

SINAMICS G120 standard inverters

0.37 kW to 250 kW (0.5 hp to 400 hp)

DC link components > Braking resistors

Overview



Braking resistor for PM240-2 Power Modules, frame size FSD



Braking resistor for PM240 Power Modules, frame size FSGX

Excess energy in the DC link is dissipated in the braking resistor. The braking resistors are intended for use with PM240 and PM240-2 Power Modules which feature an integrated braking chopper, but cannot regenerate energy to the supply system. There is an optional plug-in Braking Module for frame size FSGX. For regenerative operation, e.g. the braking of a rotating mass with high moment of inertia, a braking resistor must be connected to convert the resulting energy into heat.

The braking resistors can be installed laterally next to the PM240 and PM240-2 Power Modules. The braking resistors for the Power Modules, frame sizes FSD to FSGX, should be placed outside the control cabinet or outside the switchgear room so that the heat is dissipated away from the Power Modules. The level of air conditioning required is therefore reduced.

Every braking resistor has a temperature switch (UL-listed). The temperature switch should be evaluated to prevent consequential damage if the braking resistor overheats.

A PM250 Power Module is capable of line-commutated energy feedback. A braking resistor cannot be connected and is not necessary.

Note:

For the electromagnetically compatible connection of an optionally connectable braking resistor, the corresponding shield connection kit is to be ordered for frame sizes FSD to FSF.

For more information, see [Shield connection kits in the section Supplementary system components](#).

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Integration

Braking resistors that are optionally available depending on the Power Module used

	Frame size						
	FSA	FSB	FSC	FSD	FSE	FSF	FSGX
PM240-2 Power Module with integrated braking chopper							
Available frame sizes							
• 200 V versions	✓	✓	✓	✓	✓	✓	–
• 400 V versions	✓	✓	✓	✓	✓	✓	–
• 690 V versions	–	–	–	✓	✓	✓	–
DC link components							
Braking resistor	S	S	S	S	S	S	–
PM240 Power Module without integrated braking chopper							
Available frame sizes	–	–	–	–	–	–	✓
DC link components							
Braking resistor	–	–	–	–	–	–	S

S = Lateral mounting
– = Not possible

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DC link components > Braking resistors**Selection and ordering data** (continued)

Rated power		PM240-2 Power Module standard variant		Braking resistor
kW	hp	Type 6SL3210-...	Frame size	Article No.
500 ... 690 V 3 AC				
11	10	1PH21-4 . L0	FSD	JJY:023424020002
15	15	1PH22-0 . L0		
18.5	20	1PH22-3 . L0		
22	25	1PH22-7 . L0		
30	30	1PH23-5 . L0		
37	40	1PH24-2 . L0		
45	50	1PH25-2 . L0	FSE	JJY:023434020002
55	60	1PH26-2 . L0		
75	75	1PH28-0 . L0	FSF	JJY:023464020002
90	100	1PH31-0 . L0		
110	100	1PH31-2 . L0		
132	125	1PH31-4 . L0		

Rated power		PM240-2 Power Module push-through variant		Braking resistor
kW	hp	Type 6SL3211-...	Frame size	Article No.
200 ... 240 V 1 AC/3 AC				
0.75	1	1PB13-8 . L0	FSA	JJY:023146720008
2.2	3	1PB21-0 . L0	FSB	JJY:023151720007
4	5	1PB21-8 . L0	FSC	JJY:023163720018
200 ... 240 V 3 AC				
18.5	25	1PC26-8UL0	FSD	JJY:023422620002
30	40	1PC31-1UL0	FSE	JJY:023423320001
55	75	1PC31-8UL0	FSF	JJY:023434020003
380 ... 480 V 3 AC				
3	4	1PE18-0 . L1	FSA	6SL3201-0BE21-0AA0
7.5	10	1PE21-8 . L0	FSB	6SL3201-0BE21-8AA0
15	20	1PE23-3 . L0	FSC	6SL3201-0BE23-8AA0
37	50	1PE27-5 . L0	FSD	JJY:023424020001
55	75	1PE31-1 . L0	FSE	JJY:023434020001
132	200	1PE32-5 . L0	FSF	JJY:023464020001

Rated power		PM240 Power Module		Braking resistor
kW	hp	Type 6SL3224-...	Frame size	Article No.
380 ... 480 V 3 AC				
160	250	0XE41-3UA0	FSGX ¹⁾	6SL3000-1BE31-3AA0
200	300	0XE41-6UA0	FSGX ¹⁾	6SL3000-1BE32-5AA0
250	400	0XE42-0UA0		

¹⁾ A Braking Module must be additionally ordered for connection.

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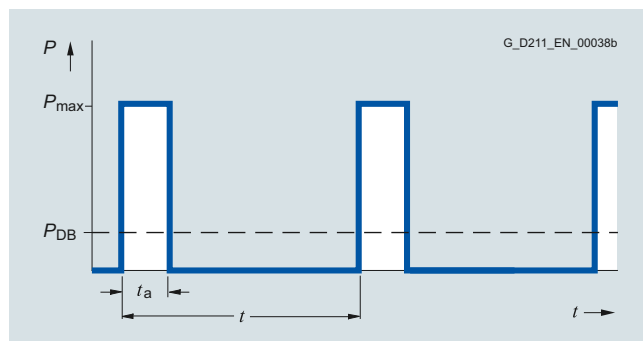
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DC link components > Braking resistors

Technical specifications (continued)

Line voltage 500 ... 690 V 3 AC		Braking resistor		
		JJY:023424020002	JJY:023434020002	JJY:023464020002 ¹⁾
Resistance	Ω	31	21	10.5
Rated power P_{DB} (Continuous braking power)	kW	1.85	2.75	5.5
Peak power P_{max} (load duration $t_a = 12$ s with period $t = 240$ s)	kW	37	55	110
Power connection		Cable	Cable	Cable
Thermostatic switch		Integrated	Integrated	Integrated
Degree of protection		IP21	IP21	IP21
Dimensions				
• Width	mm (in)	220 (8.66)	350 (13.78)	1)
• Height	mm (in)	610 (24.02)	630 (24.8)	1)
• Depth	mm (in)	180 (7.09)	180 (7.09)	1)
Weight, approx.	kg (lb)	9.5 (20.9)	13.5 (29.8)	27 (59.5)
Suitable for PM240-2 Power Module	Type	6SL3210-1PH21-4 . L0 6SL3210-1PH22-0 . L0 6SL3210-1PH22-3 . L0 6SL3210-1PH22-7 . L0 6SL3210-1PH23-5 . L0 6SL3210-1PH24-2 . L0	6SL3210-1PH25-2 . L0 6SL3210-1PH26-2 . L0	6SL3210-1PH28-0 . L0 6SL3210-1PH31-0 . L0 6SL3210-1PH31-2 . L0 6SL3210-1PH31-4 . L0
• Frame size		FSD	FSE	FSF
Line voltage 380 ... 480 V 3 AC		Braking resistor		
		6SL3000-1BE31-3AA0	6SL3000-1BE32-5AA0	
Resistance	Ω	4.4	2.2	
Rated power P_{DB} (Continuous braking power)	kW	25	50	
Peak power P_{max} (load duration $t_a = 15$ s with period $t = 90$ s)	kW	125	250	
Power connection		M10 screw stud	M10 screw stud	
Thermostatic switch		NC contact	NC contact	
• Contact load, max.		250 V AC/2.5 A	250 V AC/2.5 A	
Degree of protection		IP20	IP20	
Dimensions				
• Width	mm (in)	740 (29.13)	810 (31.89)	
• Height	mm (in)	605 (23.82)	1325 (52.17)	
• Depth	mm (in)	485 (19.09)	485 (19.09)	
Weight, approx.	kg (lb)	50 (110)	120 (265)	
Suitable for PM240-2 Power Module	Type	6SL3224-0XE41-3UA0	6SL3224-0XE41-6UA0 6SL3224-0XE42-0UA0	
• Frame size		FSGX	FSGX	

Characteristic curves



Load diagram for the braking resistors

$t_a = 12$ s or 15 s (see section Technical specifications)
 $t = 240$ s or 90 s (see section Technical specifications)

¹⁾ This braking resistor consists of two JJY:023434020002 braking resistors, which must be connected in parallel on the plant/system side.