

# Multi-stage General Purpose AC/DC EMI Filter



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



### Performance indicators

Attenuation performance



## Technical specifications

<b>Rated voltage*</b>	250 VAC, 50/60 Hz; 250 VDC
<b>Operating frequency</b>	DC to 400 Hz
<b>Rated currents</b>	1 to 30 A @ 40°C max.
<b>High potential test voltage</b>	P → PE 2000 VAC for 2 sec P → PE 2500 VAC for 2 sec (B types) P → N 1100 VDC for 2 sec
<b>Temperature range (operation and storage)</b>	-25°C to +100°C (25/100/21)
<b>Certified to</b>	UL 1283, CSA 22.2 No. 8 1986, IEC/EN 60939 (applies to AC and DC applications)
<b>Flammability corresponding to</b>	UL 94 V-2 or better
<b>Design corresponding to</b>	UL 1283, CSA 22.2 No. 8 1986, IEC/EN 60939
<b>MTBF @ 40°C/230 V (Mil-HB-217F)</b>	1,650,000 hours (B types) 950,000 hours

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

### Approvals



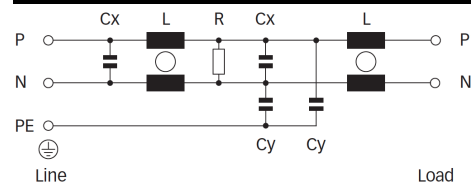
### Features and benefits

- 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 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

### Typical electrical schematic



### Filter selection table

Filter*	Rated current	Leakage current** @ 250 VAC/50 Hz (@ 120 VAC/60 Hz)	Inductance L	Capacitance		Resistance R	Input/Output connections			Weight [g]
	@ 40°C (25°C)			Cx	Cy		-06	-07	-08	
	[A]	[mA]	[mH]	[µF]	[nF]	[kΩ]				
<b>FN 2060-1-..</b>	1 (1.2)	0.66 (0.38)	12	0.22	4.7	1000	-06	-07		120
<b>FN 2060-3-..</b>	3 (3.5)	0.66 (0.38)	2.5	0.22	4.7	1000	-06	-07		120
<b>FN 2060-6-..</b>	6 (6.9)	0.66 (0.38)	0.97	0.22	4.7	1000	-06	-07		120
<b>FN 2060-10-..</b>	10 (11.5)	0.66 (0.38)	0.8	0.47	4.7	470	-06	-07		190
<b>FN 2060-12-..</b>	12 (13.8)	0.66 (0.38)	0.58	0.47	4.7	470	-06	-07		190
<b>FN 2060-16-..</b>	16 (18.4)	0.66 (0.38)	0.65	0.33	4.7	1000	-06	-07	-08	260
<b>FN 2060-20-..</b>	20 (23)	0.66 (0.38)	0.6	1	4.7	220	-06		-08	480
<b>FN 2060-30-08</b>	30 (34.5)	0.79 (0.45)	0.6	1	10	220			-08	950
<b>FN 2060A-1-..</b>	1 (1.2)	0.07 (0.04)	12	0.22	0.47	1000	-06	-07		120
<b>FN 2060A-3-..</b>	3 (3.5)	0.07 (0.04)	2.5	0.22	0.47	1000	-06	-07		120
<b>FN 2060A-6-..</b>	6 (6.9)	0.07 (0.04)	0.97	0.22	0.47	1000	-06	-07		120
<b>FN 2060A-10-..</b>	10 (11.5)	0.07 (0.04)	0.8	0.47	0.47	470	-06	-07		190
<b>FN 2060A-12-..</b>	12 (13.8)	0.07 (0.04)	0.58	0.47	0.47	470	-06	-07		190
<b>FN 2060A-16-..</b>	16 (18.4)	0.07 (0.04)	0.65	0.33	0.47	1000	-06	-07	-08	260
<b>FN 2060A-20-..</b>	20 (23)	0.07 (0.04)	0.6	1	0.47	220	-06		-08	480
<b>FN 2060A-30-08</b>	30 (34.5)	0.07 (0.04)	0.6	1	0.47	220			-08	950
<b>FN 2060B-1-..</b>	1 (1.2)	0.00	12	0.22		1000	-06	-07		120
<b>FN 2060B-3-..</b>	3 (3.5)	0.00	2.5	0.22		1000	-06	-07		120
<b>FN 2060B-6-..</b>	6 (6.9)	0.00	0.97	0.22		1000	-06	-07		120
<b>FN 2060B-10-..</b>	10 (11.5)	0.00	0.8	0.47		470	-06	-07		190
<b>FN 2060B-12-..</b>	12 (13.8)	0.00	0.58	0.47		470	-06	-07		190
<b>FN 2060B-16-..</b>	16 (18.4)	0.00	0.65	0.33		1000	-06	-07	-08	260
<b>FN 2060B-20-..</b>	20 (23)	0.00	0.6	1		220	-06		-08	480
<b>FN 2060B-30-08</b>	30 (34.5)	0.00	0.6	1		220			-08	950

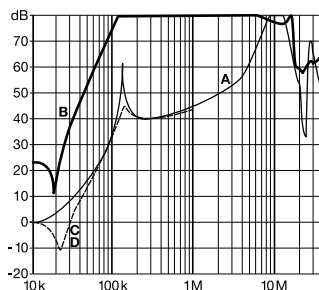
\* To compile a complete part number, please replace the .. with the required I/O connection style (e.g. FN 2060-30-08, FN 2060B-10-06).

\*\* Maximum leakage under usual AC operating conditions (acc. IEC 60939-3). Note: if the neutral line is interrupted, worst case leakage could reach twice this level. Leakage current for DC application is 0 mA;

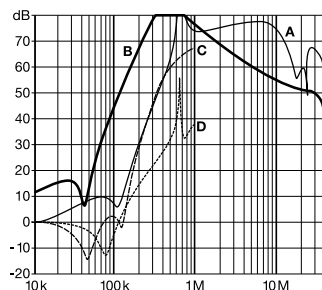
### Typical filter attenuation

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

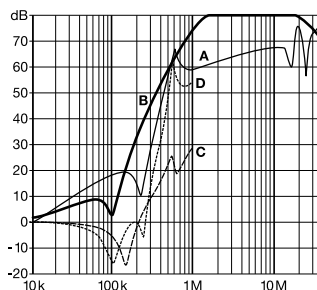
1 A types



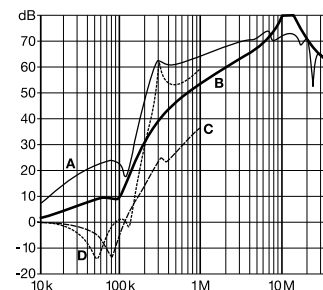
3 to 12 A types



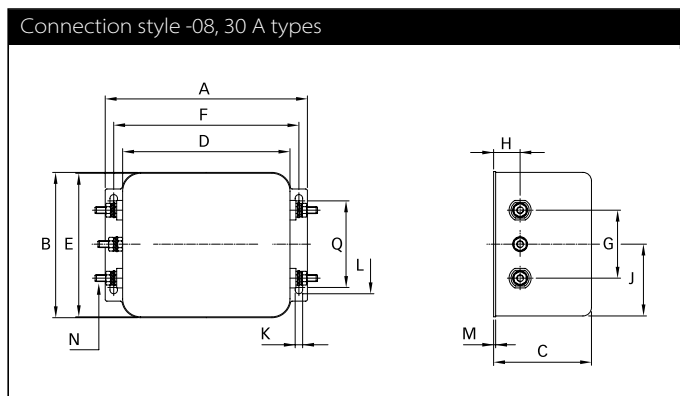
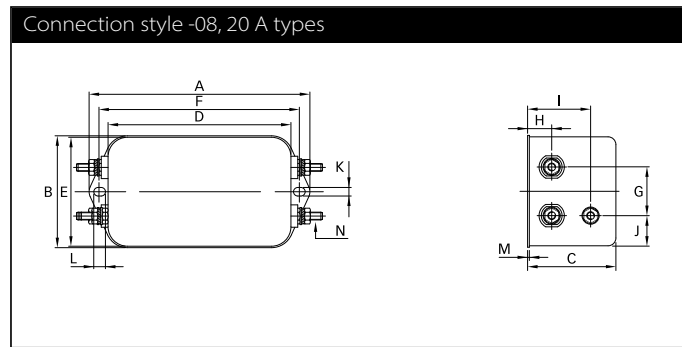
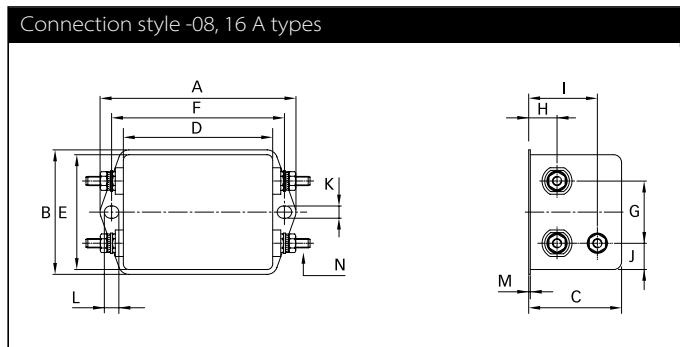
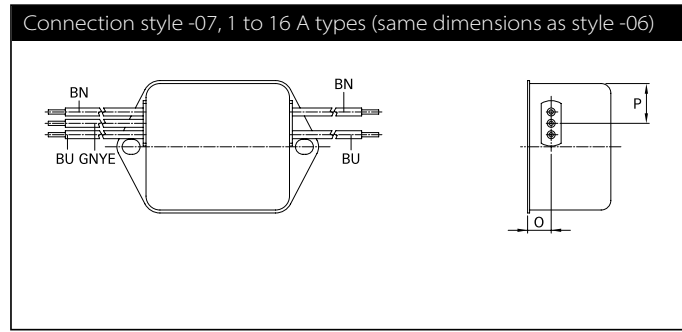
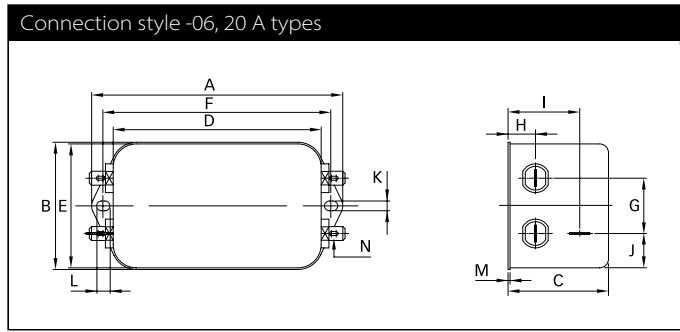
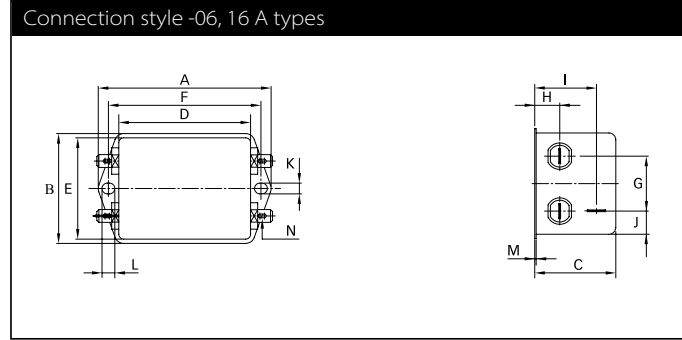
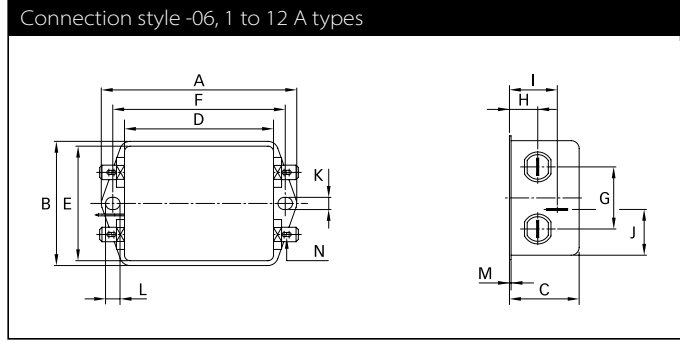
16 A types



20 and 30 A types



**Mechanical data**



	1 A	3 A	6 A	10 A	12 A	16 A	20 A	30 A	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	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			
<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
<b>Recommended torque (Nm)</b>						1.2 - 1.3	1.2 - 1.3	1.2 - 1.3	

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

Please visit [www.schaffner.com](http://www.schaffner.com) to find more details on filter connections.



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