schaffner
shaping electrical power

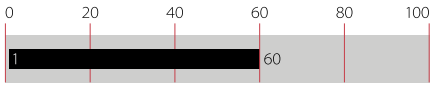
General Purpose AC/DC EMI Filter

- 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	UL 94 V-2 or better
MTBF @ 40°C/230 V (Mil-HB-217F)	1,250,000 hours 3,200,000 hours (B types)

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

Approvals

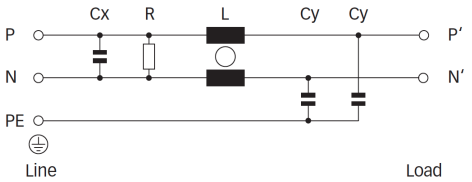
Features and benefits

- 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/amperage 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
- 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	Capacitance		Resistance	Input/Output connections			Weight
			L	Cx	Cy	R				
	[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)

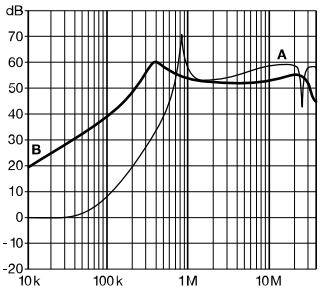
** Maximum leakage under usual AC operating conditions (acc. IEC 60939-3). Note: if the neutral line is interrupted, worst case leakage could reach twice this level.

Typical filter attenuation

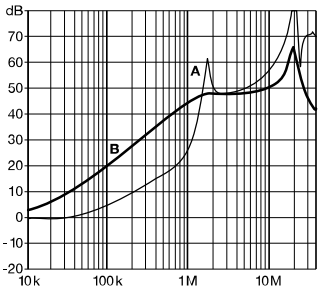
Per CISPR 17; A=50 Ω/50 Ω sym; B=50 Ω/50 Ω asym

Standard types

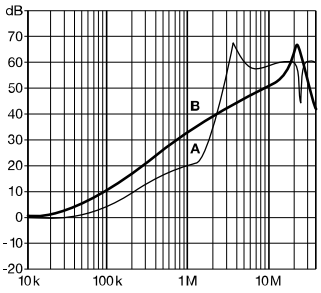
1 and 3 A types



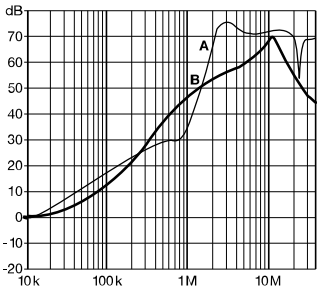
6 to 12 A types



16 and 20 A types

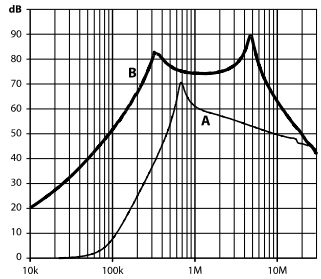


30 and 60 A types

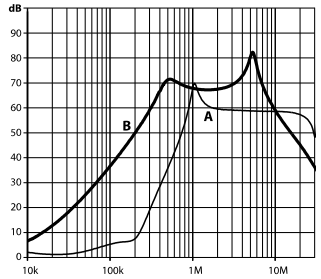


Enhanced performance types

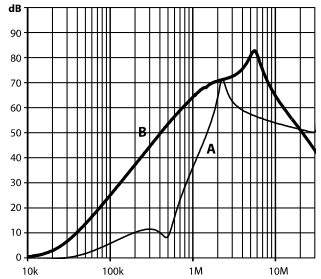
1 A types



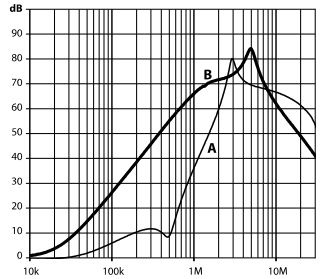
3 A types



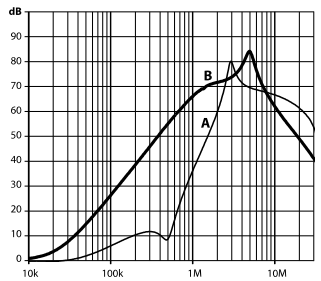
6 A types



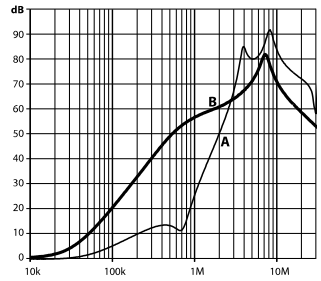
10 and 12 A types



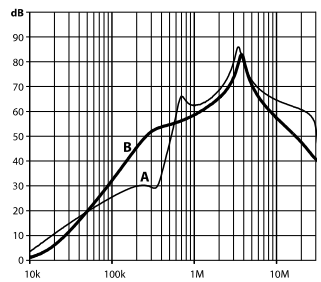
16 A types



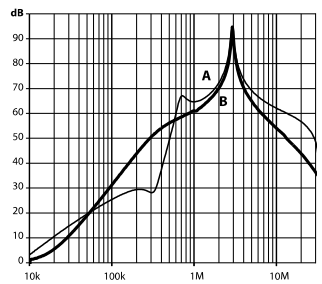
20 A types



30 A types



60 A types



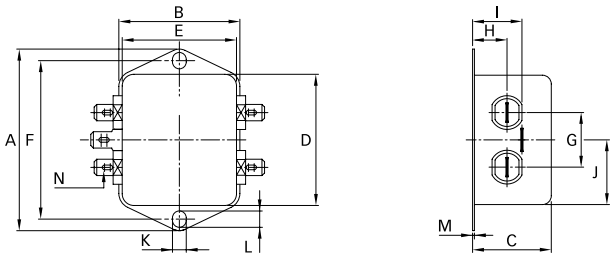
Product Selector

FN 2010-xy-xx-yy

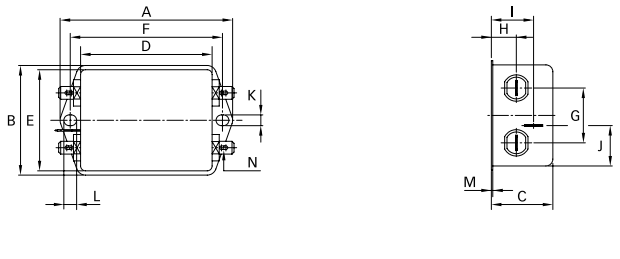
xx	06	Faston 6.3 × 0.8 mm (spade/soldering)
	07	Wire leads
	08	Studs (M4 screws)
	24	Studs (M6 screws)
yy	1 to 60	Rated current
	Blank	Standard version
	Z	With surge protection
xy	Blank	Standard version
	A	Safety version
	B	Medical version
	N1/N/M	High performance version

Mechanical data

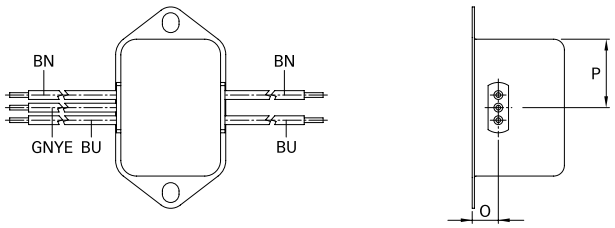
Connection style -06, 1 to 12 A types



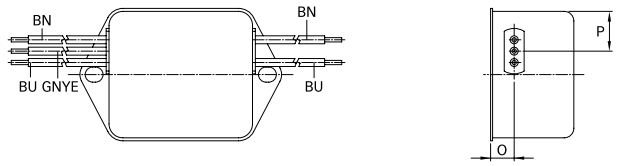
Connection style -06, 16 and 20 A types



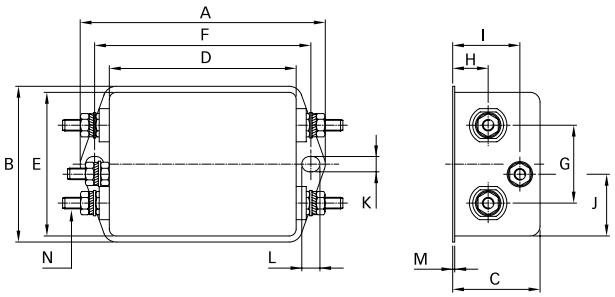
Connection style -07, 1 to 12 A types (same dimensions as style -06)



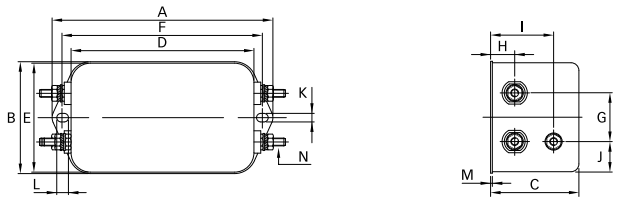
Connection style -07, 16 and 20 A types (same dimensions as style -06)



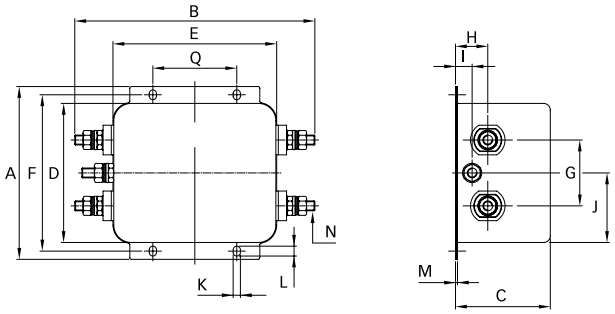
Connection style -08, 20 A types



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	1	1.2	±0.3
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		
Earth terminal							1.5 - 1.7	1.5 - 1.7		
Connection style -24										
N									M6	
Q									51	±0.2
Recommended torque (Nm)									3.5 - 4	
Earth Terminal									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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