

1-phase filters
FN 2010

General purpose EMI filter

schaffner
energy efficiency and reliability



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

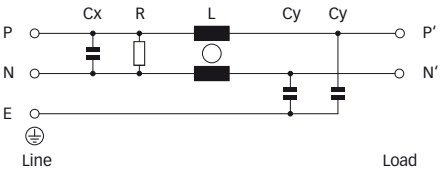
Approvals

RoHS 2002/95/EC

Technical specifications

Maximum continuous operating voltage:	250VAC, 50/60Hz
Operating frequency:	dc to 400Hz
Rated currents:	1 to 60A @ 40°C max.
High potential test voltage:	P –> E 2000VAC for 2 sec
	P –> E 2500VAC for 2 sec (B types)
	P –> N 760VAC for 2 sec (1 to 20A types)
	P –> N 1100VDC for 2 sec (30 and 60A types)
Temperature range (operation and storage):	-25°C to +100°C (25/100/21)
Flammability corresponding to:	UL 94V-2 or better
Design corresponding to:	UL 1283, CSA 22.2 No. 8 1986, IEC/EN 60939
MTBF @ 40°C/230V (Mil-HB-217F):	1,250,000 hours
	3,200,000 hours (B types)

Typical electrical schematic



Features and benefits

- FN 2010 filters are designed for easy and fast chassis mounting.
- FN 2010 filters are also 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.
- 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.
- FN 2010 filters are also available as two-stage filters (FN 2060, FN 2070 series) for more noisy environment.
- 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

Filter selection table

Filter*	Rated current @ 40°C (25°C)	Leakage current** @ 230VAC/50Hz	Inductance L	Capacitance Cx	Capacitance Cy	Resistance R	Input/Output connections			Weight
	[A]	[mA]	[mH]	[µF]	[nF]	[kΩ]				[g]
FN 2010-1-..	1 (1.15)	0.74	12	0.1	4.7	1000	-06	-07		65
FN 2010-3-..	3 (3.45)	0.74	2.5	0.1	4.7	1000	-06	-07		65
FN 2010-6-..	6 (6.9)	0.74	1	0.1	4.7	1000	-06	-07		65
FN 2010-10-..	10 (11.5)	0.74	0.8	0.1	4.7	1000	-06	-07		85
FN 2010-12-..	12 (13.8)	0.74	0.7	0.1	4.7	1000	-06	-07		85
FN 2010-16-..	16 (18.4)	0.74	0.7	0.1	4.7	1000	-06	-07		140
FN 2010-20-..	20 (23)	0.74	0.6	0.1	4.7	1000	-06	-07	-08	210
FN 2010-30-08	30 (34.5)	0.87	0.7	0.47	10	1000			-08	470
FN 2010-60-24	60 (69)	0.87	1	1.5	10	330			-24	1100
FN 2010A-1-..	1 (1.15)	0.074	12	0.1	0.47	1000	-06	-07		65
FN 2010A-3-..	3 (3.45)	0.074	2.5	0.1	0.47	1000	-06	-07		65
FN 2010A-6-..	6 (6.9)	0.074	1	0.1	0.47	1000	-06	-07		65
FN 2010A-10-..	10 (11.5)	0.074	0.8	0.1	0.47	1000	-06	-07		85
FN 2010A-12-..	12 (13.8)	0.074	0.7	0.1	0.47	1000	-06	-07		85
FN 2010A-16-..	16 (18.4)	0.074	0.7	0.1	0.47	1000	-06	-07		140
FN 2010A-20-..	20 (23)	0.074	0.6	0.1	0.47	1000	-06	-07	-08	210
FN 2010A-30-08	30 (34.5)	0.074	0.7	0.47	0.47	1000			-08	470
FN 2010A-60-24	60 (69)	0.074	1	1.5	0.47	330			-24	1100
FN 2010B-1-..	1 (1.15)	0.002	12	0.1		1000	-06	-07		65
FN 2010B-3-..	3 (3.45)	0.002	2.5	0.1		1000	-06	-07		65
FN 2010B-6-..	6 (6.9)	0.002	1	0.1		1000	-06	-07		65
FN 2010B-10-..	10 (11.5)	0.002	0.8	0.1		1000	-06	-07		85
FN 2010B-12-..	12 (13.8)	0.002	0.7	0.1		1000	-06	-07		85
FN 2010B-16-..	16 (18.4)	0.002	0.7	0.1		1000	-06	-07		140
FN 2010B-20-..	20 (23)	0.002	0.6	0.1		1000	-06	-07	-08	210
FN 2010B-30-08	30 (34.5)	0.002	0.7	0.47		1000			-08	470
FN 2010B-60-24	60 (69)	0.002	1	1.5		330			-24	1100

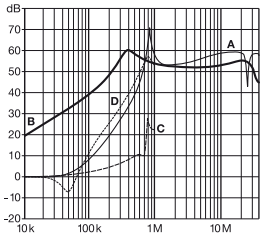
* To compile a complete part number, please replace the -.. with the required I/O connection style (e.g. FN 2010-30-08, FN 2010B-10-06).

** Maximum leakage under normal operating conditions. Note: if the neutral line is interrupted, worst case leakage could reach twice this level.

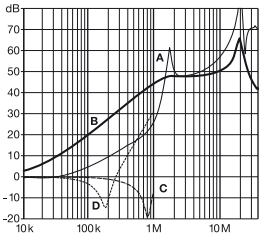
Typical filter attenuation

Per CISPR 17; A = 50Ω/50Ω sym; B = 50Ω/50Ω asym; C = 0.1Ω/100Ω sym; D = 100Ω/0.1Ω sym

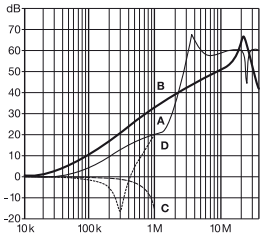
1 and 3A types



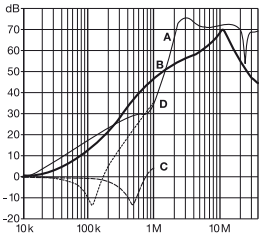
6 to 12A types



16 and 20A types

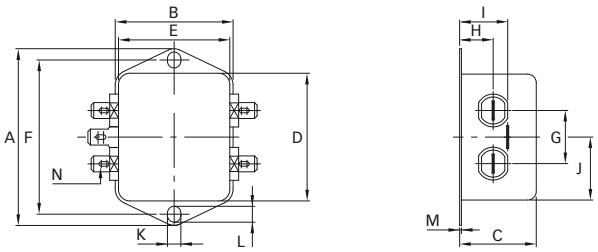


30 and 60A types

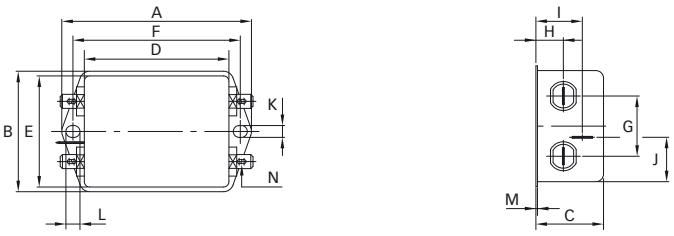


Mechanical data

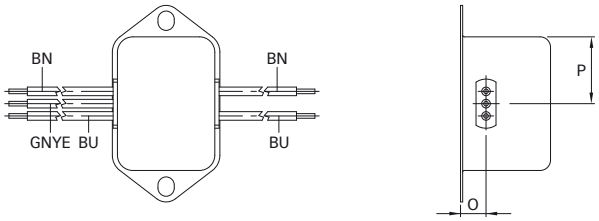
Connection style -06, 1 to 12A types



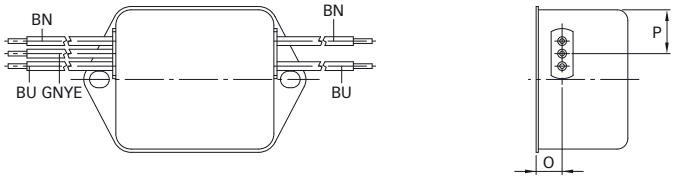
Connection style -06, 16 and 20A types



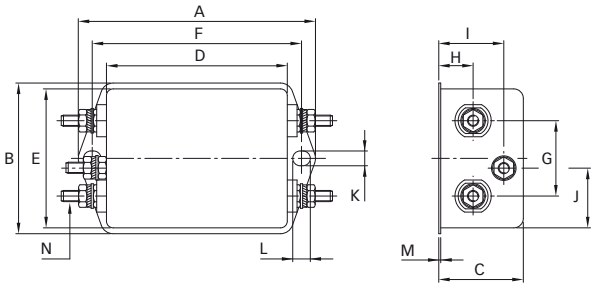
Connection style -07, 1 to 12A types (same dimensions as style -06)



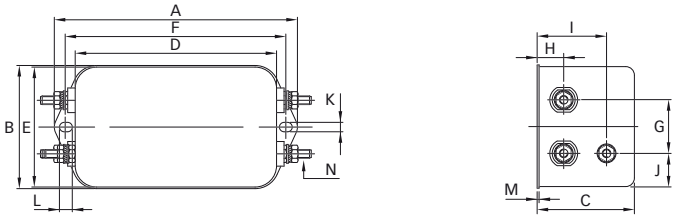
Connection style -07, 16 and 20A types (same dimensions as style -06)



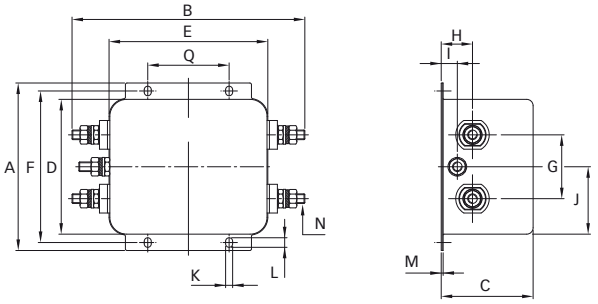
Connection style -08, 20A types



Connection style -08, 30A types



Connection style -24



Dimensions

	1A	3A	6A	10A	12A	16A	20A	30A	60A	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		
Connection style -24										
N									M6	
Q									51	±0.2

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