

1-phase filters
FN 660

Two-stage general performance EMI filter

safety for electronic systems



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

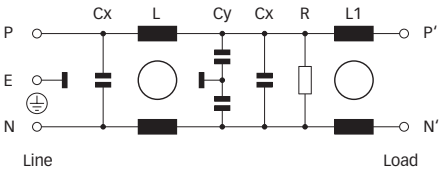
Approvals

RoHS 2002/95/EC

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 electronical equipment
- Consumer goods
- Power supplies
- Building automation
- Medical equipment
- Office automation equipment
- Datacom equipment

Filter selection table

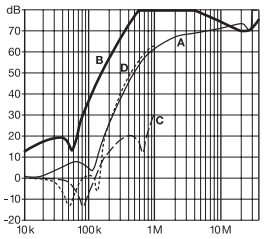
Filter	Rated current @ 40°C (25°C)	Leakage current* @ 230VAC/50Hz	Inductance L	Inductance L1	Capacitance Cx	Capacitance Cy	Resistance R	Input/Output connections				-03	-06	-07	Weight -10
	[A]	[µA]	[mH]	[mH]	[nF]	[nF]	[kΩ]					[g]	[g]	[g]	[g]
FN 660-1-..	1 (1.15)	190	3	3	150	2.2	1000		-06	-07			115	125	
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.

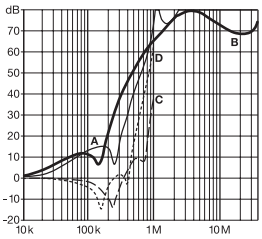
Typical filter attenuation

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

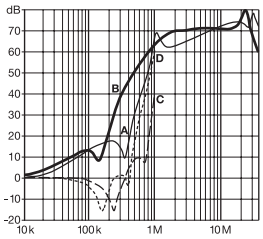
1 and 3A types



6 and 10A types

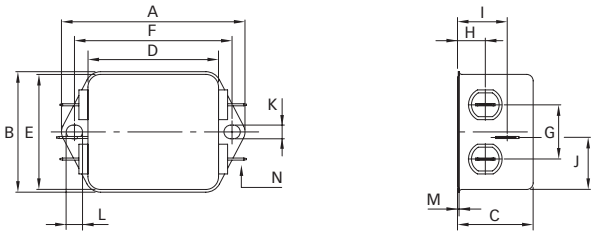


16 and 20A types

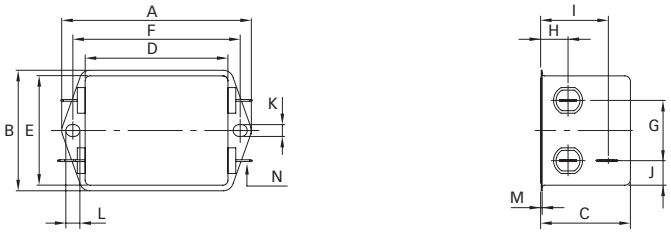


Mechanical data

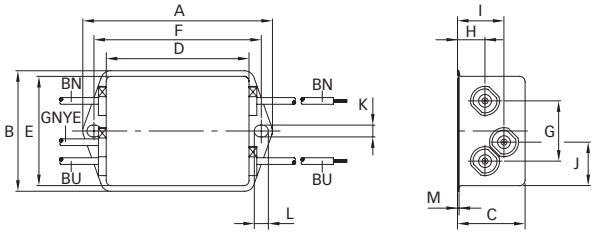
Connection style -06, 1 to 6A types



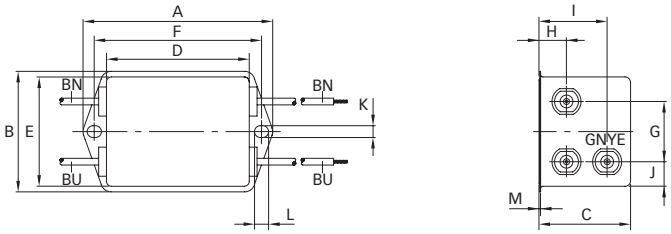
Connection style -06, 10 and 16A types



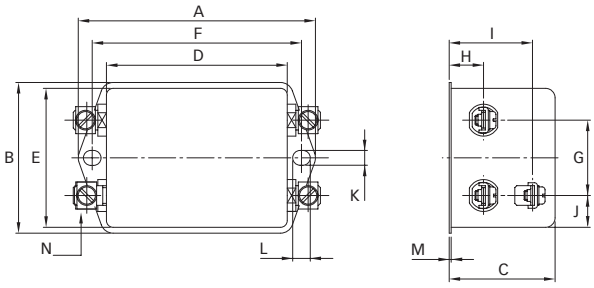
Connection style -07, 1 to 6A types



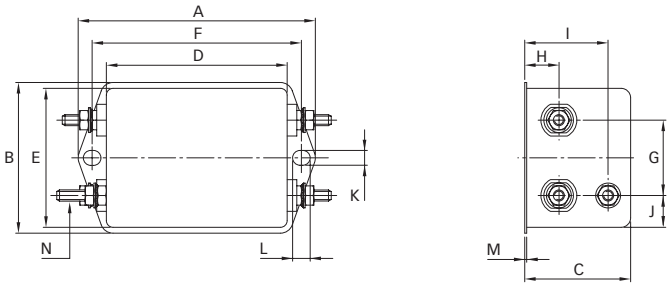
Connection style -07, 10A types



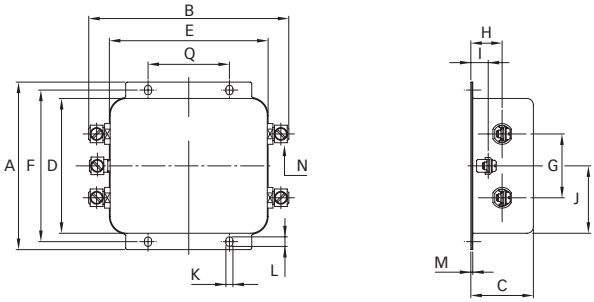
Connection style -03, 16A types



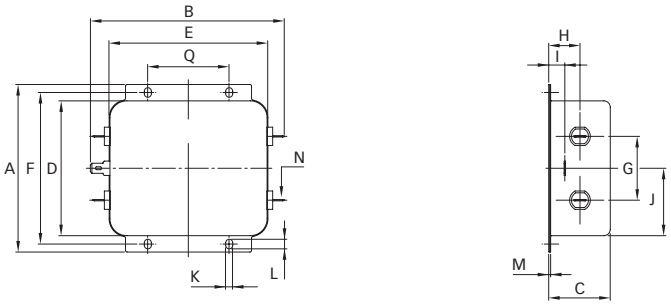
Connection style -10, 16A types



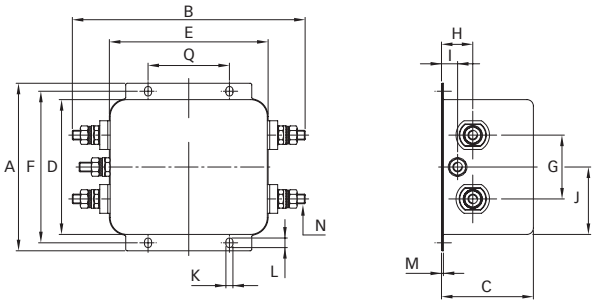
Connection style -03, 20A types



Connection style -06, 20A types



Connection style -10, 20A types



Dimensions

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

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