

# 1-phase filters FN 660

## Two-stage general performance EMI filter

**SCHAFFNER**

safety for electronic systems



- Rated currents from 1 to 20A
- High differential and common-mode attenuation
- Optional medical versions (B type)

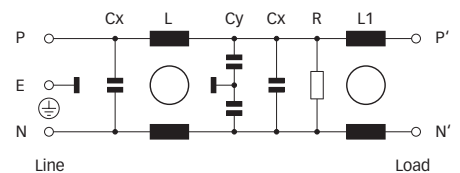
### Approvals



### Technical specifications

Maximum continuous operating voltage:	250VAC, 50/60Hz
Operating frequency:	dc to 400Hz
Rated currents:	1 to 20A @ 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
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):	350,000 hours

### Typical electrical schematic



### Features and benefits

- FN 660 two-stage filters are designed for easy and fast chassis mounting.
- FN 660 filters are also available as B versions without Y-capacitors for medical 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 660 filters are designed for noisy applications requiring good differential and common-mode attenuation.
- Various terminal options allow you to select the desired connection style.
- FN 660 filters are also available as single-stage filters (FN 610, FN 612 series).
- Custom-specific versions on request.

### Typical applications

- Electrical and electronic equipment
- Consumer goods
- Power supplies
- Building automation
- Medical equipment
- Office automation equipment
- Datacom equipment

Filter selection table

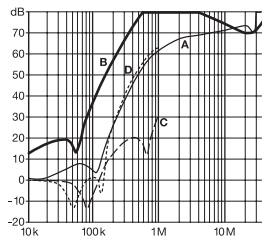
Filter	Rated current @ 40°C (25°C) [A]	Leakage current* @ 230VAC/50Hz [μA]	Inductance		Capacitance		Resistance R [kΩ]	Input/Output connections				Weight			
			L	L1	Cx	Cy		-03	-06	-07	-10	[g]	[g]		
FN 660-1-..	1 (1.15)	190	3	3	150	2.2	1000			-06	-07			115	125
FN 660-3-..	3 (3.4)	190	2	2	150	2.2	1000			-06	-07			170	180
FN 660-6-..	6 (6.9)	190	0.75	0.75	150	2.2	1000			-06	-07			170	180
FN 660-10-..	10 (11.5)	190	0.45	0.45	150	2.2	1000			-06	-07			230	240
FN 660-16-..	16 (18.4)	190	0.44	0.44	150	2.2	1000			-03	-06	-10	290	260	290
FN 660-20-..	20 (23)	190	0.48	0.48	150	2.2	1000			-03	-06	-10	600	590	640
FN 660B-1-..	1 (1.15)	2	3	3	150		1000			-06	-07			115	125
FN 660B-3-..	3 (3.4)	2	2	2	150		1000			-06	-07			170	180
FN 660B-6-..	6 (6.9)	2	0.75	0.75	150		1000			-06	-07			170	180
FN 660B-10-..	10 (11.5)	2	0.45	0.45	150		1000			-06	-07			230	240
FN 660B-16-..	16 (18.4)	2	0.44	0.44	150		1000			-03	-06	-10	290	260	290
FN 660B-20-..	20 (23)	2	0.48	0.48	150		1000			-03	-06	-10	600	590	640

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

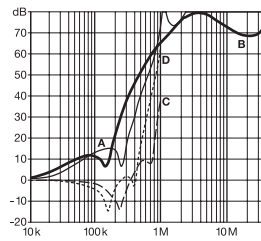
Typical filter attenuation

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

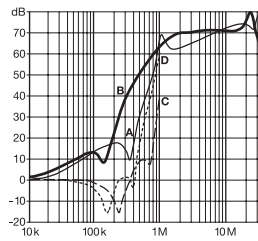
1 and 3A types



6 and 10A types

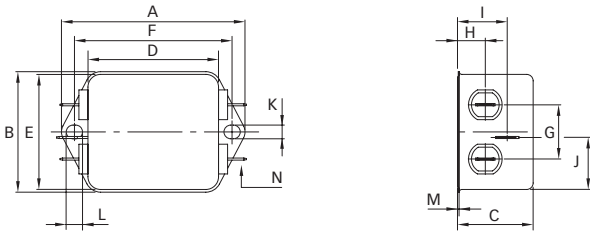


16 and 20A types

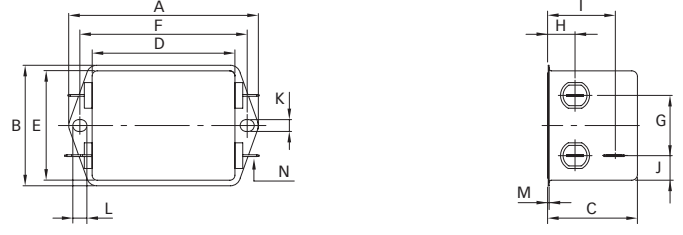


**Mechanical data**

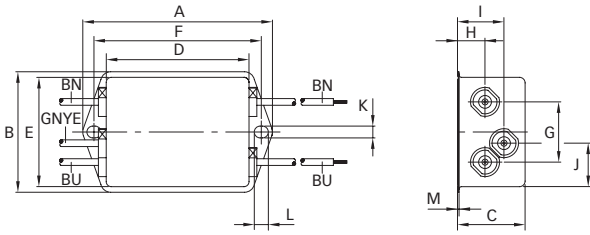
Connection style -06, 1 to 6A types



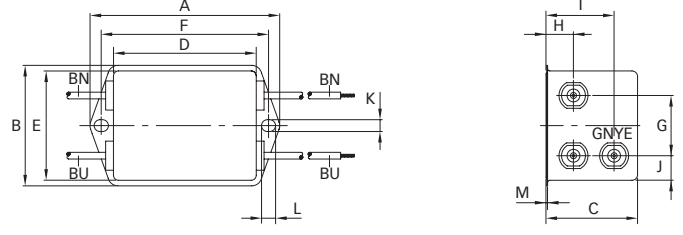
Connection style -06, 10 and 16A types



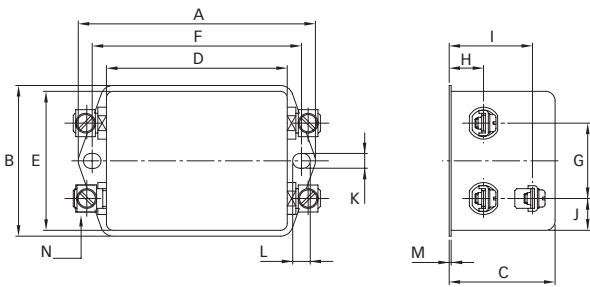
Connection style -07, 1 to 6A types



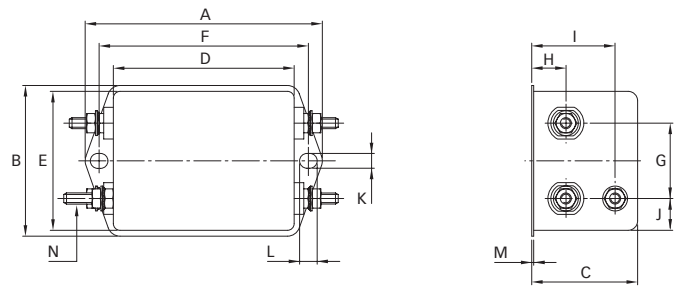
Connection style -07, 10A types



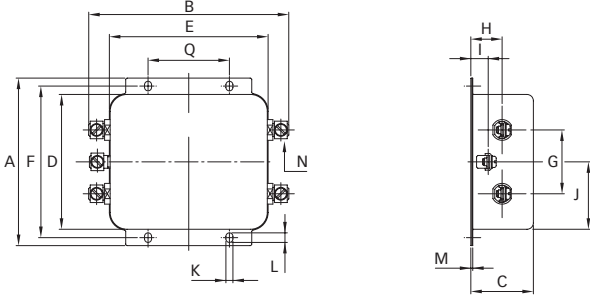
Connection style -03, 16A types



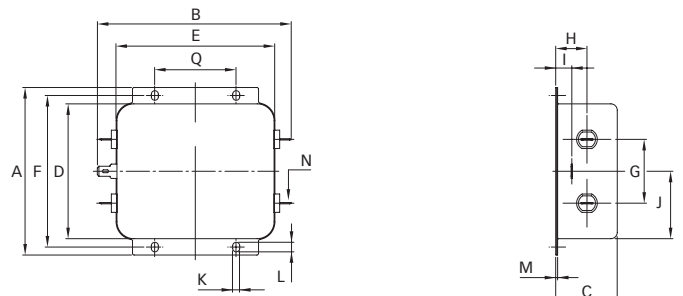
Connection style -10, 16A types



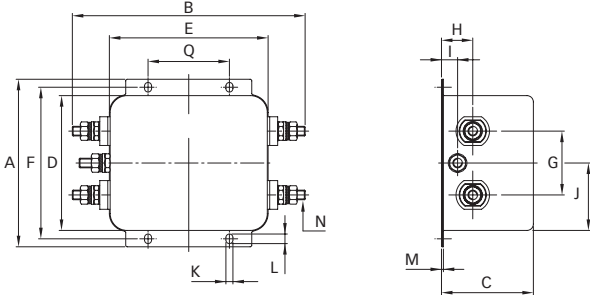
Connection style -03, 20A types



Connection style -06, 20A types



Connection style -10, 20A types



**Dimensions**

	1A	3A	6A	10A	16A	20A	Tolerances
<b>A</b>	71	85	85	85	85	105	±0.5
<b>B</b>	46.6 ±1	54	54	54	54	126 ±1	±0.5
<b>C</b>	29.3	30.3	30.3	40.3	40.3	38	±1
<b>D</b>	50.5	64.8	64.8	64.8	64.8	84.5	±1
<b>E</b>	44.5	49.8	49.8	49.8	49.8	98.5	±1
<b>F</b>	61	75	75	75	75	95	±0.2
<b>G</b>	21	27	27	27	27	40	±0.5
<b>H</b>	10.8	12.3	12.3	12.3	12.6	19	±0.5
<b>I</b>	19.3	20.8	20.8	29.8	29.8	9.5	±0.5
<b>J</b>	20.3	27.5	27.5	11.4	11.4	42.25	±0.5
<b>K</b>	5.3	5.3	5.3	5.3	5.3	4.4	
<b>L</b>	6.3	6.3	6.3	6.3	6.3	6	
<b>M</b>	0.7	0.7	0.7	0.7	0.7		
<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	
<b>Q</b>						51	±0.1
<b>Connection style -03</b>							
<b>N</b>					M4	M4	
<b>Connection style -07</b>							
<b>AWG type wire</b>	AWG 20	AWG 18	AWG 16	AWG 14			
<b>Wire length</b>	140	140	140	140			+5
<b>Connection style -10</b>							
<b>N</b>					UNC 8-32	UNC 8-32	

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

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