

General Purpose AC/DC 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]



Approvals & Compliances



Features and Benefits

- FN 2020 filters are designed for easy and fast chassis mounting
- FN 2020 B versions without capacitors to earth comply to 1MOP for ME (medical equipment) acc. IEC 60601-1
- FN 2020 A versions with low capacitance to earth 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/ amperage 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

Technical Specifications

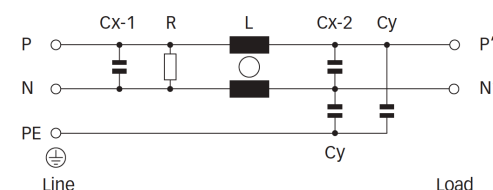
Rated voltage*	250 VAC, 50/60 Hz; 250 VDC
Operating frequency	DC to 400 Hz
Rated currents	1 to 60 A @ 40°C max
High potential test voltage	P → N 1100 VDC for 2 sec (30 and 60 A types) P → PE 2000 VAC for 2 sec P → PE 2500 VAC for 2 sec (B types) P → N 760 VAC for 2 sec (1 to 20 A types)
Temperature range (operation and storage)	-25°C to +100°C (25/100/21)**
Certified to	UL 1283, CSA 22.2 No. 8 1986, IEC/EN 60939 (applies to AC and DC applications)
Flammability corresponding to	Laces for -07 version: UL 94 VW-1 Terminal plastic for -06/-08 version: UL 94 V-0 Grommet for -07 version: UL 94 V-0
Design corresponding to	UL 1283, CSA 22.2 No. 8 1986, IEC/EN 60939
Overvoltage category	II acc. IEC 60664-1
Pollution degree	2 acc. IEC 60664-1
Altitude	2000m (above derating applies)**
MTBF @ 40°C/230 V (Mil-HB-217F)	1,250,000 hours 1,750,000 hours (B types)

* maximum RMS operating voltage at rated frequency or the maximum DC operating voltage
 ** for dedicated requests exceeding this specification (e.g. -40 °C or higher altitude) please contact your local Schaffner Sales office































Typical Applications

- Electrical and electronic equipment
- Consumer goods
- Household equipment
- Medical equipment
- Office automation equipment
- Datacom equipment

Typical electrical schematic



Filter Selection Table

Filter*	Buy	Rated current @ 40°C (25°C) [A]	Leakage current** @ 250 VAC/50 Hz (@ 120 VAC/60 Hz) [mA]	Power Loss @25°C/DC [W]	Inductance*** L [mH]	Capacitance***		Resistance*** R [kΩ]	Input/Output connections			Weight [g]
						Cx [μF]	Cy [nF]					
FN2020-1-..		1 (1.15)	0.66 (0.38)	0.8	12	0.15	4.7	1000	-06	-07		80
FN2020-3-..		3 (3.45)	0.66 (0.38)	1.2	2.5	0.15	4.7	1000	-06	-07		80
FN2020-6-..		6 (6.9)	0.66 (0.38)	1.5	1	0.15	4.7	1000	-06	-07		80
FN2020-10-..		10 (11.5)	0.66 (0.38)	2.9	0.8	0.15	4.7	1000	-06	-07		85
FN2020-12-..		12 (13.8)	0.66 (0.38)	3.6	0.7	0.15	4.7	1000	-06	-07		85
FN2020-16-..		16 (18.4)	0.66 (0.38)	2.5	0.65	0.15	4.7	1000	-06	-07	-08	140
FN2020-20-..		20 (23)	0.66 (0.38)	3.8	0.6	0.15	4.7	1000	-06		-08	210
FN2020-30-08		30 (34.5)	0.79 (0.45)	6.3	0.67	0.47	10	470			-08	470
FN2020-60-24		60 (69)	0.79 (0.45)	14.7	1	1.5	10	220			-24	1100
FN2020A-1-..		1 (1.15)	0.07 (0.04)	0.8	12	0.15	0.47	1000	-06	-07		80
FN2020A-3-..		3 (3.45)	0.07 (0.04)	1.2	2.5	0.15	0.47	1000	-06	-07		80
FN2020A-6-..		6 (6.9)	0.07 (0.04)	1.5	1	0.15	0.47	1000	-06	-07		80
FN2020A-10-..		10 (11.5)	0.07 (0.04)	2.9	0.8	0.15	0.47	1000	-06	-07		85
FN2020A-12-..		12 (13.8)	0.07 (0.04)	3.6	0.7	0.15	0.47	1000	-06	-07		85
FN2020A-16-..		16 (18.4)	0.07 (0.04)	2.5	0.65	0.15	0.47	1000	-06	-07	-08	140
FN2020A-20-..		20 (23)	0.07 (0.04)	3.8	0.6	0.15	0.47	1000	-06		-08	210
FN2020A-30-08		30 (34.5)	0.07 (0.04)	6.3	0.67	0.47	0.47	470			-08	470
FN2020A-60-24		60 (69)	0.07 (0.04)	14.7	1	1.5	0.47	220			-24	1100
FN2020B-1-..		1 (1.15)	0.00	0.8	12	0.15		1000	-06	-07		80
FN2020B-3-..		3 (3.45)	0.00	1.2	2.5	0.15		1000	-06	-07		80
FN2020B-6-..		6 (6.9)	0.00	1.5	1	0.15		1000	-06	-07		80
FN2020B-10-..		10 (11.5)	0.00	2.9	0.8	0.15		1000	-06	-07		85
FN2020B-12-..		12 (13.8)	0.00	3.6	0.7	0.15		1000	-06	-07		85
FN2020B-16-..		16 (18.4)	0.00	2.5	0.65	0.15		1000	-06	-07	-08	140
FN2020B-20-..		20 (23)	0.00	3.8	0.6	0.15		1000	-06		-08	210
FN2020B-30-08		30 (34.5)	0.00	6.3	0.67	0.47		470			-08	470
FN2020B-60-24		60 (69)	0.00	14.7	1	1.5		220			-24	1100

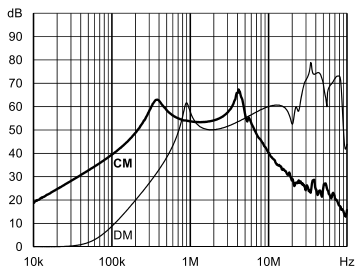
* To compile a complete part number, please replace the -.. with the required I/O connection style (e.g. FN 2020-30-08, FN 2020B-10-06).

** Maximum leakage under usual AC operating conditions (acc. IEC60939-3). Note: if the neutral line is interrupted, worst case leakage could reach twice this level.

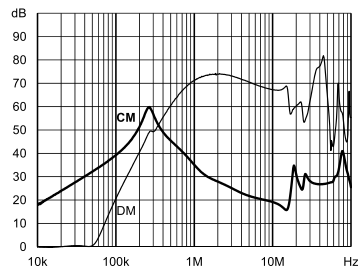
*** Tolerances apply: Inductance: -30/+50%, Capacitance: ±20%, Resistance: ±10%

Typical Filter Attenuation

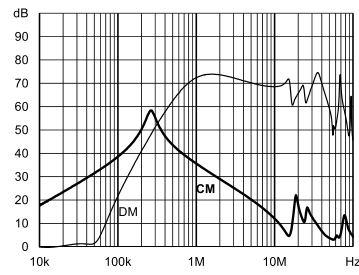
Per CISPR 17; CM=50 Ω/50 Ω sym; DM=50 Ω/50 Ω asym;



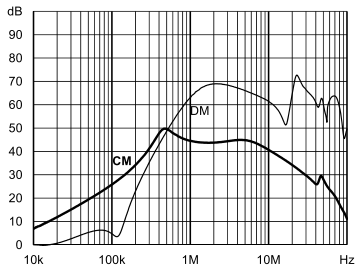
1 A: Standard type



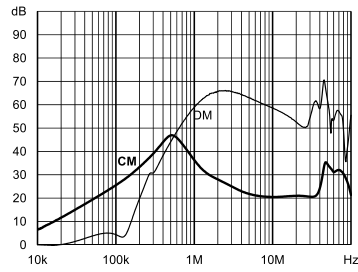
A type



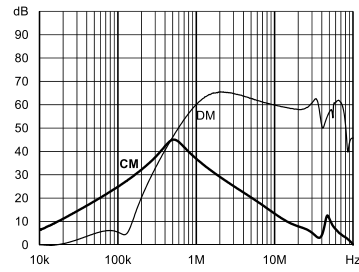
B type



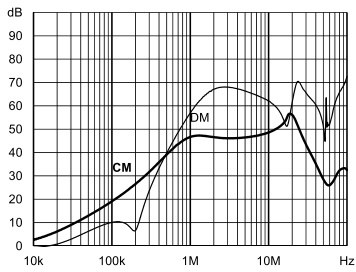
3 A: Standard type



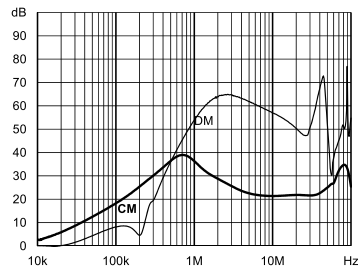
A type



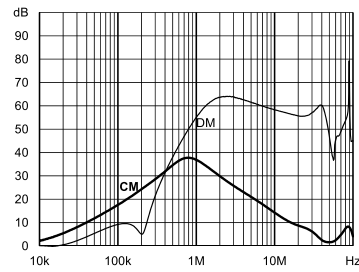
B type



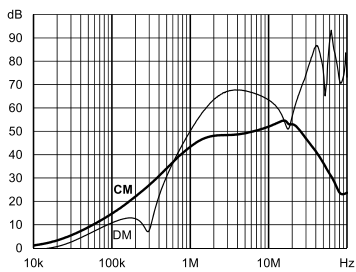
6 A: Standard type



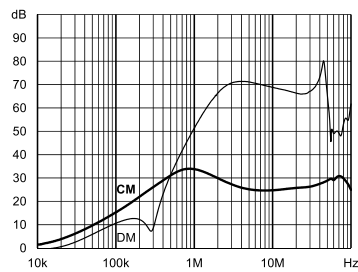
A type



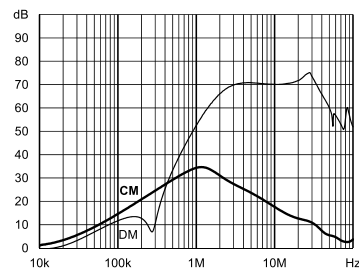
B type



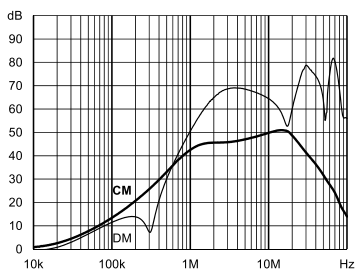
10 A: Standard type



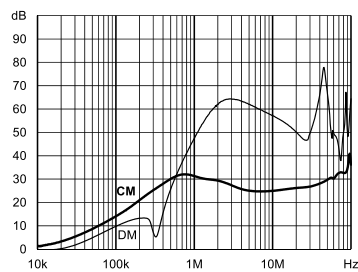
A type



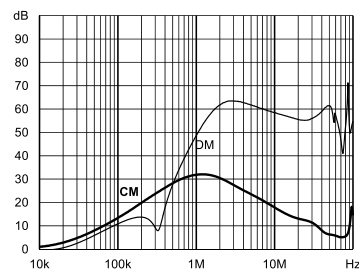
B type



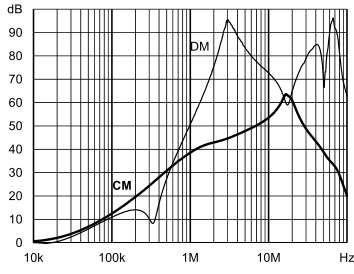
12 A: Standard type



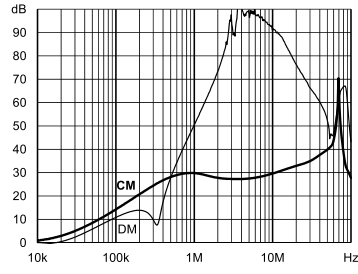
A type



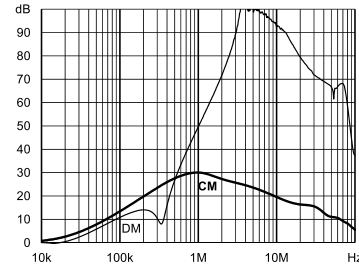
B type



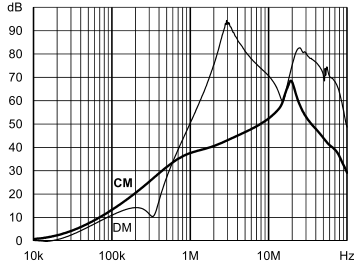
16 A: Standard type



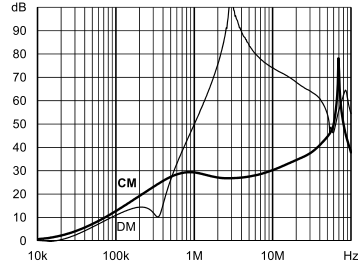
A type



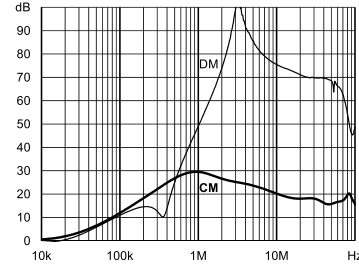
B type



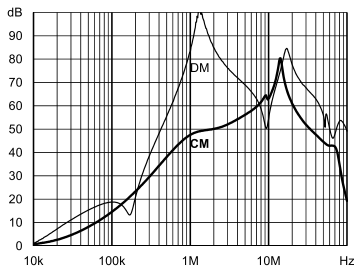
20 A: Standard type



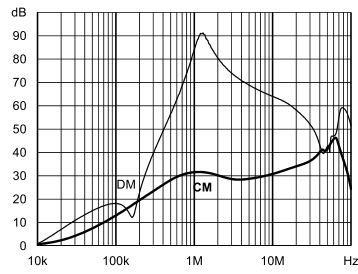
A type



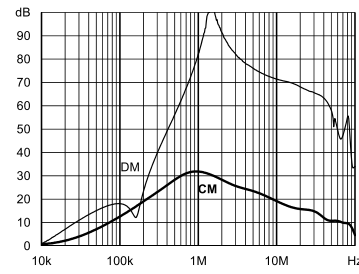
B type



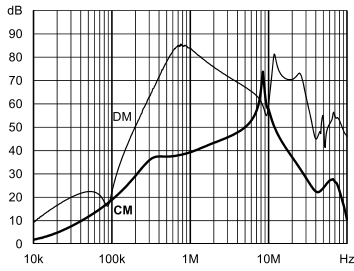
30 A: Standard type



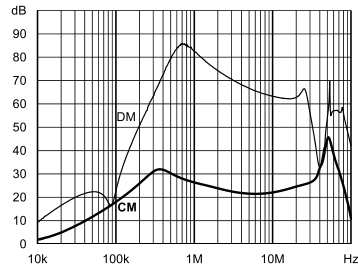
A type



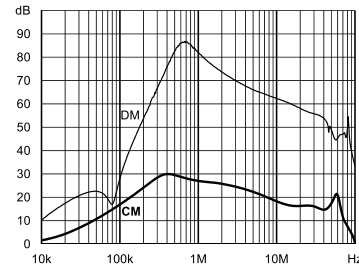
B type



60 A: Standard type



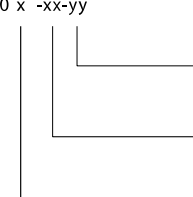
A type



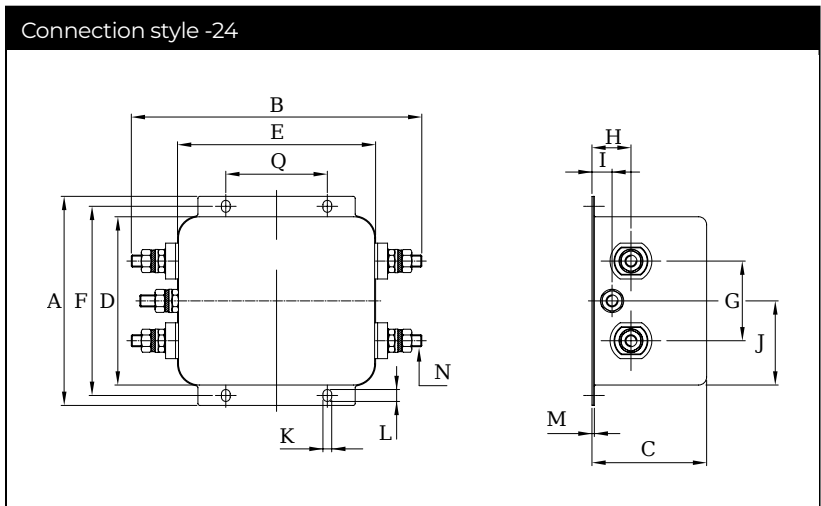
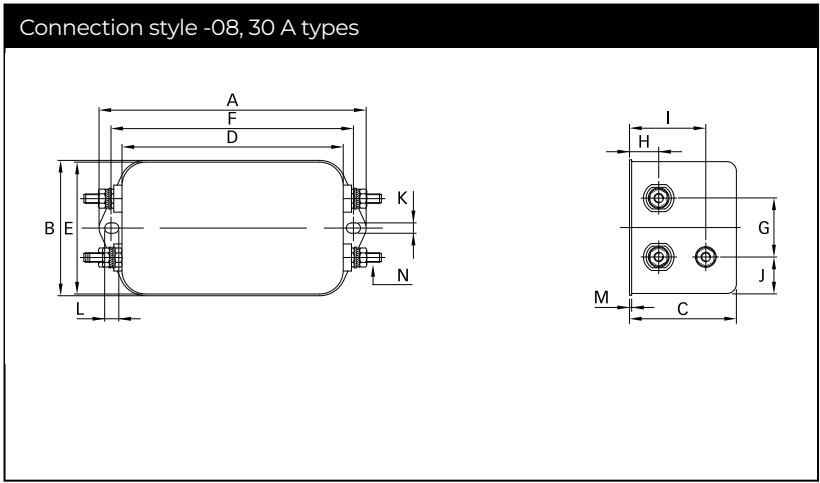
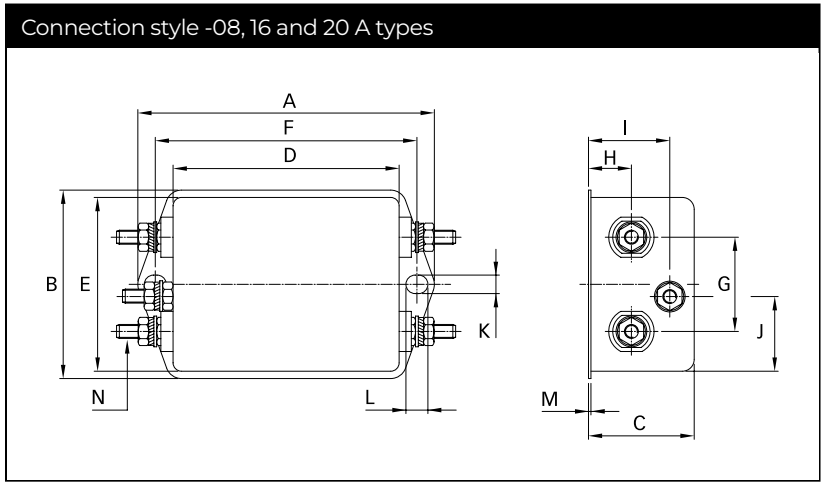
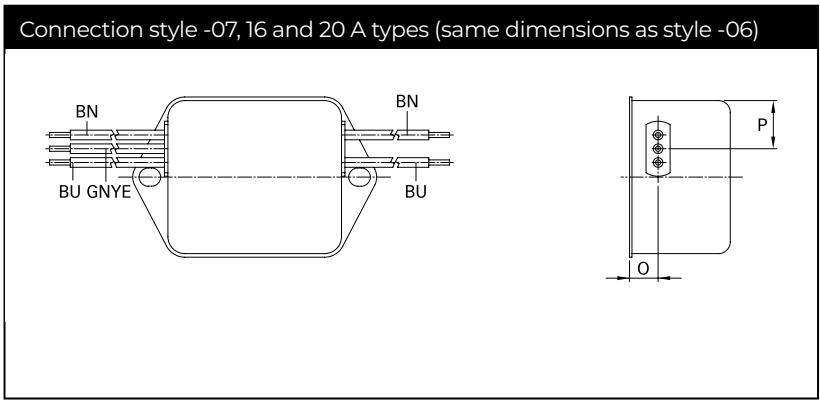
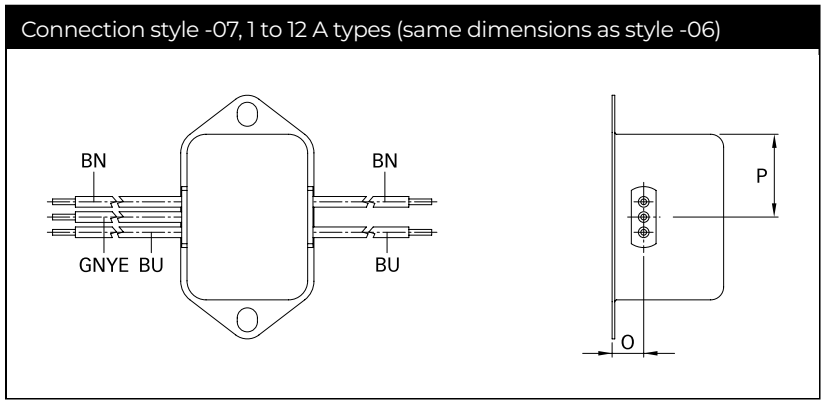
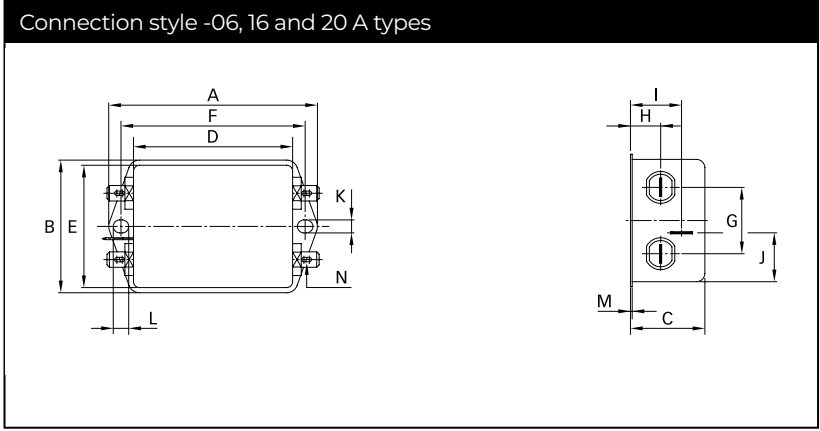
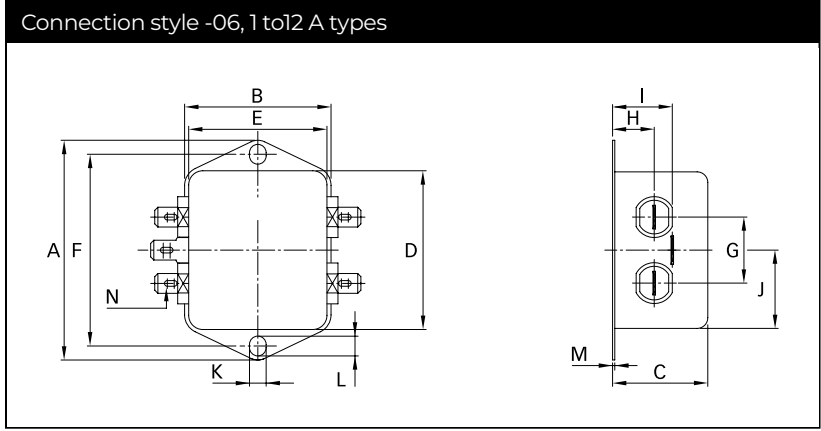
B type

Product selector

FN 2020 x -xx-yy	06	Faston 6.3 × 0.8 mm (spade/soldering)
	07	Wire leads
	08	Studs (M4 screws)
	24	Studs (M6 screws)
	1 to 60	Rated current
	Blank	Standard version
	A	Safety version
	B	Medical version



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	1	1.2	±0.3
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	M4		
Recommended torque (Nm)						1.2 - 1.3	1.2 - 1.3	1.2 - 1.3		
Earth Terminal						1.5 - 1.7	1.5 - 1.7	1.5 - 1.7		
Connection style -24										
N									M6	
Q									51	±0.2
Recommended torque (Nm)									3.5 - 4	
Earth Terminal									3.5 - 4	

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

Switzerland

Schaffner Holding AG

Industrie Nord
 Nordstrasse 11e
 4542
 Luterbach
 +41 32 681 66 26
info@schaffner.com

Sales and Application Centers

China

Schaffner EMC Ltd. Shanghai

T20-3 C, No 565 Chuangye Road, Pudong district
 201201
 Shanghai
 +86 2138139500
cschina@schaffner.com

Finland

Schaffner Oy

Sauvonrinne 19 H
 8500
 Lohja
 +358 50 468 7284
finlandsales@schaffner.com

France

Schaffner EMC S.A.S.

16-20 Rue Louis Rameau
 95875
 Bezons
 +33 1 34 34 30 60
francesales@schaffner.com

Germany

Schaffner Deutschland GmbH

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

India

Schaffner India Pvt. Ltd

Regus World Trade Centre
 WTC, 22nd Floor Unit No 2238, Brigade Gateway Campus, 26/1, Dr. Rajkumar Road Malleshwaram (W)
 560055
 Bangalore
 +91 8067935355
indiasales@schaffner.com

Italy

Schaffner EMC S.r.l.

Via Ticino, 30
 20900
 Monza (MB)
 +39 039 21 41 070
italysales@schaffner.com

Japan

Schaffner EMC K.K.

ISM Sangenjaya 7F
 1-32-12 Kamiuma, Setagaya-ku
 154-0011
 Tokyo
 +81 3 5712 3650
japansales@schaffner.com

Singapore

Schaffner EMC Pte Ltd.

Blk 3015A Ubi Road 1, #05-09, Kampong Ubi Industrial Estate
 408705
 Singapore
 +65 63773283
singaporesales@schaffner.com

Spain

Schaffner EMC España

Calle Caléndula 93, Miniparc III, Edificio E El Soto de Moraleja, Alcobendas
 28109
 Madrid
 +34 917 912 900
spainsales@schaffner.com

Sweden

Schaffner EMC AB

Östermalmstrorg 1
 114 42
 Stockholm
 +46 8 5050 2425
swedensales@schaffner.com

Switzerland

Schaffner EMV AG

Industrie Nord
 Nordstrasse 11e
 4542
 Luterbach
 +41 32 681 66 26
switzerlandsales@schaffner.com

Taiwan

Schaffner EMV Ltd.

U-Town
 20 Floor-2, No 97, Section 1, XinTai 5th Road, XiZhi District
 22175
 New Taipei City
 +886 226975500
taiwansales@schaffner.com

Thailand

Schaffner EMC Co. Ltd.

Sathorn Square Tower
 Room 3780, 37FL, 98 North-Sathorn Rd, Silom, Bangrak
 10500
 Bangkok
 +66 621056397
thailandsales@schaffner.com

United Kingdom

Schaffner Ltd.

1, Oakmede Place
 Terrace Road
 RG42 4JF
 Binfield
 +44 118 9770070
uksales@schaffner.com

United States

Schaffner EMC Inc.

52 Mayfield Avenue
 Edison, New Jersey
 +1 732 225 9533
usasales@schaffner.com

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

© 2022 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.