

# Data sheet: Safety isolating transformers type FL

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Description ..... : safety isolating transformer according to VDE 0570/EN 61558  
UL 506; CSA 22.2

Test voltage ..... PRI - SEC 5000 V, 50 Hz  
..... SEC - SEC 250V , 50Hz

Short-circuit protection ..... : non-short-circuit proof

Construction ..... : open design, potted in insulation housing

Protection class ..... : prepared for protection class II

Protection index ..... : connections IP 00  
housing IP 65

Max ambient temperature .... : + 40 °C

Insulation class of the  
insulation system ..... : VDE (E = 120°C); UL + CSA Class 105 (A = 105°C)

Input voltage ..... : 2 x 115 V

Frequency ..... : 50 - 60 Hz

Output voltage ..... : according to chart

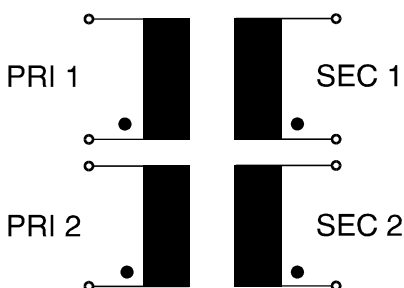
Connections ..... : soldering pins 0,8 mm Ø, for printed circuit board mounting  
(FL 42 and FL 52 with rectangular solder pins 0,45x1,1mm)

Mounting ..... : supplementary mounting possible with self tapping screws, using the moulded  
holes in the corners of the case. (type FL 42, FL52 with M3 screws)

Extras ..... : Phillips self tapping screws (type LS), 2,9 x 9,5mm DIN 7981  
LS10 package 10 pieces  
LS100 package 100 pieces  
LS1000 package 1000 pieces

Packing ..... : separately packed in cartons

Schematic plan :



transformer specification

updated 12/2002

BLOCK TRANSFORMATOREN ELEKTRONIK GMBH & CO. KG, 27283 VERDEN, GERMANY

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The FL type resin moulded safety isolating transformer, with its extremely low profile is most suited for printed circuit boards as well as 19" rack systems.

The use of two chamber glass-fibre reinforced polyamid bobbins and the immersion in resin enables a HV test of 5000 V ac to be carried out.

The transformer can be secured with self tapping screws 2,9 x 9,5 mm DIN 7981 (as extras available). This can be an advantage when the transformer is soldered, via soldering bath, to a printed circuit board, because no extra space, which is precious, is needed to secure the transformer to the PCB and pollution of the soldering bath is averted.

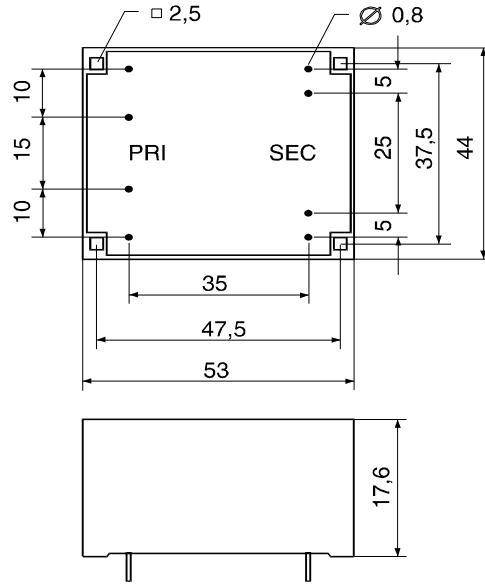
The input and output windings are dual and separated from one another so that the input windings must be connected in parallel for 115 V and in series for 230 V. The dual output can be operated in series or parallel.

Note :

- \* vacuum epoxy resin moulded
- \* self extinguishing epoxy resin UL 94 V-0 listed
- \* also available in all self extinguishing materials according to UL 94 V-0
- \* minimal difference between load and no-load voltage
- \* high electrical efficiency

Height 17,6 mm      Weight 115 g  
 Ground area 53 mm x 44 mm

Type	SEC rated output-		Approvals
	voltage V	current A	
FL2/5	2x5	2x0,200	1,2
FL2/6	2x6	2x0,166	1,2
FL2/8	2x8	2x0,125	1,2
FL2/9	2x9	2x0,111	1,2
FL2/12	2x12	2x0,083	1,2
FL2/15	2x15	2x0,066	1,2
FL2/18	2x18	2x0,055	1,2
FL2/24 *	2x24	2x0,042	1



according to VDE 0570/EN 61 558 -1 : 1997 with part 2-6  
 \*according to VDE 0570/EN 61 558 -1 : 1997 with part 2-1

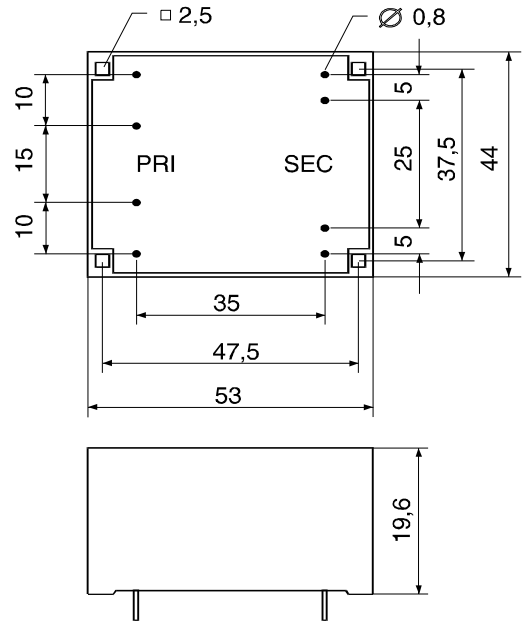
No load output voltage x Factor = typ. 1,35  
 No load (active) power typ. 0,6 W  
 Efficiency typ. 66 %

Approvals  (1)

 (2)

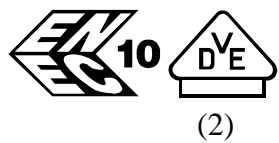
Height 19,6 mm      Weight 145 g  
 Ground area 53 mm x 44 mm

Type	SEC rated output-		Approvals
	voltage V	current A	
FL4/5	2x5	2x0,40	1,2
FL4/6	2x6	2x0,33	1,2
FL4/8	2x8	2x0,25	1,2
FL4/9	2x9	2x0,22	1,2
FL4/12	2x12	2x0,16	1,2
FL4/15	2x15	2x0,13	1,2
FL4/18	2x18	2x0,11	1,2
FL4/24*	2x24	2x0,08	1



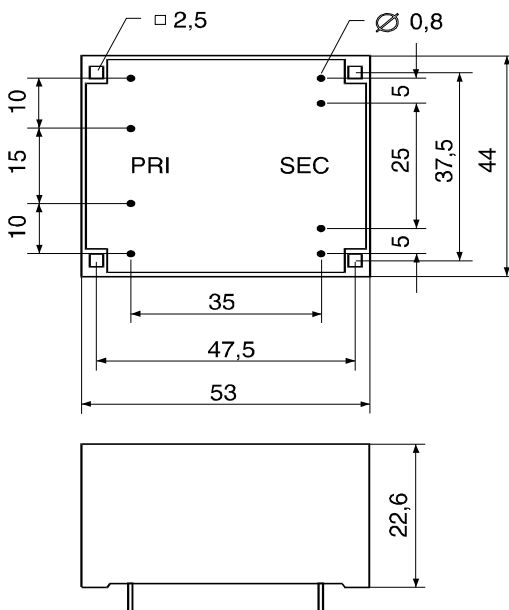
according to VDE 0570/EN 61 558 -1 : 1997 with part 2-6  
 \*according to VDE 0570/EN 61 558 -1 : 1997 with part 2-1

No load output voltage x Factor = typ. 1,35  
 No load (active) power            typ. 0,9 W  
 Efficiency                            typ. 66 %



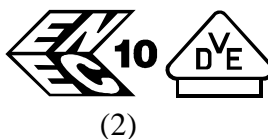
Height 22,6 mm      Weight 175 g  
 Ground area 53 mm x 44 mm

Type	SEC rated output-		Approvals
	voltage V	current A	
FL6/5	2x5	2x0,60	1,2
FL6/6	2x6	2x0,50	1,2
FL6/8	2x8	2x0,375	1,2
FL6/9	2x9	2x0,333	1,2
FL6/12	2x12	2x0,25	1,2
FL6/15	2x15	2x0,20	1,2
FL6/18	2x18	2x0,166	1,2
FL6/24*	2x24	2x0,125	1



according to VDE 0570/EN 61 558 -1 : 1997 with part 2-6  
 \*according to VDE 0570/EN 61 558 -1 : 1997 with part 2-1

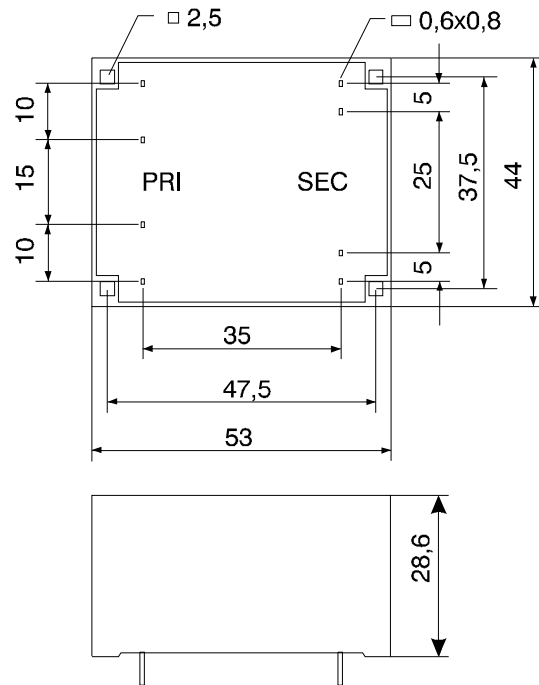
No load output voltage x Factor = typ. 1,35  
 No load (active) power typ. 1,2 W  
 Efficiency typ. 69 %



Height 28,6 mm Weight 247 g

Ground area 53 mm x 44 mm


Type	SEC rated output-		Approvals
	voltage V	current A	
FL8/5	2x5	2x0,80	1,2
FL8/6	2x6	2x0,66	1,2
FL8/8	2x8	2x0,50	1,2
FL8/9	2x9	2x0,44	1,2
FL8/12	2x12	2x0,33	1,2
FL8/15	2x15	2x0,26	1,2
FL8/18	2x18	2x0,22	1,2
FL8/24*	2x24	2x0,16	1



according to VDE 0570/EN 61 558 -1 : 1997 with part 2-6  
 \*according to VDE 0570/EN 61 558 -1 : 1997 with part 2-1

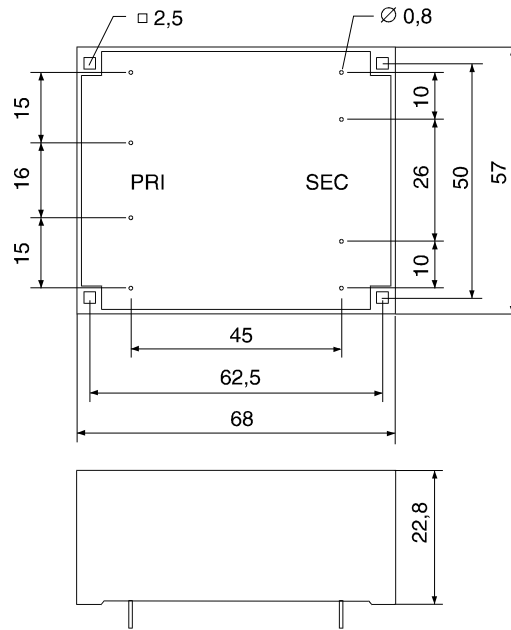
No load output voltage x Factor = typ. 1,22  
 No load (active) power typ. 1,3 W  
 Efficiency typ. 76 %

Approvals  (1)

 (2)

Height 22,8 mm      Weight 280 g  
 Ground area 68,0 mm x 57 mm

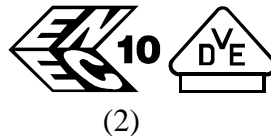
Type	SEC rated output-		Approvals
	voltage V	current A	
FL10/5	2x5	2x1,00	1,2
FL10/6	2x6	2x0,833	1,2
FL10/8	2x8	2x0,625	1,2
FL10/9	2x9	2x0,555	1,2
FL10/12	2x12	2x0,416	1,2
FL10/15	2x15	2x0,333	1,2
FL10/18	2x18	2x0,277	1,2
FL10/24*	2x24	2x0,208	1



according to VDE 0570/EN 61 558 -1 : 1997 with part 2-6  
 \*according to VDE 0570/EN 61 558 -1 : 1997 with part 2-1

No load output voltage x Factor = typ. 1,32  
 No load (active) power typ. 1,1 W  
 Efficiency typ. 72 %

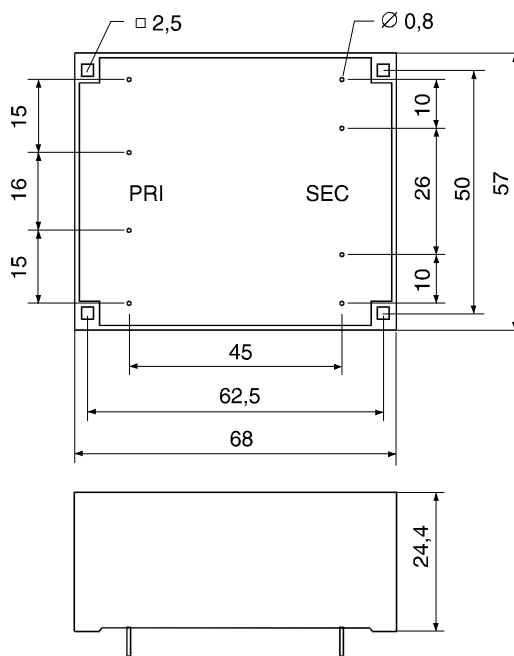
Approvals



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Height 24,4 mm      Weight 315 g  
 Ground area 68,0 mm x 57 mm

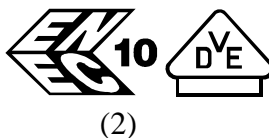
Type	SEC rated output-		Approvals
	voltage V	current A	
FL14/5	2x5	2x1,40	1,2
FL14/6	2x6	2x1,16	1,2
FL14/8	2x8	2x0,875	1,2
FL14/9	2x9	2x0,77	1,2
FL14/12	2x12	2x0,583	1,2
FL14/15	2x15	2x0,466	1,2
FL14/18	2x18	2x0,38	1,2
FL14/24*	2x24	2x0,29	1



according to VDE 0570/EN 61 558 -1 : 1997 with part 2-6  
 \*according to VDE 0570/EN 61 558 -1 : 1997 with part 2-1

No load output voltage x Factor = typ. 1,28  
 No load (active) power typ. 1,2W  
 Efficiency typ. 74 %

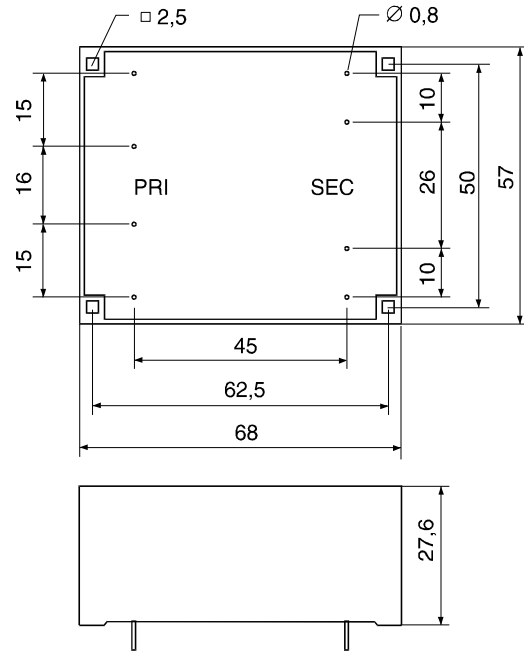
Approvals





Height 27,6 mm      Weight 375 g  
Ground area 68,0 mm x 57 mm

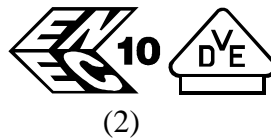
Type	SEC rated output-		Approvals
	voltage V	current A	
FL18/5	2x5	2x1,80	1,2
FL18/6	2x6	2x1,50	1,2
FL18/8	2x8	2x1,125	1,2
FL18/9	2x9	2x1,00	1,2
FL18/12	2x12	2x0,75	1,2
FL18/15	2x15	2x0,60	1,2
FL18/18	2x18	2x0,50	1,2
FL18/24*	2x24	2x0,375	1



according to VDE 0570/EN 61 558 -1 : 1997 with part 2-6  
\*according to VDE 0570/EN 61 558 -1 : 1997 with part 2-1

No load output voltage x Factor = typ. 1,22  
No load (active) power                      typ. 1,5 W  
Efficiency    typ. 77 %

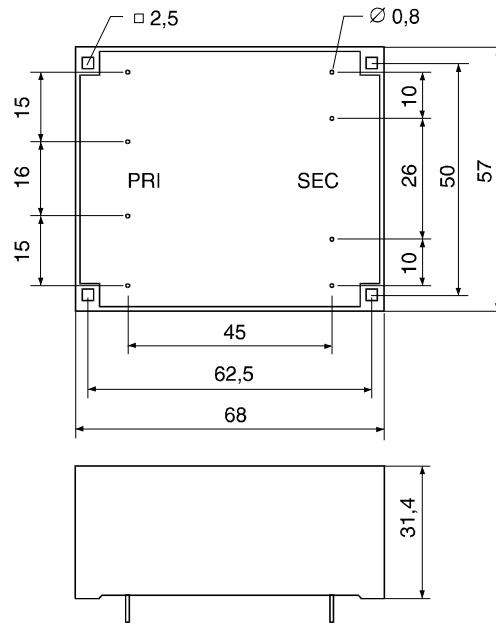
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Height 31,4 mm      Weight 445 g  
 Ground area 68,0 mm x 57 mm

Type	SEC rated output-		Approvals
	voltage V	current A	
FL24/5	2x5	2x2,40	1,2
FL24/6	2x6	2x2,00	1,2
FL24/8	2x8	2x1,50	1,2
FL24/9	2x9	2x1,33	1,2
FL24/12	2x12	2x1,00	1,2
FL24/15	2x15	2x0,80	1,2
FL24/18	2x18	2x0,66	1,2
FL24/24*	2x24	2x0,50	1



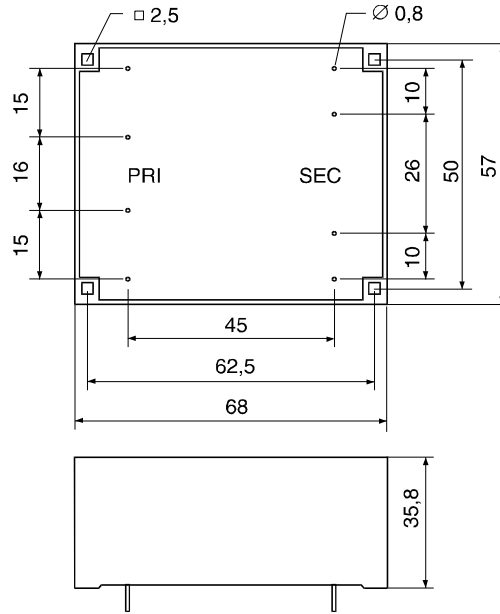
according to VDE 0570/EN 61 558 -1 : 1997 with part 2-6  
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No load output voltage x Factor = typ. 1,2  
 No load (active) power            typ. 1,6 W  
 Efficiency                                typ. 77 %



Height 35,8 mm      Weight 530 g  
 Ground area 68,0 mm x 57 mm

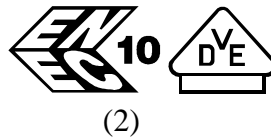
Type	SEC rated output-		Approvals
	voltage V	current A	
FL30/5	2x5	2x3,00	1,2
FL30/6	2x6	2x2,50	1,2
FL30/8	2x8	2x1,875	1,2
FL30/9	2x9	2x1,66	1,2
FL30/12	2x12	2x1,25	1,2
FL30/15	2x15	2x1,00	1,2
FL30/18	2x18	2x0,83	1,2
FL30/24*	2x24	2x0,625	1



according to VDE 0570/EN 61 558 -1 : 1997 with part 2-6  
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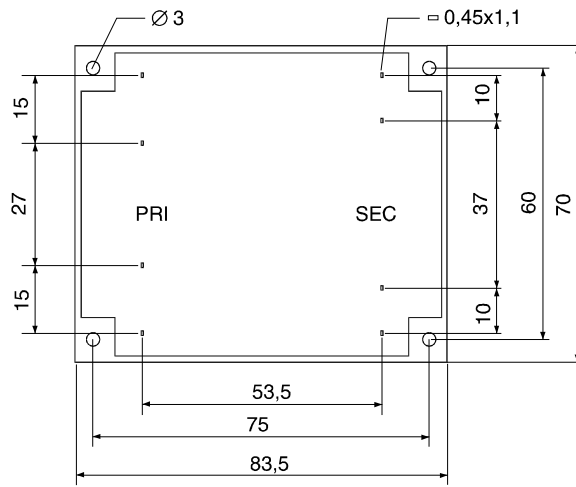
No load output voltage x Factor = typ. 1,16  
 No load (active) power typ. 3,5 W  
 Efficiency typ. 81 %

Approvals



Height 39,0 mm      Weight 715 g  
 Ground area 83,5 mm x 70 mm

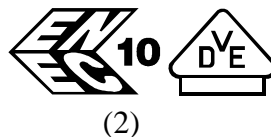
Type	SEC rated output-		Approvals
	voltage V	current A	
FL42/5	2x5	2x4,20	1,2
FL42/6	2x6	2x3,50	1,2
FL42/8	2x8	2x2,625	1,2
FL42/9	2x9	2x2,33	1,2
FL42/12	2x12	2x1,75	1,2
FL42/15	2x15	2x1,40	1,2
FL42/18	2x18	2x1,16	1,2
FL42/24*	2x24	2x0,875	1



according to VDE 0570/EN 61 558 -1 : 1997 with part 2-6  
 \*according to VDE 0570/EN 61 558 -1 : 1997 with part 2-1

No load output voltage x Factor = typ. 1,16  
 No load (active) power      typ. 3,5 W  
 Efficiency                      typ. 81 %

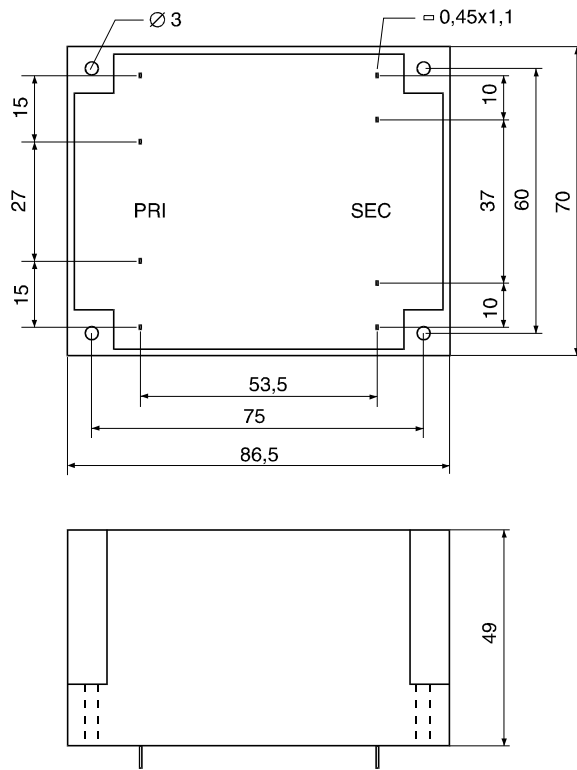
Approvals



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Height 49,0 mm      Weight 980 g  
 Ground area 86,5 mm x 70 mm

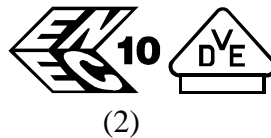
Type	SEC rated output-		Approvals
	voltage V	current A	
FL52/5	2x5	2x5,20	1,2
FL52/6	2x6	2x4,33	1,2
FL52/8	2x8	2x3,25	1,2
FL52/9	2x9	2x2,88	1,2
FL52/12	2x12	2x2,16	1,2
FL52/15	2x15	2x1,73	1,2
FL52/18	2x18	2x1,44	1,2
FL52/24*	2x24	2x1,08	1



according to VDE 0570/EN 61 558 -1 : 1997 with part 2-6  
 \*according to VDE 0570/EN 61 558 -1 : 1997 with part 2-1

No load output voltage x Factor = typ. 1,12  
 No load (active) power typ. 4,0 W  
 Efficiency typ. 81 %

Approvals



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