

Selection guide

Selection guide for feedthrough components

Type	Dia- meter mm	I _R A	V _R AC V	C _R μF	Termi- nal type	Insertion loss in the frequency range (Hz)			Page	
						10 ⁵	10 ⁶	10 ⁷		
Feedthrough capacitors										
B85121A*C160	16	16	110 ... 440	0.0025 ... 0.1						166
B85121A*250 B85121A*E750	20	25, 75	250 ... 440	0.035 ... 0.1						167
B85121A*A250 B85121A*A750	30	25, 75	250	1.0						169
B85121A*A630, A101, A201	55	63 ... 200	250	0.5 ... 4.7						170
Feedthrough filters										
B85321A*160	16	16	250	2 × 0.0025						173
B85321A*A250 B85321A*A750	30	25, 75	250	2 × 0.1 ... 2 × 1.0						175
B85321A*A630, A101 ... A501	55	63 ... 500	250	2 × 0.5 ... 2 × 4.7						176

Terminal type:



Tab connectors

Axial leads



Soldering tag

Threaded studs

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Selection guide for 2-line filters

Type	I _R	V _R	Power system	Design	Connection type	Insertion loss in the frequency range (Hz)			Page
	A	V				10 ⁵	10 ⁶	10 ⁷	

General applications, IEC inlet filters

B84771 NEW	1 ... 20	250 AC/DC	TT/TN	C						182
B84773 NEW	1 ... 10	250 AC/DC	TT/TN	C						198
B84776 NEW	1 ... 10	250 AC/DC	TT/TN	C						206
B84103	1 ... 6	250 AC/DC	TT/TN	C						214

General applications, SIFI series

B84111F NEW	3 ... 36	250 AC/DC	TT/TN	C						218
B84112G NEW										227
B84113H NEW										238
B84111A	1 ... 20	250 AC/DC	TT/TN	C						246
B84115E										

General applications, PCB mounting

B84110A	0.5 ... 6	250 AC/DC	TT/TN	P						269
B84110B	1.4	250 AC/DC	TT/TN	P						273

Converters and power electronics

B84142*R000	10 ... 60	250 AC/DC	TT/TN	C						276
B84142*G075	60									
B84142A*166 NEW	10 ... 30	250 AC/DC	TT/TN	C						283
B84142B*R000	8 ... 25	250 AC/DC	TT/TN	C						287
B84142A*R122	8 ... 180	300 AC/DC	TT/TN	C						292
B84142A*R123	12 ... 100	520 AC/DC	TT/TN	C						301
B84742A*R190 NEW	25 ... 130	500 AC 1000 DC	TT/TN	C						307
B84142A/C/J*S081 NEW	180 ... 1600	1000 V DC, 1500 V DC	–	C						314

Design:

- C Compact filter
- P PCB filter

Terminal type:

- Tab connectors
- Litz wires
- Terminal blocks
- Busbars
- Pins
- IEC connectors
- Threaded studs

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Selection guide for 3-line filters

Type	I _R A	V _R AC V	Power system	De- sign	Con- nection type	Motor cable length (m) ¹⁾		Insertion loss in the frequency range (Hz)			Page
						Class A	Class B	10 ⁵	10 ⁶	10 ⁷	
B84143A*R166 NEW	10 ... 35	520	TT/TN	C		25	10				327
B84143A*R106 NEW	10 ... 100	520	TT/TN	C		25	10				332
B84143A*R105	8 ... 150	520	TT/TN	B		25	25				339
B84143A*R000	8 ... 180	480	TT/TN	C		50	25				349
B84143B*R000	8 ... 80	440	TT/TN	C		100	50				356
B84143G*R110	8 ... 220	520	TT/TN	B		25	25				362
B84143B*R110	8 ... 200	520	TT/TN	B		50	25				370
B84143D*R127 NEW	16 ... 200	530	TT/TN	B		300	100 ... 200				379
B84143+*R410 NEW	35 ... 230	520	TT/TN	B		100	50				392
B84143B*S080	180	520	TT/TN	C		25	10				401
B84143B*S081	... 1600	760									
B84143B*S020	150	530	TT/TN	C		50	20				411
B84143B*S021	...	760									
B84143B*S024	2500	690	IT								
B84143A*R021	25 ... 180	760	TT/TN	C		50	25				421

Design: C Compact filter
B Book-size filter

Terminal type: Litz wires
 Terminal blocks
 Busbars
 Tab connectors

1) Motor cable lengths for observing the limits according to DIN EN 55011 (2003), typical values. These specifications are designed as a qualitative help in selecting the right filter. The maximum motor cable length depends on several factors, including the pulse frequency, the interference level of the converter and the capacitance of the motor cable; it may in an individual case diverge both upwards and downwards from the specified values. Observance of the limits must always be verified by relevant measurements. On this point, see also chapter "EMC services and EMC laboratory".

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Selection guide for 4-line filters

Type	I _R A	V _R AC V	Lines	Power system	De- sign	Con- nection type	Insertion loss in the frequency range (Hz)			Page
							10 ⁵	10 ⁶	10 ⁷	
B84144A*R120	8 ... 200	520	3 + N	TT/TN	C					429
B84144A*R140	8 ... 200	520	3 + N	TT/TN	C					437
NEW B84144B*S120 B84144B*S121	250 ... 600	530	3 + N	TT/TN	C					446
B84144A*R000	16 ... 180	440	3 + N	TT/TN	C					450
B84108	10, 20	440	3 + N	TT/TN	C					457
B84131	6 ... 125	440	3 + N	TT/TN	C	 				460

Design: C Compact filter

Terminal type: Tab connectors
 Threaded studs
 Terminal blocks
 Busbars

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Selection guide for line reactors, output chokes and output filters

Type	I_R A	U_R AC V	u_k %	Terminal	Motor cable length m	Shielded motor cable required	Asym- metric attenuation	Max. $f_M^{1)}$ Hz	Max. $f_P^{2)}$ kHz	Page
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Line reactors and output chokes

Line reactors

B86305L*000 NEW	4 ... 390	520	5		–	–	low	–	–	470
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Output chokes

dv/dt chokes

B86301U NEW	8 ... 1500	520	1		50	yes	low	400	2.5 ... 16	475
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Output filters

Sine-wave output filters

B84143V*R227 NEW	4 ... 320 ³⁾	520, 690	5 ... 11		1000	yes	low	100	6 ... 16	483
B84143V*R027	6 ... 35	440	2		100	yes	low	100	6 ... 16	492

EMC output filters *SineFormer*

B84143V*R127 <i>SineFormer</i>	6 ... 320 ³⁾	520, 600	5 ... 10	 	1000	no	high	100	4 ... 8	496
B84143V*R290 <i>SineFormer</i> NEW	95 ... 320	760	10	 	1000	no	high	100	4 ... 8	502

Terminal type:

Terminal blocks

Cable


Busbars

1) f_M = Motor frequency
 2) f_P = Pulse frequency
 3) Higher currents on request

Selection guide

Selection guide for converter filters

Our experience has shown that the filters listed below have proved their worth in converters for EMC measurements and in practice. However, the following points must be observed:

-  The rated data of the converter (such as the input current, rated voltage and harmonic content) as well as the derating notes in Sections 9, 10 and 11 must be considered without fail when selecting the filters.
- Application-referred measurements must be used to ensure observation of the EMC specifications in each individual case.
- The correct installation of filters and additional measures designed to observe the EMC directive must be assured (on this point, see also the Chapter on "Mounting instructions").

2-line filters (250 V AC) for converters for electric drives

Motor power (1 AC 230 V)	Recommended suppression filters to:	
	EN 55011, class A EN 61800-3 ¹⁾ , category C2	EN 55011, class B EN 61800-3 ¹⁾ , category C1
0.55 kW	B84142A0010A166	B84142B0008R000
0.75 kW	B84142A0010A166	B84142B0008R000
1.1 kW	B84142A0016A166	B84142B0012R000
1.5 kW	B84142A0030R166	B84142B0025R000
2.2 kW	B84142A0030R166	B84142B0025R000
3.0 kW	B84142A0030R166	

1) Table 14 from EN 61800-3, edition 2004

3-line filters (440 V AC) for converters for electric drives (examples)

Motor power (3 AC 400 V)	Recommended suppression filters to:	
	EN 55011, class A EN 61800-3 ²⁾ , category C2	EN 55011, class B EN 61800-3 ²⁾ , category C1
1.5 kW	B84143A0010A166	B84143B0008R000
	B84143A0008R105	B84143D0016R127
2.2 kW	B84143A0010A166	B84143B0008R000
	B84143A0008R105	B84143D0016R127
3.0 kW	B84143A0020A166	B84143B0016R000
	B84143A0016R105	B84143D0016R127
4.0 kW	B84143A0020A166	B84143B0016R000
	B84143A0016R105	B84143D0016R127
5.5 kW	B84143A0020A166	B84143B0016R000
	B84143A0016R105	B84143D0016R127

2) Table 14 from EN 61800-3, edition 2004

Selection guide

Motor power (3 AC 400 V)	Recommended suppression filters to:	
	EN 55011, class A EN 61800-3 ²⁾ , category C2	EN 55011, class B EN 61800-3 ²⁾ , category C1
7.5 kW	B84143A0020A166 B84143A0025R000	B84143D0025R127
11 kW	B84143A0035R166 B84143A0036R000	B84143D0036R127
15 kW	B84143A0035R166 B84143A0036R000	B84143D0036R127
18.5 kW	B84143A0050R105 B84143A0050R000	B84143D0050R127
22 kW	B84143A0050R105 B84143A0050R000	B84143D0050R127
30 kW	B84143A0066R105 B84143A0080R000	B84143D0075R127
37 kW	B84143A0090R105 B84143A0080R000	B84143D0090R127
45 kW	B84143A0120R105 B84143A0120R000	B84143D0120R127
55 kW	B84143A0150R000 B84143A0150R105	B84143D0150R127
75 kW	B84143A0150R000 B84143A0150R105	B84143D0150R127
90 kW	B84143A0180R000 B84143B0180S080 B84143G0220R110	B84143B0200R110 B84143D0200R127
110 kW	B84143B0250S020 B84143B0250S080 B84143G0220R110	
132 kW	B84143B0250S020 B84143B0250S080	
160 kW	B84143B0320S020 B84143B0320S080	
200 kW	B84143B0400S020 B84143B0400S080	
250 kW	B84143B0600S020 B84143B0600S080	
315 kW	B84143B0600S020 B84143B0600S080	

2) Table 14 from EN 61800-3, edition 2004

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Motor power (3 AC 400 V)	Recommended suppression filters to:	
	EN 55011, class A EN 61800-3 ²⁾ , category C2	EN 55011, class B EN 61800-3 ²⁾ , category C1
400 kW	B84143B1000S020 B84143B1000S080	
500 kW	B84143B1000S020 B84143B1000S080	
630 kW	B84143B1600S020 B84143B1600S080	
710 kW	B84143B1600S020 B84143B1600S080	
900 kW	B84143B1600S020 B84143B1600S080	
1100 kW	B84143B2500S020	
1300 kW	B84143B2500S020	
1500 kW	B84143B2500S020	

2) Table 14 from EN 61800-3, edition 2004

4-line filters for control cabinet interference suppression

Power (3 AC 400 V)	Recommended suppression filters to:	
	EN 55011, class A EN 61800-3 ³⁾ , category C2	EN 55011, class B EN 61800-3 ³⁾ , category C1
5.5 kW	B84144A0008R120	
11 kW	B84144A0016R120	
17 kW	B84144A0025R120	
25 kW	B84144A0036R120	
34.5 kW	B84144A0050R120	
45.5 kW	B84144A0066R120	
62 kW	B84144A0090R120	
83 kW	B84144A0120R120	
103 kW	B84144A0150R120	
138 kW	B84144A0200R120	
172 kW	B84144B0250S120	B84144B0250S121
276 kW	B84144B0400S120	B84144B0400S121
474 kW	B84144B0600S120	B84144B0600S121

3) Table 14 from EN 61800-3, edition 2004

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Selection guide for SIFI EMC 2-line filters

Field of application	Interference suppression	Increasing insertion loss	Limit class (EN 55011)	Immunity	Type	Page	
Office equipment	with linear power supplies				Normal requirements (f > 1 MHz)	B84111F B84111A	218 246
	with commutator motors						High requirements (f > 1 MHz)
Domestic appliances	with secondary switch-mode power supplies			A	Like SIFI G/B, additional symmetrical insertion loss in the range 0.1 MHz ... 0.5 MHz		
	IT equipment					with transistor or thyristor circuits	
Micro-processor systems				B	Very high requirements (f > 0.1 MHz ... 100 MHz)	B84115E	
Electrical tools	with primary switch-mode power supplies						
Optical devices							

* SIFI-A, -B and -C not for new applications; replaced by SIFI-F, -G and -H.