

General Purpose EMI Filter



- Rated currents from 1 to 60 A
- High differential-mode attenuation
- Optional medical version (B type)
- Optional safety version (A type)

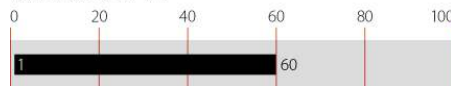


Performance indicators

Attenuation performance



Rated current [A]



Technical specifications

Operating voltage	110/250 VAC, 50/60 Hz
Operating frequency	dc to 400 Hz
Rated currents	1 to 60 A @ 40 °C max.
High potential test voltage	P → PE 2000 VAC for 2 sec P → N 1100 VDC for 2 sec (30 and 60 A types) P → N 760 VAC for 2 sec (1 to 20 A types) P → PE 2500 VAC for 2 sec (B types)
Temperature range (operation and storage)	-25 °C to +100 °C (25/100/21)
Flammability corresponding to	UL 94 V-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 1,750,000 hours (B types)

Approvals



Features and benefits

FN 2020 filters are designed for easy and fast chassis mounting

FN 2020 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 2020 filters can be used to cover a broad range of usage and they offer a good size/ampere ratio

FN 2020 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

Typical electrical schematic

□

Filter selection table

Filter*	Rated current	Leakage current**	Inductance	Capacitance		Resistance	Input/Output connections			Weight [g]
	@ 40 °C (25 °C)	@ 230 VAC/50 Hz	L	Cx	Cy	R				
	[A]	[mA]	[mH]	[μF]	[nF]	[kΩ]				
FN 2020-1-..	1 (1.15)	0.74	12	0.15	4.7	1000	-06	-07		80
FN 2020-3-..	3 (3.45)	0.74	2.5	0.15	4.7	1000	-06	-07		80
FN 2020-6-..	6 (6.9)	0.74	1	0.15	4.7	1000	-06	-07		80
FN 2020-10-..	10 (11.5)	0.74	0.8	0.15	4.7	1000	-06	-07		85
FN 2020-12-..	12 (13.8)	0.74	0.7	0.15	4.7	1000	-06	-07		85
FN 2020-16-..	16 (18.4)	0.74	0.65	0.15	4.7	1000	-06	-07		140
FN 2020-20-..	20 (23)	0.74	0.6	0.15	4.7	1000	-06		-08	210
FN 2020-30-08	30 (34.5)	0.87	0.67	0.47	10	470			-08	470
FN 2020-60-24	60 (69)	0.87	1	1.5	10	220			-24	1100
FN 2020A-1-..	1 (1.15)	0.074	12	0.15	0.47	1000	-06	-07		80
FN 2020A-3-..	3 (3.45)	0.074	2.5	0.15	0.47	1000	-06	-07		80
FN 2020A-6-..	6 (6.9)	0.074	1	0.15	0.47	1000	-06	-07		80
FN 2020A-10-..	10 (11.5)	0.074	0.8	0.15	0.47	1000	-06	-07		85
FN 2020A-12-..	12 (13.8)	0.074	0.7	0.15	0.47	1000	-06	-07		85
FN 2020A-16-..	16 (18.4)	0.074	0.65	0.15	0.47	1000	-06	-07		140
FN 2020A-20-..	20 (23)	0.074	0.6	0.15	0.47	1000	-06		-08	210
FN 2020A-30-08	30 (34.5)	0.074	0.67	0.47	0.47	470			-08	470
FN 2020A-60-24	60 (69)	0.074	1	1.5	0.47	220			-24	1100
FN 2020B-1-..	1 (1.15)	0.002	12	0.15		1000	-06	-07		80
FN 2020B-3-..	3 (3.45)	0.002	2.5	0.15		1000	-06	-07		80
FN 2020B-6-..	6 (6.9)	0.002	1	0.15		1000	-06	-07		80
FN 2020B-10-..	10 (11.5)	0.002	0.8	0.15		1000	-06	-07		85
FN 2020B-12-..	12 (13.8)	0.002	0.7	0.15		1000	-06	-07		85
FN 2020B-16-..	16 (18.4)	0.002	0.65	0.15		1000	-06	-07		140
FN 2020B-20-..	20 (23)	0.002	0.6	0.15		1000	-06		-08	210
FN 2020B-30-08	30 (34.5)	0.002	0.67	0.47		470			-08	470
FN 2020B-60-24	60 (69)	0.002	1	1.5		220			-24	1100

* To compile a complete part number, please replace the .. with the required I/O connection style (e.g. FN 2020-30-08, FN 2020B-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

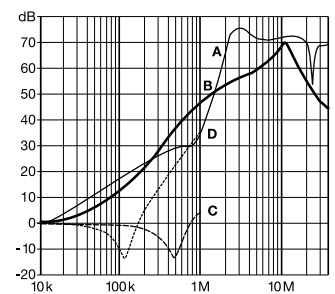
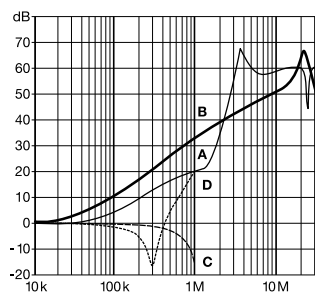
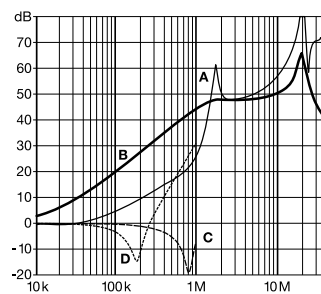
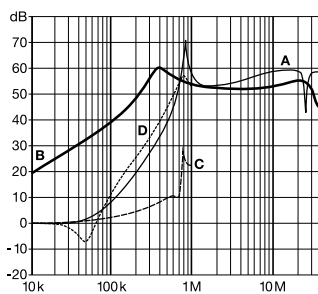
Per CISPR 17; A = 50 Ω/50 Ω sym; B = 50 Ω/50 Ω asym; C = 0.1 Ω/100 Ω sym; D = 100 Ω/0.1 Ω sym

1 and 3 A types

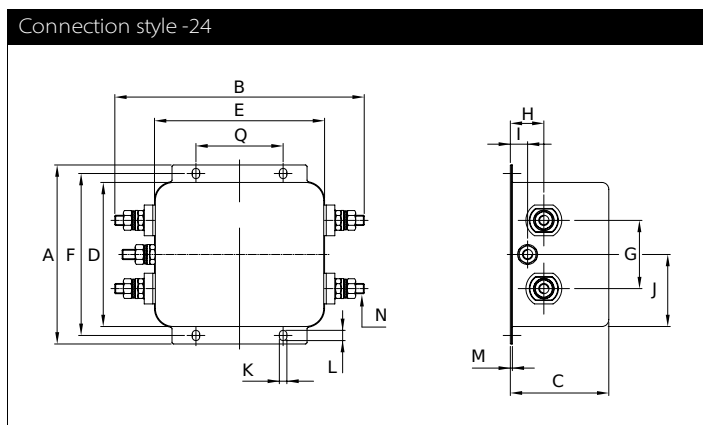
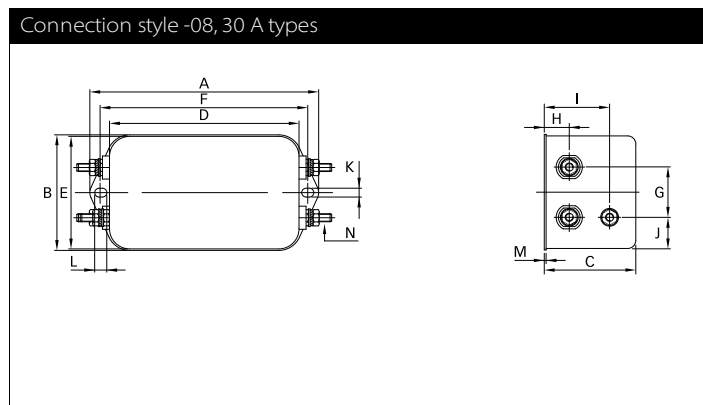
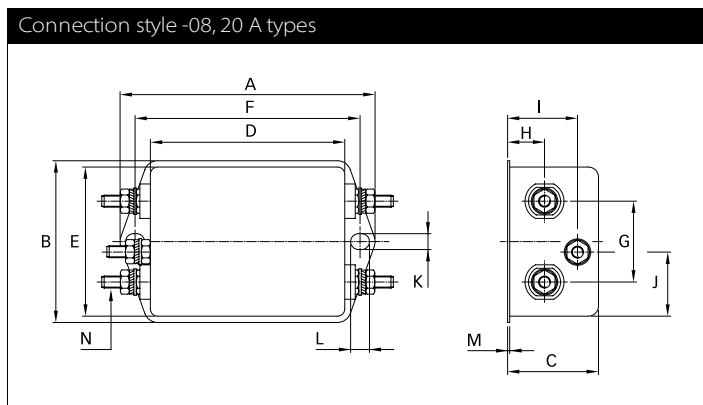
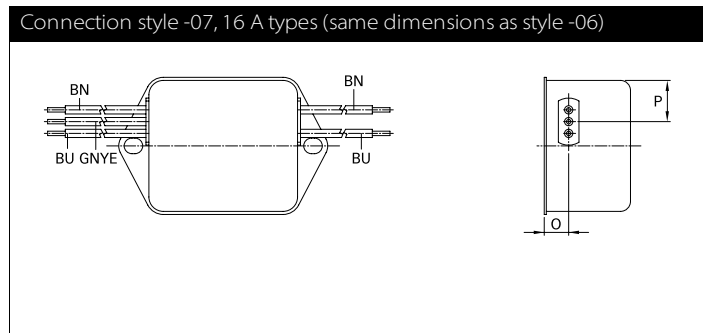
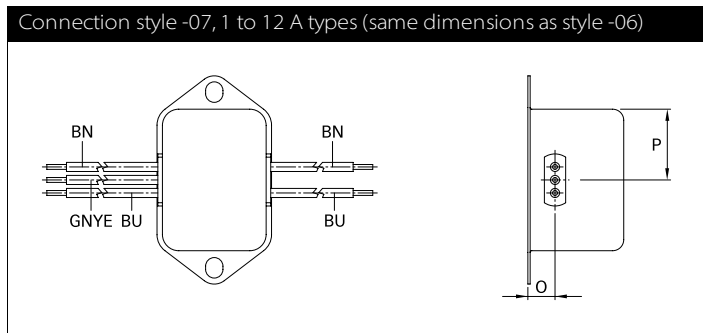
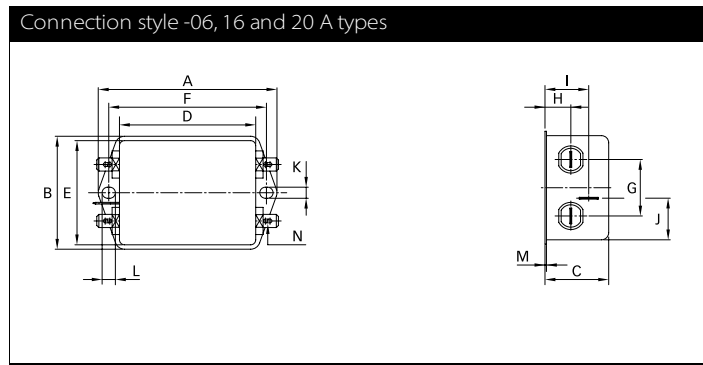
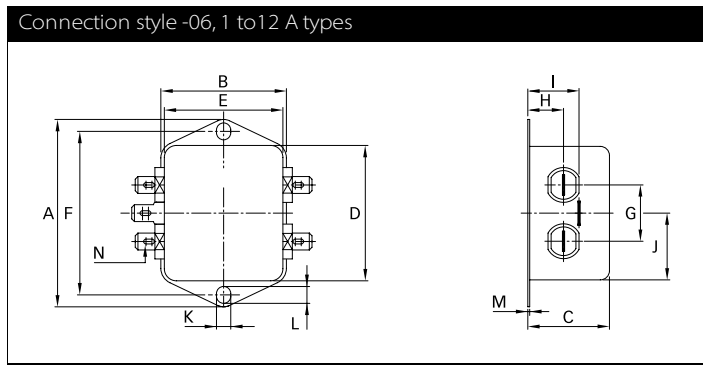
6 to 12 A types

16 and 20 A types

30 and 60 A types



Mechanical data



Dimensions

	1 A	3 A	6 A	10 A	12 A	16 A	20 A	30 A	60 A	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	29.3	29.3	29.3	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				±0.5
P	21.8	21.8	21.8	21.8	21.8	14				±0.5
AWG type wire	AWG 20	AWG 20	AWG 18	AWG 18	AWG 16	AWG 16				
Wire length	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 = 25.4 mm
Tolerances according: ISO 2768-m / EN 22768-m

Please visit www.schaffner.com to find more details on filter connections.

Headquarters, global innovation and development center

Switzerland

Schaffner Group

Nordstrasse 11
4542 Luterbach
T +41 32 6816 626
F +41 32 6816 630
info@schaffner.com
<http://www.schaffner.com>

Sales and application centers

China

Schaffner EMC Ltd. Shanghai

T20-3, No 565 Chuangye Road
Pudong New Area
201201 Shanghai
T +86 21 3813 9500
F +86 21 3813 9501 / 02
cschina@schaffner.com
<http://www.schaffner.com.cn/>

Finland

Schaffner Oy

Sauvonrinne 19 H
08500 Lohja
T +358 19 35 72 71
finlandsales@schaffner.com

France

Schaffner EMC S.A.S.

112 Quai de Bezons
Boîte postale 133
95100 Argenteuil
T +33 1 34 34 30 60
F +33 1 39 47 02 28
francesales@schaffner.com

Germany

Schaffner Deutschland GmbH

Schoemperlenstrasse 12B
76185 Karlsruhe
T +49 721 56910
F +49 721 569110
germanysales@schaffner.com

Italy

Schaffner EMC S.r.l.

Via Galileo Galilei 47
20092 Cinisello Balsamo (MI)
T +39 02 66 04 30 45/47
F +39 02 61 23 943
italysales@schaffner.com

Japan

Schaffner EMC K.K.

1-32-12, Kamiyama, Setagaya-ku
7F Mitsui-seimei Sangenjaya Bldg.
154-0011 Tokyo
T +81 3 5712 3650
F +81 3 5712 3651
japansales@schaffner.com
<http://www.schaffner.jp>

Singapore

Schaffner EMC Pte Ltd.

Blk 3015A Ubi Road 1
05-09 Kampong Ubi Industrial Estate
408705 Singapore
T +65 6377 3283
F +65 6377 3281
singaporesales@schaffner.com

Spain

Schaffner EMC España

Calle Caléndula 93, Miniparc III, Edificio E,
Alcobendas
Miniparc III, Edificio E
El Soto de la Moraleja
Alcobendas
28109 Madrid
M +34 618 176 133
T +34 917 912 900
F +34 917 912 901
spainsales@schaffner.com

Sweden

Schaffner EMC AB

Turebergstorg 1, 6
19147 Sollentuna
T +46 8 5792 1121 / 22
F +46 8 92 96 90
swedensales@schaffner.com

Switzerland

Schaffner EMV AG

Nordstrasse 11
4542 Luterbach
T +41 32 6816 626
F +41 32 6816 641
sales@schaffner.ch

Taiwan R.O.C.

Schaffner EMV Ltd.

6 Floor, No. 413
Rui Guang Road
114 Neihu District Taipei City
T +886 2 87525050
F +886 2 87518086
taiwansales@schaffner.com

Thailand

Schaffner EMC Co. Ltd.

Northern Region Industrial Estate
67 Moo 4 Tambon Ban Klang
Amphur Muang P.O. Box 14
51000 Lamphun
T +66 53 58 11 04
F +66 53 58 10 19
thailandsales@schaffner.com

UK

Schaffner Ltd.

5 Ashville Way
Molly Millars Lane
Wokingham
RG41 2PL Berkshire
T +44 118 9770070
F +44 118 9792969
uksales@schaffner.com
<http://www.schaffner.uk.com>

USA

Schaffner EMC Inc.

52 Mayfield Avenue
08837 Edison, New Jersey
T +1 800 367 5566
T +1 732 225 9533
F +1 732 225 4789
usasales@schaffner.com
<http://www.schaffner.com/us>

Schaffner MTC LLC

6722 Thirlane Road
24019 Roanoke, Virginia
T +1 276 228 7943
F +1 276 228 7953
<http://www.schaffner-mtc.com>

Schaffner Trencos LLC

2550 Brookpark Road
44134 Cleveland, Ohio
T +1 216 741 5282
F +1 216 741 4860
<http://www.schaffner-trencos.com>

To find your local partner within Schaffner's global network: www.schaffner.com

© 2014 Schaffner Group

The content of this document has been carefully checked and understood. However, neither Schaffner nor its subsidiaries assume any liability whatsoever for any errors or inaccuracies of this document and the consequences thereof. Published specifications are subject to change without notice. Product suitability for any area of application must ultimately be determined by the customer. In all cases, products must never be operated outside their published specifications. Schaffner does not guarantee the availability of all published products. This disclaimer shall be governed by substantive Swiss law and resulting disputes shall be settled by the courts at the place of business of Schaffner Holding AG. Latest publications and a complete disclaimer can be downloaded from the Schaffner website. All trademarks recognized.