuous power loss ¹	coils @ 100°C	P_c	W		430	530	640	853	1060			
	Thermal resistance	coils to mount. sfc.	R_{th}	K/W		0.15	0.12	0.11	0.08	0.06			
	Thermal time constant		τ_{th}	s		90							
	Temperature sensor			PTC 1kΩ / KTY 83-122									
Mechanical	Coil unit mass	ex. cables	m	kg	4.9	5.9	6.9	9.4	11.6				
	Coil unit length	ex. cables	L	mm	244	290	336	434	562				
	Motor attraction force	rms @ 0 A	F_a	N	4400	5350	6300	8750	10700				
	Magnet pitch NN		τ	mm	24								
	Cable mass	all cables		kg/m	0.3								
	Cable type (power)	length 1 m	d	mm (AWG)	11.4 (14)								
	Cable type (sensor)	length 1 m	d	mm (AWG)	4.7 (26)								

Magnet plate dimensions

Le (mm) 192 288

M5 bolts 8 12

Mass (kg/m) 10.8

Magnet plates can be butted together.

Approvals



* Expected in 2025.

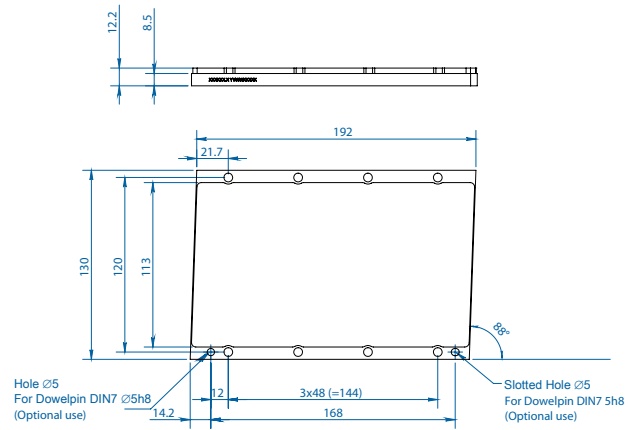
¹ These values are only applicable when the mounting surface is at 20°C and the motor is driven at continuous current. If these values differ in your application, please check our simulation tool.

² Actual values depend on bus voltage. Please check the F/v diagram in our simulation tool.

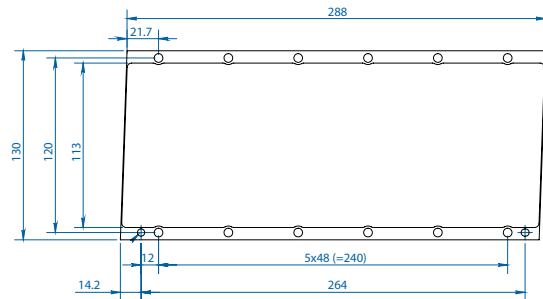
All specifications ±10%

Magnet plates

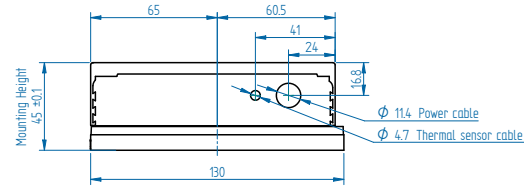
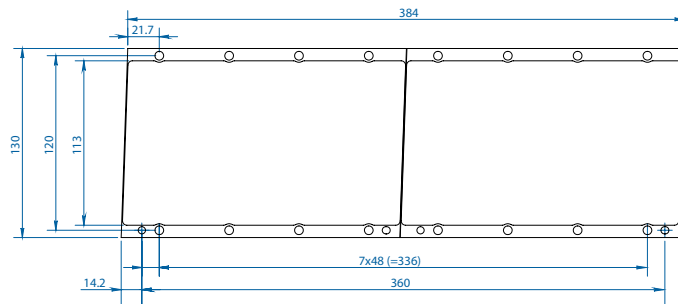
TBX 192 mm



TBX 288 mm

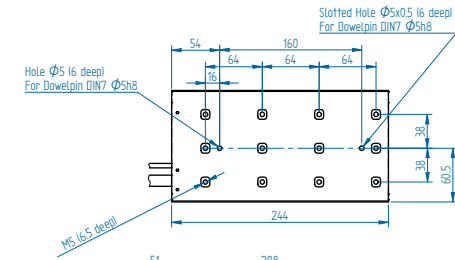


2x TBX 192 mm

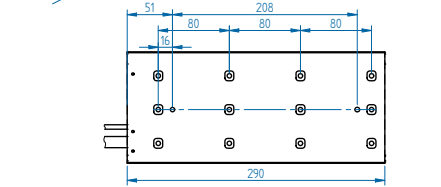


Coil units

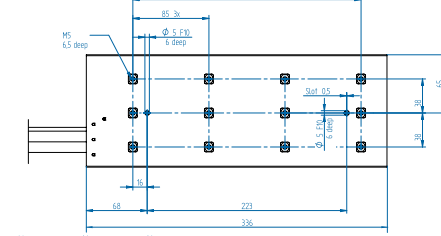
TB12



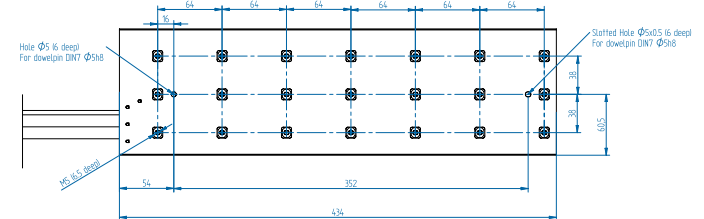
TB15



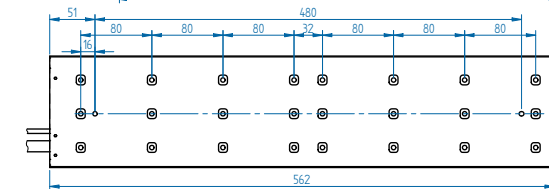
TB18



TB24



TB30



Mounting instructions and flatness or parallelism can be found in the iron core installation manual, and are not different from the standard magnet plate. CAD files, 3D models and the manual can be downloaded from our website.

* All sizes are in mm



TBW18 on TBX 192mm magnet plates

TBWX series

Parameter	Remarks	Symbol	Unit	TBWX18		TBWX30		TBWX45	
				N	S	N	S	N	S
Winding type				N	S	N	S	N	S
Motor type, max voltage ph-ph	3-phase synchronous	U_{max}	$V_{ac,rms} (V_{dc})$	400 (565)					
Ultimate force @ 10 K/s increase	magnets @ 25°C	F_u	N	3097		5162		7742	
Peak force @ 6 K/s increase	magnets @ 25°C	F_p	N	2753		4588		6882	
Continuous force water cooled ¹	coils @ 100°C	F_{cw}	N	1376		2294		3441	
Continuous force ¹	coils @ 100°C	F_c	N	1308		2179		3269	
Maximum speed ²	@ $U_{max} @ F_c$	v_{max}	m/s	2.2	4.9	1.8	4.7	1.8	4.7
Motor force constant	$I \leq I_c$	K_f	N/A _{rms}	213	103	258	107	258	107
Motor constant	coils @ 25°C	S	N ² /W	3448	3552	5693	5747	8539	8620
Ultimate current	magnets @ 25°C	I_u	A _{rms}	20	41	27	65	41	98
Peak current	magnets @ 25°C	I_p	A _{rms}	15.0	31.1	20.7	50	31.1	75
Continuous current water cooled ¹	coils @ 100°C	I_{cw}	A _{rms}	6.5	13.4	8.9	21.5	13.4	32.3
Back EMF ph-ph _{peak}		K_e	$V_{dc}/m/s$	174	87	210	87	210	87
Resistance per phase	coils @ 25°C ex. cable	R_{ph}	Ω	4.4	1.0	3.9	0.66	2.6	0.44
Induction per phase	$I < 0.6 I_p$	L_{ph}	mH	36	8.3	32	5.3	22	3.6
Electrical time constant		τ_e	ms	8.2					
Continuous power loss ¹	coils @ 100°C	P_c	W	726		1209		1804	
Thermal resistance	coils to mount. sfc.	R_{th}	K/W	0.10		0.06		0.04	
Thermal time constant		τ_{th}	s	87					
Water cooling flow	for $\Delta T=3K$	Φ_w	l/min	3.1		5.2		7.8	
Water cooling pressure drop		ΔP_w	bar	1.0		1.5		2.5	
Temperature sensor				PTC 1kΩ / KTY 83-122					
Coil unit mass	ex. cables	m	kg	7.3		12.3		18.2	
Coil unit length	ex. cables	L	mm	344		580		852	
Motor attraction force	rms @ 0 A	F_a	N	6300		10700		16050	
Magnet pitch NN		τ	mm	24					
Cable mass	all cables		kg/m	0.3		0.6			
Cable type (power)	length 1 m	d	mm (AWG)	11.4 (14)				15.8 (10)	
Cable type (sensor)	length 1 m	d	mm (AWG)	4.7 (26)					

Water cooling

All TBW 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)	10.8	

Magnet plates can be butted together.

Approvals



* Expected in 2025.

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.

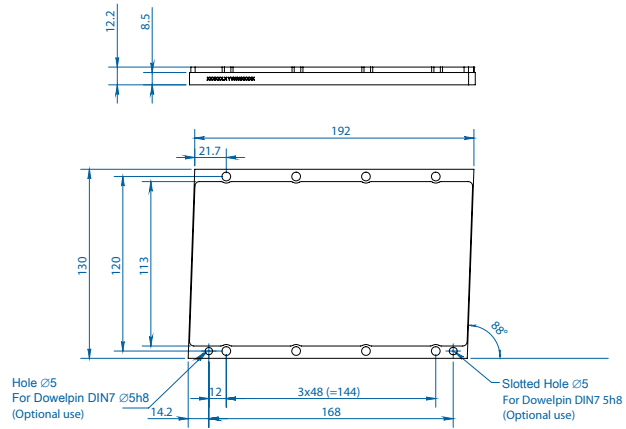
² Actual values depend on bus voltage. Please check the F/v diagram in our simulation tool.

All specifications ±10%

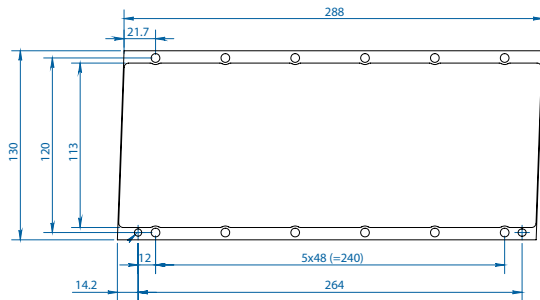
Magnet plates

Coil units

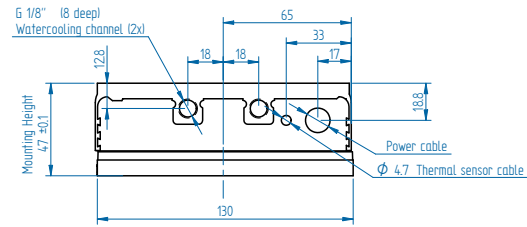
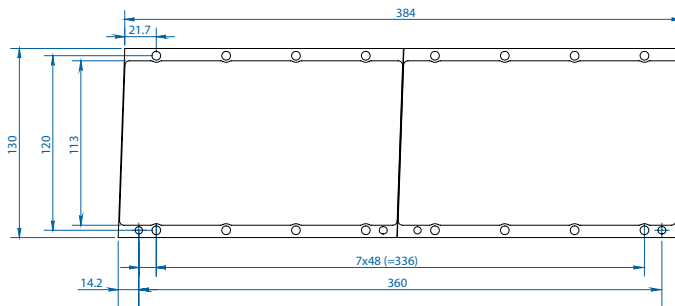
TBX 192 mm



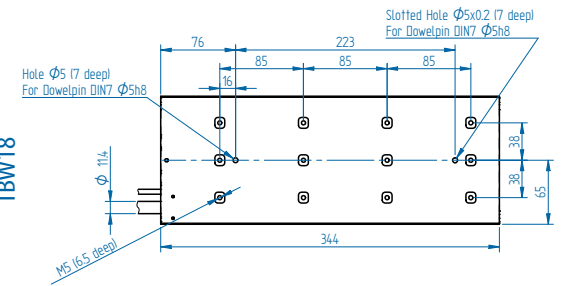
TBX 288 mm



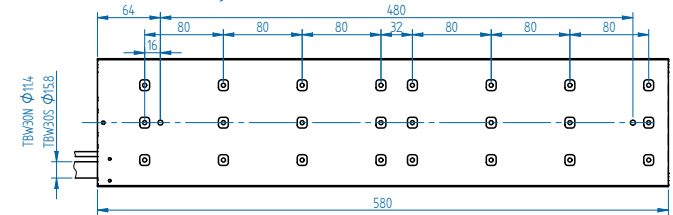
2x TBX 192 mm



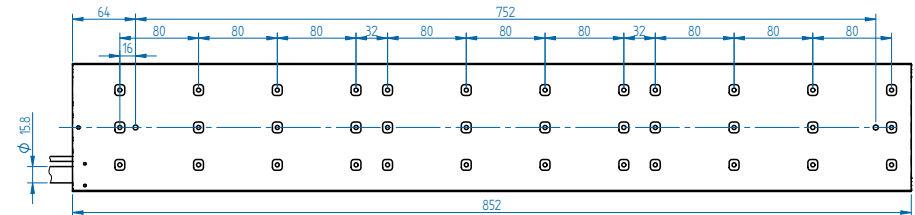
TBW18



TBW30



TBW45



Mounting instructions and flatness or parallelism can be found in the iron core installation manual, and are not different from the standard magnet plate. CAD files, 3D models and the manual can be downloaded from our website.

* All sizes are in mm