



TBW18 on 2x192mm magnet plates

TBW series

	Parameter	Remarks	Symbol	Unit	TBW18		TBW30		TBW45	
Performance	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	2700		4500		6750	
	Peak force @ 6 K/s increase	magnets @ 25°C	F_p	N	2400		4000		6000	
	Continuous force water cooled ¹	coils @ 100°C	F_{cw}	N	1200		2000		3000	
	Continuous force ¹	coils @ 100°C	F_c	N	1140		1900		2850	
	Maximum speed ²	@ $U_{\max}$ @ F_c	$v_{\max}$	m/s	2.4	5.0	2.0	5.0	2.0	5.0
	Motor force constant	$I \leq I_c$	K_f	N/A _{rms}	186	90	225	93	225	93
	Motor constant	coils @ 25°C	S	N ² /W	2621	2700	4327	4368	6490	6552
Electrical	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	152	76	183	76	183	76
	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	35	8.1	31	5.1	21	3.5
	Electrical time constant		τ_e	ms	8.0					
Thermal	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 ΔT=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					
Mechanical	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	4900		8300		12450	
	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) 10.5

Magnet plates can be butted together.

Approvals



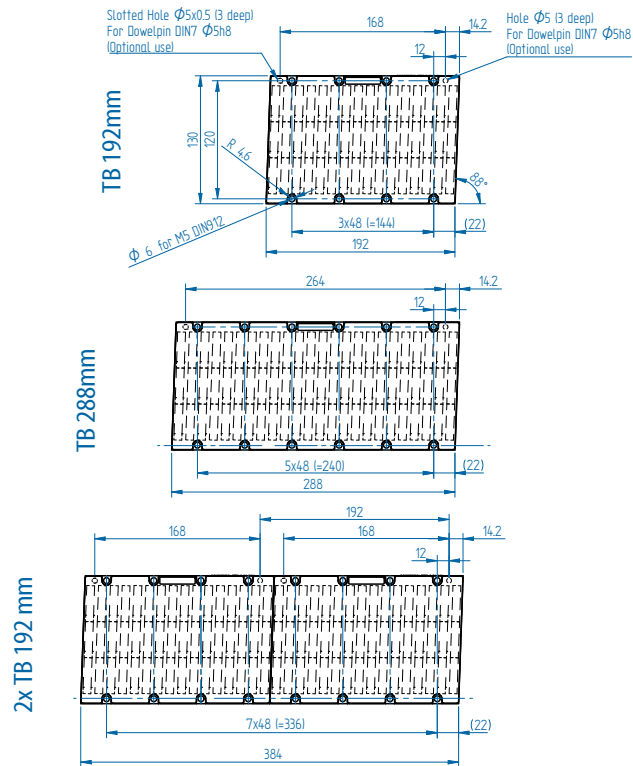
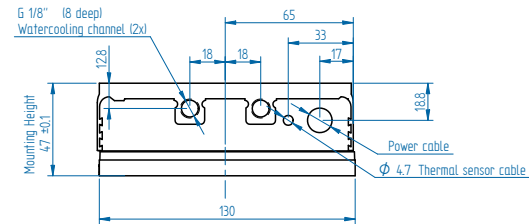
All specifications ±10%

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.

Magnet plates		Coil units	
1	2	3	4
5	6	7	8
9	10	11	12
13	14	15	16
17	18	19	20
21	22	23	24
25	26	27	28
29	30	31	32
33	34	35	36
37	38	39	40
41	42	43	44
45	46	47	48
49	50	51	52
53	54	55	56
57	58	59	60
61	62	63	64
65	66	67	68
69	70	71	72
73	74	75	76
77	78	79	80
81	82	83	84
85	86	87	88
89	90	91	92
93	94	95	96
97	98	99	100

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1	2	3	4
5	6	7	8
9	10	11	12
13	14	15	16
17	18	19	20
21	22	23	24
25	26	27	28
29	30	31	32
33	34	35	36
37	38	39	40
41	42	43	44
45	46	47	48
49	50	51	52
53	54	55	56
57	58	59	60
61	62	63	64
65	66	67	68
69	70	71	72
73	74	75	76
77	78	79	80
81	82	83	84
85	86	87	88
89	90	91	92
93	94	95	96
97	98	99	100



TBW45

