

General Purpose AC/DC EMI Filter



- | Rated currents from 1 to 60 A
- | General purpose filtering performance
- | Optional medical versions (B type)
- | Optional safety versions (A type)
- | Optional enhanced performance versions
- | Optional DC optimized versions



Performance indicators

Attenuation performance



Rated current [A]



Approvals



Features and benefits

- | FN 2010 filters are designed for easy and fast chassis mounting
- | FN 2010 filters are available as B versions without Y-capacitors for medical applications as well as A version with low capacitance for safety critical applications with necessity for low leakage currents
- | FN 2010 filters are also available as enhanced performance and DC optimized versions. With higher attenuation in very compact housing (M, N1,N types)
- | All filters provide a general purpose conducted attenuation performance, based on chokes with high saturation resistance and excellent thermal behavior
- | FN 2010 filters can be used to cover a broad range of usage and they offer a good size/ampereage ratio
- | Various terminal options allow you to select the desired connection style

Technical specifications

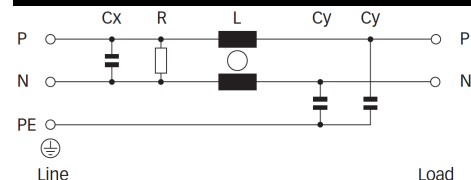
Rated voltage*	250 VAC, 50/60 Hz; 250 VDC
Operating frequency	dc to 400 Hz
Rated currents	1 to 60 A @ 40°C max.
High potential test voltage	P → PE 2000 VAC for 2 sec (equiv. cap <88 nF) P → PE 2550 VDC for 2 sec (equiv. cap >88 nF) P → PE 2500 VAC for 2 sec (B types) P → N 1100 VDC for 2 sec
Temperature range (operation and storage)	-25 °C to +100 °C (25/100/21)
Certified to	UL 1283, CSA 22.2 No. 8 1986, IEC/EN 60939 (applies to AC and DC applications)
Flammability corresponding to MTBF @ 40°C/230 V (Mil-HB-217F)	UL 94 V-2 or better 1,250,000 hours 3,200,000 hours (B types)

*maximum RMS operating voltage at rated frequency or the maximum DC operating voltage




Typical applications

- | Electrical and electronic equipment
- | Consumer goods
- | Household equipment
- | Medical equipment
- | Office automation equipment
- | Datacom equipment

Typical electrical schematic



Filter selection table

Filter*	Rated current @ 40°C (25°C)	Leakage current** @ 250 VAC/50 Hz (@ 120 VAC/60 Hz)	Inductance L	Capacitance		Resistance R	Input/Output connections			Weight
				Cx	Cy					
	[A]	[mA]	[mH]	[µF]	[nF]	[kΩ]				[g]
FN 2010-1-..	1 (1.15)	0.66 (0.38)	12	0.1	4.7	1000	-06	-07		65
FN 2010-3-..	3 (3.45)	0.66 (0.38)	2.5	0.1	4.7	1000	-06	-07		65
FN 2010-6-..	6 (6.9)	0.66 (0.38)	1	0.1	4.7	1000	-06	-07		65
FN 2010-10-..	10 (11.5)	0.66 (0.38)	0.8	0.1	4.7	1000	-06	-07		85
FN 2010-12-..	12 (13.8)	0.66 (0.38)	0.7	0.1	4.7	1000	-06	-07		85
FN 2010-16-..	16 (18.4)	0.66 (0.38)	0.7	0.1	4.7	1000	-06	-07		140
FN 2010-20-..	20 (23)	0.66 (0.38)	0.6	0.1	4.7	1000	-06	-07	-08	210
FN 2010-30-08	30 (34.5)	0.79 (0.46)	0.7	0.47	10	1000			-08	470
FN 2010-60-24	60 (69)	0.79 (0.46)	1	1.5	10	330			-24	1100
FN 2010 A-1-..	1 (1.15)	0.07 (0.04)	12	0.1	0.47	1000	-06	-07		65
FN 2010 A-3-..	3 (3.45)	0.07 (0.04)	2.5	0.1	0.47	1000	-06	-07		65
FN 2010 A-6-..	6 (6.9)	0.07 (0.04)	1	0.1	0.47	1000	-06	-07		65
FN 2010 A-10-..	10 (11.5)	0.07 (0.04)	0.8	0.1	0.47	1000	-06	-07		85
FN 2010 A-12-..	12 (13.8)	0.07 (0.04)	0.7	0.1	0.47	1000	-06	-07		85
FN 2010 A-16-..	16 (18.4)	0.07 (0.04)	0.7	0.1	0.47	1000	-06	-07		140
FN 2010 A-20-..	20 (23)	0.07 (0.04)	0.6	0.1	0.47	1000	-06	-07	-08	210
FN 2010 A-30-08	30 (34.5)	0.07 (0.04)	0.7	0.47	0.47	1000			-08	470
FN 2010 A-60-24	60 (69)	0.07 (0.04)	1	1.5	0.47	330			-24	1100
FN 2010 B-1-..	1 (1.15)	0.00	12	0.1		1000	-06	-07		65
FN 2010 B-3-..	3 (3.45)	0.00	2.5	0.1		1000	-06	-07		65
FN 2010 B-6-..	6 (6.9)	0.00	1	0.1		1000	-06	-07		65
FN 2010 B-10-..	10 (11.5)	0.00	0.8	0.1		1000	-06	-07		85
FN 2010 B-12-..	12 (13.8)	0.00	0.7	0.1		1000	-06	-07		85
FN 2010 B-16-..	16 (18.4)	0.00	0.7	0.1		1000	-06	-07		140
FN 2010 B-20-..	20 (23)	0.00	0.6	0.1		1000	-06	-07	-08	210
FN 2010 B-30-08	30 (34.5)	0.00	0.7	0.47		1000			-08	470
FN 2010 B-60-24	60 (69)	0.00	1	1.5		330			-24	1100
Enhanced performance										
FN 2010 N1-1-06	1 (1.15)	5.34 (3.08)	12	0.1	68	1000	-06			70
FN 2010 N1-3-06	3 (3.45)	5.34 (3.08)	2.5	0.1	68	1000	-06			70
FN 2010 N1-6-06	6 (6.9)	5.34 (3.08)	1	0.1	68	1000	-06			70
FN 2010 N1-10-06	10 (11.5)	5.34 (3.08)	0.8	0.1	68	1000	-06			85
FN 2010 N1-12-06	12 (13.8)	3.69 (2.13)	0.7	0.1	47	1000	-06			85
FN 2010 M-16-06	16 (18.4)	3.69 (2.13)	0.7	0.1	47	1000	-06			140
FN 2010 M-20-..	20 (23)	3.69 (2.13)	0.6	0.1	47	1000	-06		-08	220
FN 2010 N-30-08	30 (34.5)	7.85 (4.52)	0.7	0.47	100	1000			-08	400
FN 2010 N-60-24	60 (69)	7.85 (4.52)	1	1.5	100	330			-24	1120

* To compile a complete part number, please replace the .. with the required I/O connection style (e.g. FN 2010-30-08, FN 2010B-10-06). The different letters code the used Cy values in the filter type (A = 0.47nF; M = 47nF; N1 = 47nF; N = 100nF)

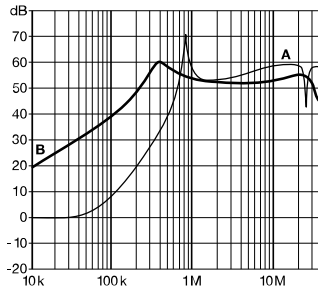
** Maximum leakage under usual AC operating conditions (acc. IEC 60939-3). Note: if the neutral line is interrupted, worst case leakage could reach twice this level.

Typical filter attenuation

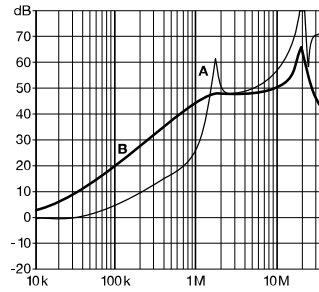
Per CISPR 17; A=50 Ω/50 Ω sym; B=50 Ω/50 Ω asym

Standard types

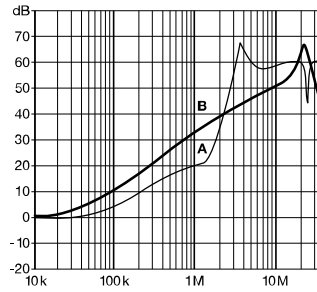
1 and 3 A types



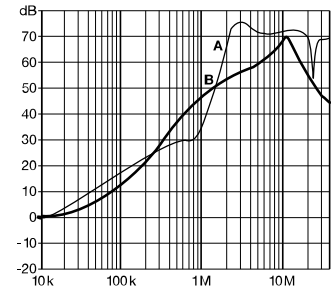
6 to 12 A types



16 and 20 A types

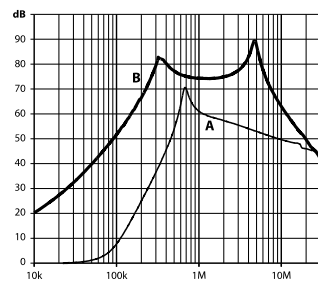


30 and 60 A types

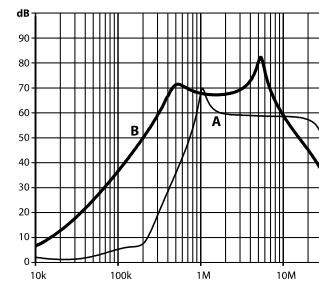


Enhanced performance types

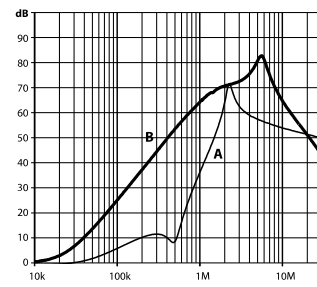
1 A types



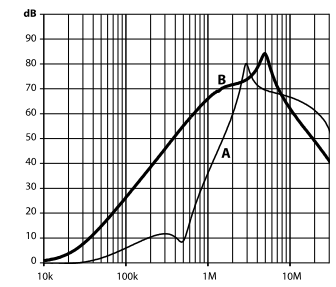
3 A types



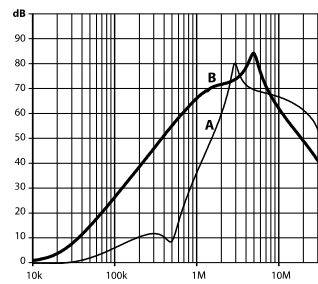
6 A types



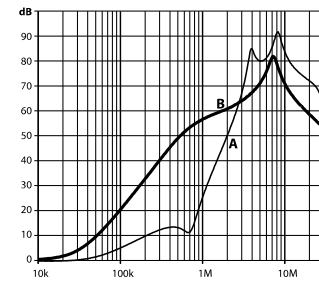
10 and 12 A types



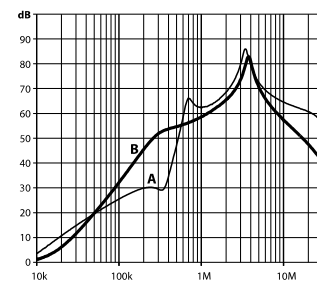
16 A types



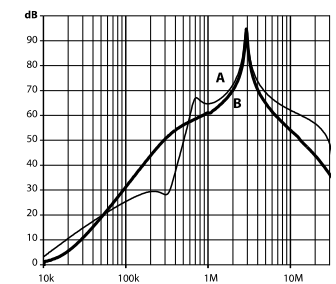
20 A types



30 A types



60 A types

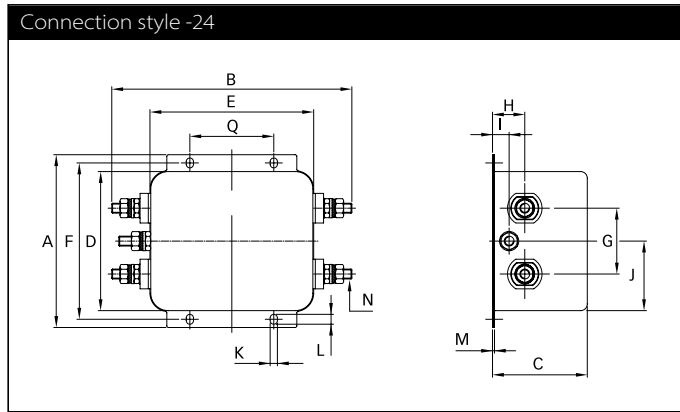
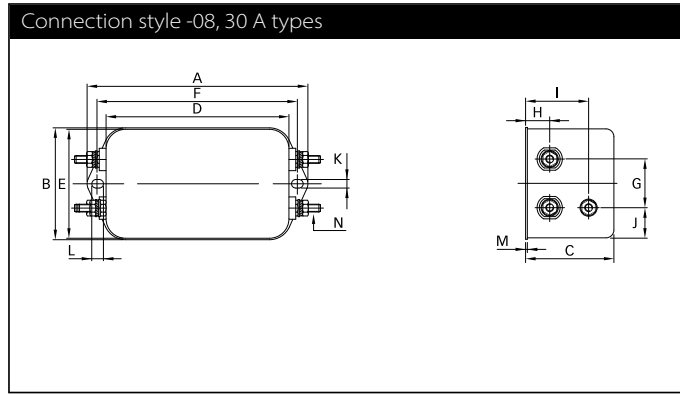
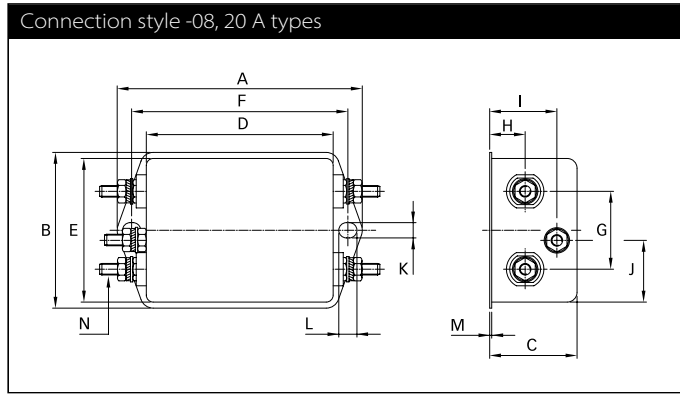
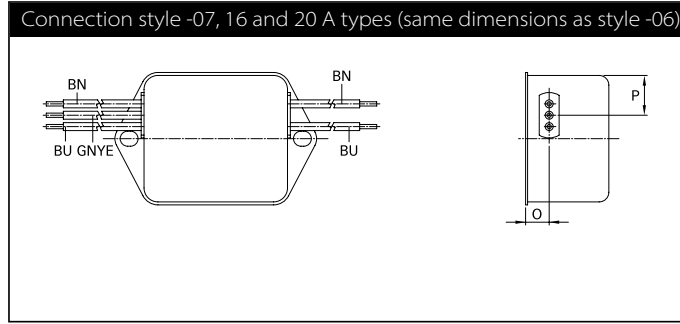
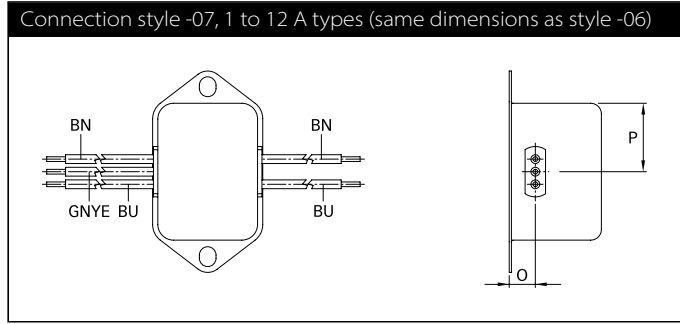
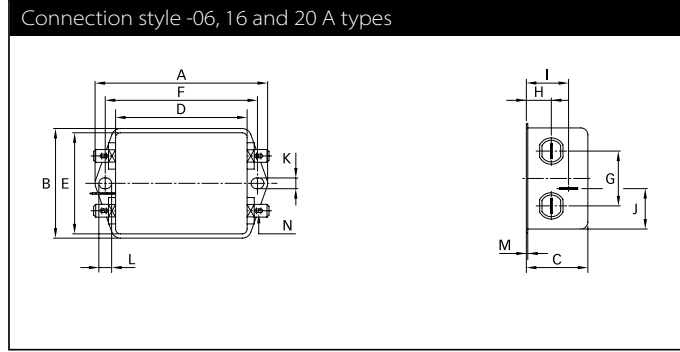
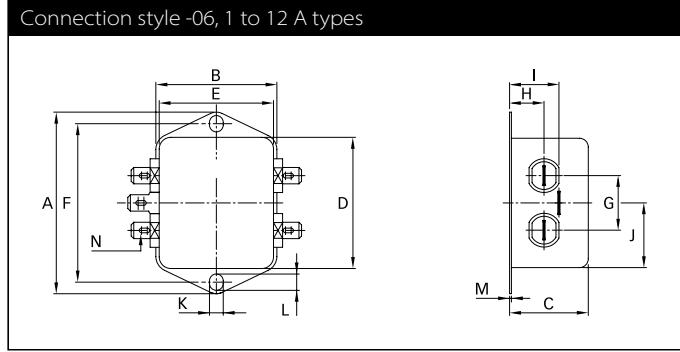


Product Selector

FN 2010-xy-xx-yy

	06	Faston 6.3 × 0.8 mm (spade/soldering)
	07	Wire leads
	08	Studs (M4 screws)
	24	Studs (M6 screws)
	1 to 60	Rated current
	Blank	Standard version
	Z	With surge protection
	Blank	Standard version
	A	Safety version
	B	Medical version
	N1/N/M	High performance version

Mechanical data



Dimensions

	1 A	3 A	6 A	10 A	12 A	16 A	20 A	30 A	60 A	Tolerances
A	64	64	64	64	64	71	85	113.5 ±1	105 ±1	±0.5
B	35	35	35	35	35	46.6	54	57.5 ±1	145.9 ±1	±0.5
C	24.3	24.3	24.3	29.3	29.3	29.3	30.3	45.4 ±1	57.6 ±1	±0.5
D	43.5	43.5	43.5	43.5	43.5	50.5	64.8	94 ±1	84.5 ±1	±0.5
E	32.5	32.5	32.5	32.5	32.5	44.5	49.8	56	99.5	±0.5
F	54	54	54	54	54	61	75	103	95	±0.3
G	21	21	21	21	21	21	27	25	40	±0.2
H	9.3	9.3	9.3	9.3	9.3	10.8	12.3	12.4	19.6	±0.5
I	15.3	15.3	15.3	15.3	15.3	19.3	20.8	32.4	10.1	±0.5
J	21.8	21.8	21.8	21.8	21.8	20.1	19.9	15.5	42.25	±0.5
K	5.3	5.3	5.3	5.3	5.3	5.3	5.3	4.4	4.4	
L	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6	6	
M	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.9	1.2	
Connection style -06										
N	6.3 x 0.8	6.3 x 0.8	6.3 x 0.8	6.3 x 0.8	6.3 x 0.8	6.3 x 0.8	6.3 x 0.8			
Connection style -07										
O	8.3	8.3	8.3	8.3	8.3	8.3	8.3			±0.5
P	21.8	21.8	21.8	21.8	21.8	14	14.9			±0.5
AWG type wire	AWG 20	AWG 20	AWG 18	AWG 18	AWG 16	AWG 16	AWG 14			
Wire length	140	140	140	140	140	140	140			+5
Connection style -08										
N							M4	M4		
Recommended torque (Nm)							1.2 - 1.3	1.2 - 1.3		
Connection style -24										
N									M6	
Q									51	±0.2
Recommended torque (Nm)									3.5 - 4	

All dimensions in mm; 1 inch = 25.4 mm
Tolerances according: ISO 2768-m/EN 22768-m

Please visit www.schaffner.com to find more details on filter connections.



Headquarters, global innovation and development

Switzerland

Schaffner Group

Nordstrasse 11
4542 Luterbach
T +41 32 681 66 26
F +41 32 681 66 30
info@schaffner.com
<http://www.schaffner.com>



Sales and application centers

China

Schaffner EMC Ltd. Shanghai

T20-3 C, No 565 Chuangye Road,
Pudong district
201201 Shanghai
T +86 21 3813 9500
cschina@schaffner.com
<http://www.schaffner.com.cn>

Finland

Schaffner Oy

Sauvonrinne 19 H
08500 Lohja
T +358 50 468 7284
finlandsales@schaffner.com

France

Schaffner EMC S.A.S.

16-20 Rue Louis Rameau
95875 Bezons
T +33 1 34 34 30 60
F +33 1 39 47 02 28
francesales@schaffner.com

Germany

Schaffner Deutschland GmbH

Schoemperlenstrasse 12B
76185 Karlsruhe
T +49 721 56910
F +49 721 569110
germanysales@schaffner.com

India

Schaffner India Pvt. Ltd

Unit 59, Level, Mfar Greenheart 7
Manyata Tech Park, Hebbal Outer Ring Road
560045 Bangalore
T +91 80 6781 9805
F +91 80 6781 9998
indiasales@schaffner.com

Italy

Schaffner EMC S.r.l.

Via Galileo Galilei 47
20092 Cinisello Balsamo (MI)
T +39 02 66 04 30 45 /47
F +39 02 61 23 943
italysales@schaffner.com

Japan

Schaffner EMC K.K.

1-32-12, Kamiyama, Setagaya-ku
7F Mitsui-seimei Sangenjaya Bldg.
154-0011 Tokyo
T +81 3 5712 3650
F +81 3 5712 3651
japansales@schaffner.com
<http://www.schaffner.jp>

Singapore

Schaffner EMC Pte Ltd.

#05-09, Kg Ubi Ind. Estate
408705 Singapore
T +65 6377 3283
F +65 6377 3281
singaporesales@schaffner.com

Spain

Schaffner EMC España

Calle Caléndula 93, Miniparc III, Edificio E
El Soto de Moraleja, Alcobendas
28109 Madrid
T +34 917 912 900
F +34 917 912 901
spainsales@schaffner.com

Sweden

Schaffner EMC AB

Tegeluddsvägen 76, 2tr
115 28 Stockholm
T +46 8 5050 2425
swedensales@schaffner.com
<http://www.schaffner.com>

Switzerland

Schaffner EMV AG

Nordstrasse 11
4542 Luterbach
T +41 32 681 66 26
switzerlandsales@schaffner.com

Taiwan R.O.C.

Schaffner EMV Ltd.

20 Floor-2, No 97, Section 1, XinTai 5th Road
22175 XiZhi District New Taipei City 22175
T +886 2 2697 5500
F +886 2 2697 5533
taiwansales@schaffner.com
<http://www.schaffner.tw>

Thailand

Schaffner EMC Co. Ltd.

Northern Region Industrial Estate
67 Moo 4 Tambon Ban Klang
Amphur Muangng P.O. Box 14
51000 Lamphun
T +66 53 58 11 04
F +66 53 58 10 19
thailandsales@schaffner.com

United Kingdom

Schaffner Ltd.

5 Ashville Way, Molly Millars Lane
Wokingham
RG41 2PL Berkshire
T +44 118 9770070
F +44 118 9792969
uksales@schaffner.com

USA

Schaffner EMC Inc.

52 Mayfield Avenue
08837 Edison, New Jersey
T +1 800 367 5566
T +1 732 225 9533
F +1 732 225 4789
usasales@schaffner.com
<http://www.schaffnerusa.com>

Schaffner North America

6722 Thirlane Road
24019 Roanoke, Virginia
T +1 276 228 7943
F +1 276 228 7953

Schaffner North America

823 Fairview Road
24382 Wytheville, Virginia
T +1 276 228 7943
F +1 276 228 7258

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