

## Multi-stage general purpose EMI filter

**SCHAFFNER**

energy efficiency and reliability



- Rated currents from 1 to 30A
- High differential and common-mode attenuation
- Optional medical versions (B type)
- Optional safety versions (A type)

### Approvals



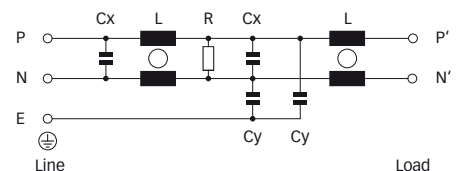
### Technical specifications

Maximum continuous operating voltage:	250VAC, 50/60Hz
Operating frequency:	dc to 400Hz
Rated currents:	1 to 30A @ 40°C max.
High potential test voltage:	P → E 2000VAC for 2 sec P → E 2500VAC for 2 sec (B types) P → N 1100VDC for 2 sec
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):	950,000 hours 1,650,000 hours (B types)

### Features and benefits

- FN 2060 two-stage filters are designed for easy and fast chassis mounting.
- FN 2060 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 high conducted attenuation performance, based on chokes with high saturation resistance and excellent thermal behavior.
- FN 2060 two-stage filters are designed for noisy applications requiring good differential and common-mode attenuation.
- FN 2060 filters are also available as single-stage filters (FN 2010 series).
- Various terminal options allow you to select the desired connection style.

### Typical electrical schematic



### Typical applications

- Electrical and electronic equipment
- Consumer goods
- Household equipment
- Building automation
- Industrial applications
- Machinery
- Medical equipment
- Electronic data processing equipment
- Office automation and datacom equipment
- Various noisy applications requiring good filter performance

Filter selection table

Filter*	Rated current @ 40°C (25°C)	Leakage current** @ 230VAC/50Hz	Inductance L	Capacitance Cx Cy		Resistance R	Input/Output connections			Weight
	[A]	[mA]	[mH]	[µF]	[nF]	[kΩ]				[g]
FN 2060-1-..	1 (1.2)	0.734	12	0.22	4.7	1000	-06	-07		120
FN 2060-3-..	3 (3.5)	0.734	2.5	0.22	4.7	1000	-06	-07		120
FN 2060-6-..	6 (6.9)	0.734	0.97	0.22	4.7	1000	-06	-07		120
FN 2060-10-..	10 (11.5)	0.734	0.8	0.47	4.7	470	-06	-07		190
FN 2060-12-..	12 (13.8)	0.734	0.58	0.47	4.7	470	-06	-07		190
FN 2060-16-..	16 (18.4)	0.734	0.65	0.33	4.7	1000	-06	-07	-08	260
FN 2060-20-..	20 (23)	0.734	0.6	1	4.7	220	-06		-08	480
FN 2060-30-08	30 (34.5)	0.867	0.6	1	10	220			-08	950
FN 2060A-1-..	1 (1.2)	0.04	12	0.22	0.47	1000	-06	-07		120
FN 2060A-3-..	3 (3.5)	0.04	2.5	0.22	0.47	1000	-06	-07		120
FN 2060A-6-..	6 (6.9)	0.04	0.97	0.22	0.47	1000	-06	-07		120
FN 2060A-10-..	10 (11.5)	0.04	0.8	0.47	0.47	470	-06	-07		190
FN 2060A-12-..	12 (13.8)	0.04	0.58	0.47	0.47	470	-06	-07		190
FN 2060A-16-..	16 (18.4)	0.04	0.65	0.33	0.47	1000	-06	-07	-08	260
FN 2060A-20-..	20 (23)	0.04	0.6	1	0.47	220	-06		-08	480
FN 2060A-30-08	30 (34.5)	0.04	0.6	1	0.47	220			-08	950
FN 2060B-1-..	1 (1.2)	0.002	12	0.22		1000	-06	-07		120
FN 2060B-3-..	3 (3.5)	0.002	2.5	0.22		1000	-06	-07		120
FN 2060B-6-..	6 (6.9)	0.002	0.97	0.22		1000	-06	-07		120
FN 2060B-10-..	10 (11.5)	0.002	0.8	0.47		470	-06	-07		190
FN 2060B-12-..	12 (13.8)	0.002	0.58	0.47		470	-06	-07		190
FN 2060B-16-..	16 (18.4)	0.002	0.65	0.33		1000	-06	-07	-08	260
FN 2060B-20-..	20 (23)	0.002	0.6	1		220	-06		-08	480
FN 2060B-30-08	30 (34.5)	0.002	0.6	1		220			-08	950

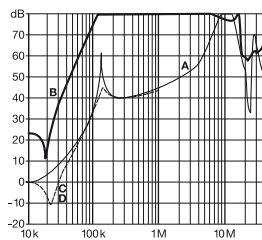
\* To compile a complete part number, please replace the -.. with the required I/O connection style (e.g. FN 2060-30-08, FN 2060B-10-06).

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

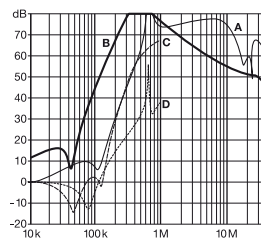
Typical filter attenuation

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

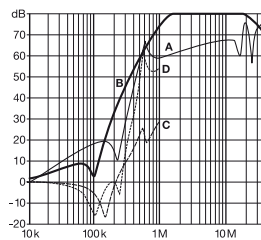
1A types



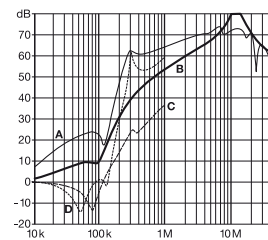
3 to 12A types



16A types

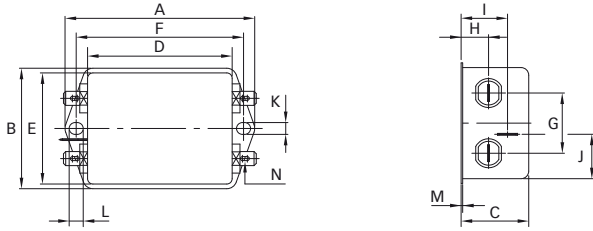


20 and 30A types

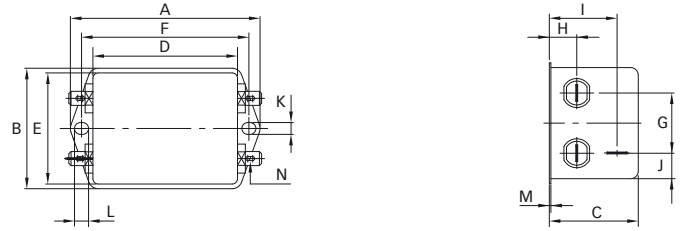


**Mechanical data**

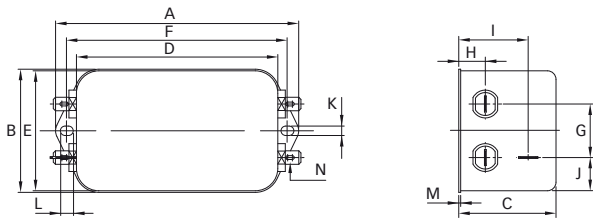
Connection style -06, 1 to 12A types



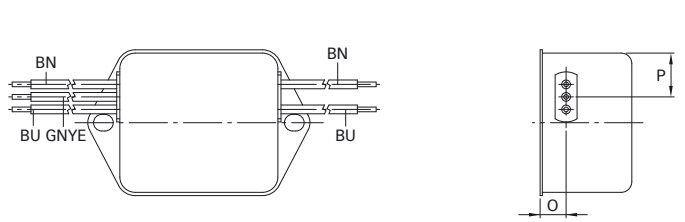
Connection style -06, 16A types



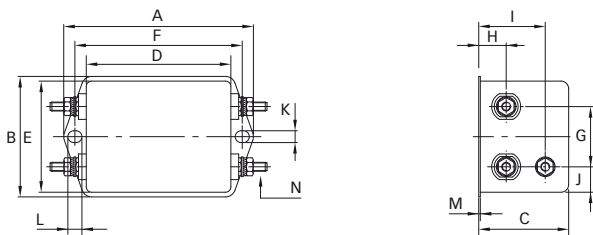
Connection style -06, 20A types



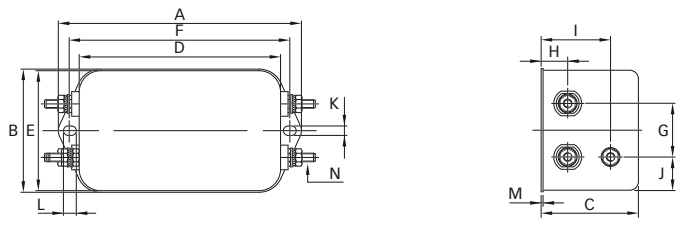
Connection style -07, 1 to 16A types (same dimensions as style -06)



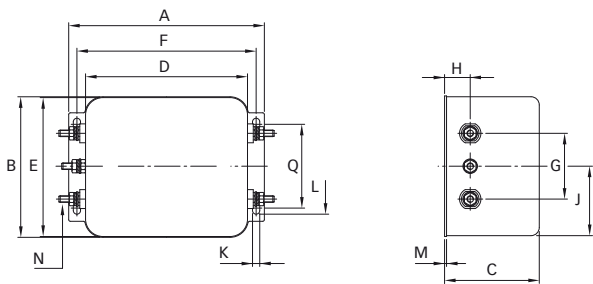
Connection style -08, 16A types



Connection style -08, 20A types



Connection style -08, 30A types



**Dimensions**

	1A	3A	6A	10A	12A	16A	20A	30A	Tolerances
<b>A</b>	71	71	71	85	85	85	113.5 ±1	119 ±1	±0.5
<b>B</b>	46.6	46.6	46.6	54	54	54	57.5 ±1	85.5 ±1	±0.5
<b>C</b>	29.3	29.3	29.3	30.3	30.3	40.3	45.4 ±1	57.6 ±1	±0.5
<b>D</b>	50.5	50.5	50.5	64.8	64.8	64.8	94 ±1	98.5 ±1	±0.5
<b>E</b>	44.5	44.5	44.5	49.8	49.8	49.8	56	84.5	±0.5
<b>F</b>	61	61	61	75	75	75	103	109	±0.3
<b>G</b>	21	21	21	27	27	27	25	40	±0.2
<b>H</b>	10.8	10.8	10.8	12.3	12.3	12.3	12.4	15.6	±0.5
<b>I</b>	19.3	19.3	19.3	20.8	20.8	29.8	32.4		±0.5
<b>J</b>	20.1	20.1	20.1	19.9	19.9	11.4	15.5	42.25	±0.5
<b>K</b>	5.3	5.3	5.3	5.3	5.3	5.3	4.4	4.4	
<b>L</b>	6.3	6.3	6.3	6.3	6.3	6.3	6	7.4	
<b>M</b>	0.7	0.7	0.7	0.7	0.7	0.7	0.9	1.2	
<b>Connection style -06</b>									
<b>N</b>	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		
<b>Connection style -07</b>									
<b>O</b>	8.3	8.3	8.3	8.3	8.3	8.3			±0.5
<b>P</b>	14	14	14	14.9	14.9	14.9			±0.5
<b>AWG type wire</b>	AWG 20	AWG 20	AWG 18	AWG 18	AWG 16	AWG 16			
<b>Wire length</b>	140	140	140	140	140	140			+5
<b>Connection style -08</b>									
<b>N</b>						M4	M4	M4	
<b>Q</b>								51	±0.2

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