

# Compact EMC/RFI Filter for Motor Drives

## Single-Phase Filters FN 350



- Compact filter solution for single-phase motor drive applications
- Industrial grade safety terminal blocks
- Designed to meet EN 55011/14/22
- Compliant with IEC 60950



### Performance indicators

Attenuation performance



Rated current [A]



### Technical specifications

<b>Maximum continuous operating voltage</b>	1x 250 VAC
<b>Operating frequency</b>	dc to 400 Hz
<b>Rated currents</b>	8 to 55 A @ 40 °C
<b>High potential test voltage</b>	P → E 2000 VAC for 2 sec P → N 1100 VDC for 2 sec
<b>Protection category</b>	IP20
<b>Overload capability</b>	4x rated current at switch on, 1.5x rated current for 1 minute, once per hour
<b>Temperature range (operation and storage)</b>	-25 °C to +100 °C (25/100/21)
<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/230V (Mil-HB-217F)</b>	420,000 hours

### Approvals



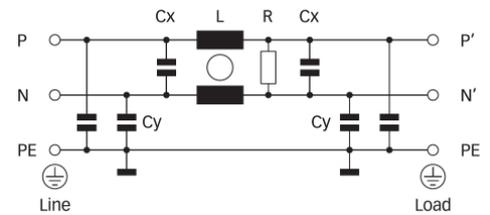
### Features and benefits

- High component values optimized for common and differential-mode attenuation in the lower frequency range makes this filter ideal for a large variety of single-phase motor drive applications
- Supplied in a relatively small housing design with safety terminal blocks for fast and easy installation in primarily industrial environments
- FN 350 also meets IEC 60950 requirements, thus providing additional application flexibility

### Typical applications

- Single-phase motor drives
- Automation equipment
- Power supplies, SMPS
- Office equipment
- Testing and measurements equipment

### Typical electrical schematic



## Filter selection table

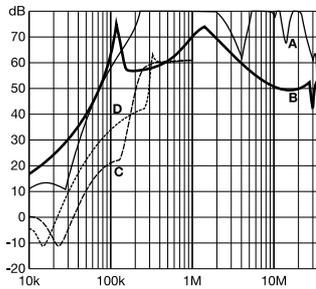
Filter	Rated current @ 40 °C (25 °C)	Leakage current* @ 230 VAC/50 Hz	Power loss @ 25 °C/50 Hz	Input/Output connections	Weight
	[A]	[mA]	[W]		[kg]
<b>FN 350-8-29</b>	8 (9.0)	4.9	5.2	-29	0.7
<b>FN 350-12-29</b>	12 (13.5)	4.9	5.7	-29	0.7
<b>FN 350-20-29</b>	20 (22.4)	4.9	6.1	-29	0.7
<b>FN 350-30-33</b>	30 (33.6)	5.4	6.1	-33	0.7
<b>FN 350-55-33</b>	55 (61.5)	11.0	9.9	-33	1.2

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

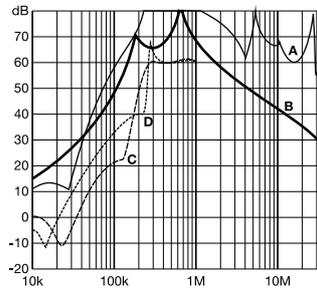
## Typical filter attenuation

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

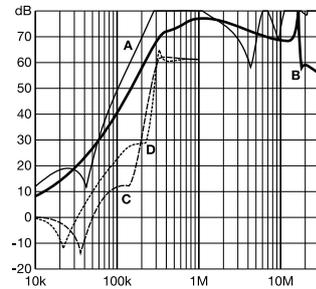
8 A types



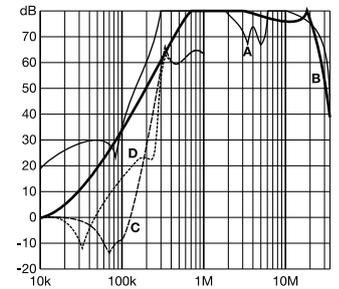
12 A types



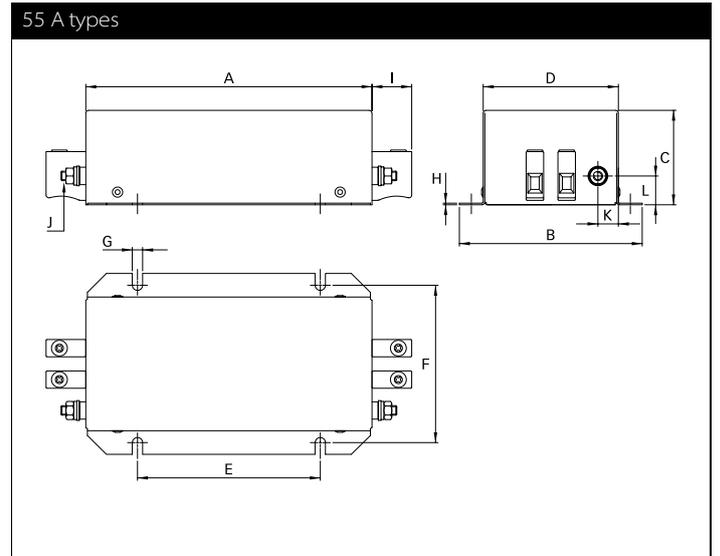
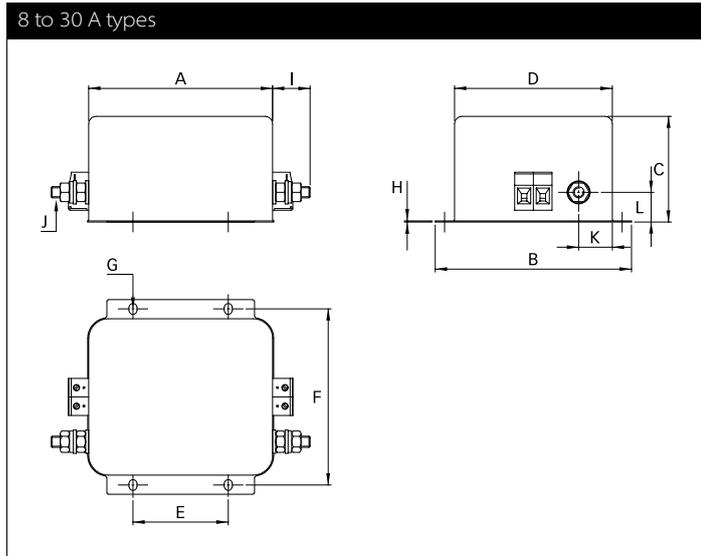
20 and 30 A types



55 A types



## Mechanical data



## Dimensions

	8 A	12 A	20 A	30 A	55 A
A	99.5	99.5	99.5	99.5	180
B	105	105	105	105	115
C	57	57	57	57.6	60
D	84.4	84.4	84.4	84.4	85
E	51	51	51	51	115
F	95	95	95	95	100
G	6 x 4.4	6 x 4.4	6 x 4.4	6 x 4.4	6.5
H	0.6	0.6	0.6	1.2	1
I	19.5	19.5	19.5	25	25
J	M6	M6	M6	M6	M6
K	18	18	18	16	12.9
L	16	16	16	19	18.3

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

## Filter input/output connector cross sections

	-29	-33
<b>Solid wire</b>	6 mm <sup>2</sup>	16 mm <sup>2</sup>
<b>Flex wire</b>	4 mm <sup>2</sup>	10 mm <sup>2</sup>
<b>AWG type wire</b>	AWG 10	AWG 6
<b>Recommended torque</b>	0.6-0.8 Nm	1.5-1.8 Nm

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



## 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](mailto: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 F +86 21 3813 9501 / 02  
[cschina@schaffner.com](mailto: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](mailto:finlandsales@schaffner.com)

France

### Schaffner EMC S.A.S.

112, Quai de Bezons  
Boite postale 133  
95103 Argenteuil  
T +33 1 34 34 30 60  
F +33 1 39 47 02 28  
[francesales@schaffner.com](mailto:francesales@schaffner.com)

Germany

### Schaffner Deutschland GmbH

Schoemperlenstrasse 12B  
76185 Karlsruhe  
T +49 721 56910  
F +49 721 569110  
[germanysales@schaffner.com](mailto: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](mailto: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](mailto: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](mailto:singaporesales@schaffner.com)

Spain

### Schaffner EMC España

Edificio E, Alcobendas  
El Soto de la Moraleja Alcobendas  
28109 Madrid  
T +34 618 176 133  
[spainsales@schaffner.com](mailto: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](mailto:swedensales@schaffner.com)

Switzerland

### Schaffner EMV AG

Nordstrasse 11  
4542 Luterbach  
T +41 32 6816 626  
F +41 32 6816 641  
[sales@schaffner.ch](mailto: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](mailto:taiwansales@schaffner.com)

Thailand

### Schaffner EMC Co. Ltd.

Northern Region Industrial Estate  
67 Moo 4 Tambon Ban Klang Amphur Muangng  
P.O. Box 14  
51000 Lamphun  
T +66 53 58 11 04  
F +66 53 58 10 19  
[thailandsales@schaffner.com](mailto: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](mailto: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 +732 225 9533  
F +732 225 4789  
[usasales@schaffner.com](mailto:usasales@schaffner.com)  
<http://www.schaffner.com/us>

### Schaffner MTC LLC

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

### Schaffner Trencó LLC

2550 Brookpark Road  
44134 Cleveland, Ohio  
T +216 741 5282  
F +216 741 4860  
[www.schaffner-trencó.com](http://www.schaffner-trencó.com)

To find your local partner within Schaffner's global network, please go to:  
[www.schaffner.com](http://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.