

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]



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

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/ampere ratio

Various terminal options allow you to select the desired connection style

Typical applications

Electrical and electronic equipment

Consumer goods

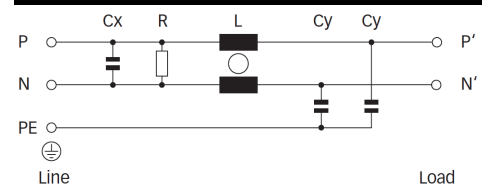
Household equipment

Medical equipment

Office automation equipment

Datcom 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 [g]
				Cx	Cy					
	[A]	[mA]	[mH]	[μF]	[nF]	[kΩ]				
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)

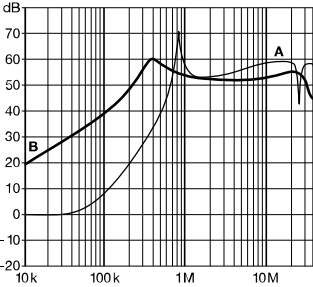
** Maximum leakage under usual AC operating conditions (acc. IEC 60939-3). Note: if the neutral line is interrupted, worst case leakage could reach twice this level.

Typical filter attenuation

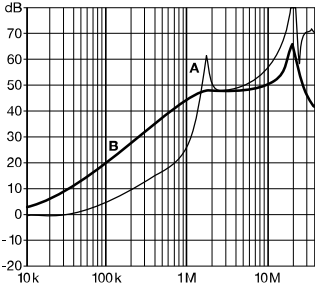
Per CISPR 17; A=50 Ω/50 Ω sym; B=50 Ω/50 Ω asym

Standard types

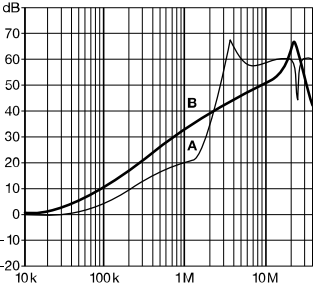
1 and 3 A types



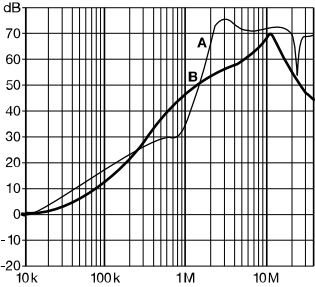
6 to 12 A types



16 and 20 A types

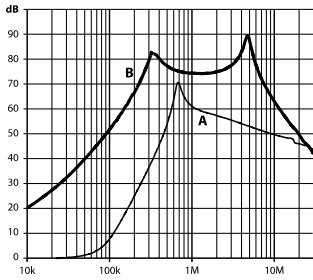


30 and 60 A types

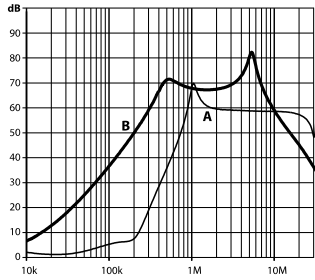


Enhanced performance types

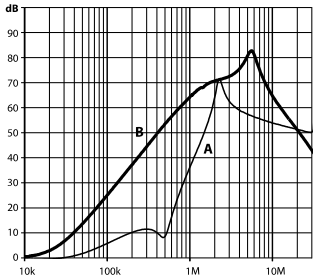
1 A types



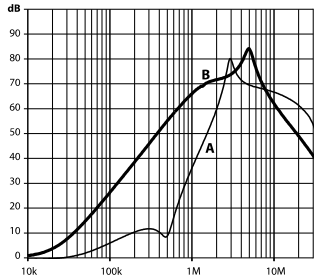
3 A types



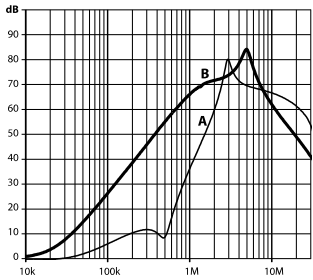
6 A types



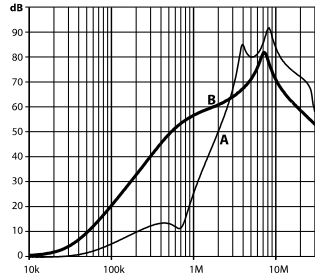
10 and 12 A types



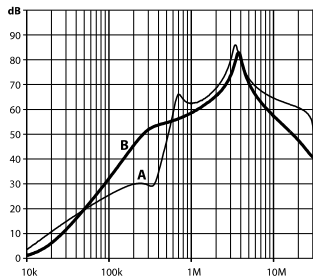
16 A types



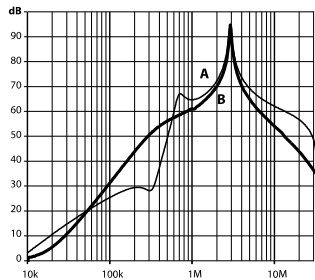
20 A types



30 A types



60 A types



Product Selector

FN 2010-xy-xx-yy

06

07

08

24

1 to 60

Blank

Z

Blank

A

B

N1/N/M

Faston 6.3 × 0.8 mm (spade/soldering)

Wire leads

Studs (M4 screws)

Studs (M6 screws)

Rated current

Standard version

With surge protection

Standard version

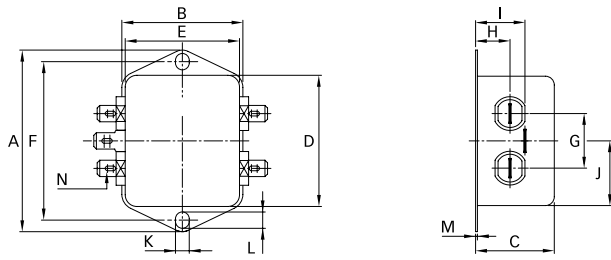
Safety version

Medical version

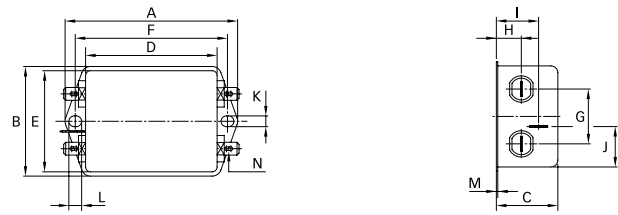
High performance version

Mechanical data

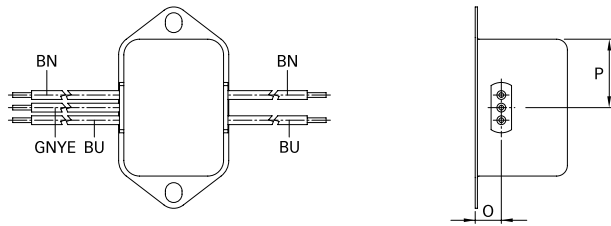
Connection style -06, 1 to 12 A types



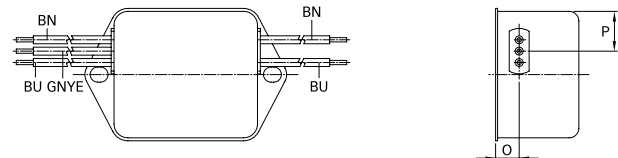
Connection style -06, 16 and 20 A types



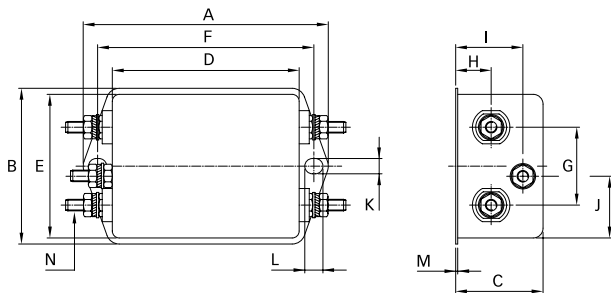
Connection style -07, 1 to 12 A types (same dimensions as style -06)



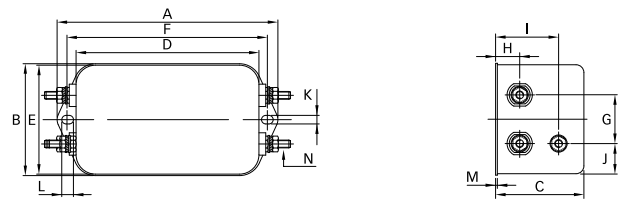
Connection style -07, 16 and 20 A types (same dimensions as style -06)



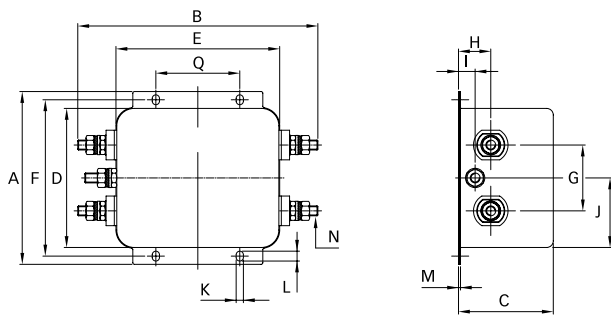
Connection style -08, 20 A types



Connection style -08, 30 A types



Connection style -24



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.



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