

Ultra-compact EMC/RFI Filter for Motor Drives Applications



- New: solid safety connector blocks available for the whole range
- Exceptional attenuation performance from 150 kHz to 30 MHz
- Excellent saturation resistance up to 50 m cable length
- Most compact and slim filter design in its class



Performance indicators

Attenuation performance



Rated current [A]



Technical specifications

| | |
|--|--|
| Maximum continuous operating voltage | 3x 480/277 VAC (FN 3258) 3x 520/300 VAC (FN 3258 H) |
| Operating frequency | DC to 60 Hz |
| Rated currents | 7 to 180 A @ 50°C |
| High potential test voltage | P → E 2650 / 2750 VDC for 2 sec (FN 3258 / FN 3258H) P → P 2100 / 2250 VDC for 2 sec (FN 3258 / FN 3258H) |
| Protection category | IP 20 |
| Overload capability | 1.5x rated current for 1 minute, once per hour 4x rated current at switch on, |
| 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 @ 50°C/400 V (Mil-HB-217F) | 300,000 hours |

Approvals



Features and benefits

- The extremely compact and slim filter design allows a trouble-free installation even where the available mounting space is minimal
- With new additional filter types providing safety terminal blocks, the most preferred connection style can be chosen fast and easy. This helps to stay in line with the electrical connection concept of a given application
- FN 3258 filters ensure compliance with Class A limits according to EN 55011 up to 50 m cable length and beyond. Further they can contribute significantly to meet conducted emission limits according to Class B
- Filter operation on the mains input side of consumers increases their reliability and conducted immunity significant
- Chokes with exceptional saturation resistance and excellent thermal behavior are a vital part of FN 3258 design. Thus, all filters retain the expected filter performance even in very noisy applications and under full load conditions

Typical applications

- Three-phase variable speed motor drives, servo drives, inverters and converters
- Applications comprising energy conversion devices like machines or process automation equipment
- HVAC equipment, elevators, power supplies, UPS and further three-phase applications

Typical electrical schematic



Filter selection table

| Filter | Rated current @ 50°C (40°C) [A] | Typical drive power rating* [kW] | Leakage current** @ 480/520 VAC/50 Hz [mA] | Power loss @ 25°C/50 Hz [W] | Input/Output connections  | Weight [kg] |
|-------------------------|---------------------------------------|--|--|-----------------------------------|--|----------------|
| FN 3258-7-44 | 7 (7.7) | 4 | 4.3 | 3.8 | -44 | 0.5 |
| FN 3258-16-44 | 16 (17.5) | 7.5 | 4.3 | 6.1 | -44 | 0.8 |
| FN 3258-30-33 | 30 (32.9) | 15 | 4.3 | 11.8 | -33 | 1.2 |
| FN 3258-42-33 | 42 (46.0) | 22 | 4.3 | 15.7 | -33 | 1.4 |
| FN 3258-55-34 | 55 (60.2) | 30 | 4.3 | 25.9 | -34 | 2.0 |
| FN 3258-75-34 | 75 (82.2) | 37 | 4.3 | 32.2 | -34 | 2.7 |
| FN 3258-100-35 | 100 (109.5) | 55 | 4.3 | 34.5 | -35 | 4.3 |
| FN 3258-130-35 | 130 (142.4) | 75 | 4.3 | 43.1 | -35 | 4.5 |
| FN 3258-180-40 | 180 (197.1) | 90 | 4.3 | 58.3 | -40 | 6.0 |
| FN 3258 H-7-44 | 7 (7.7) | 4 | 4.7 | 3.8 | -44 | 0.5 |
| FN 3258 H-16-44 | 16 (17.5) | 7.5 | 4.7 | 6.1 | -44 | 0.8 |
| FN 3258 H-30-33 | 30 (32.9) | 18.5 | 4.7 | 11.8 | -33 | 1.2 |
| FN 3258 H-42-33 | 42 (46.0) | 22 | 4.7 | 15.7 | -33 | 1.4 |
| FN 3258 H-55-34 | 55 (60.2) | 37 | 4.7 | 25.9 | -34 | 2.0 |
| FN 3258 H-75-34 | 75 (82.2) | 45 | 4.7 | 32.2 | -34 | 2.7 |
| FN 3258 H-100-35 | 100 (109.5) | 55 | 4.7 | 34.5 | -35 | 4.3 |
| FN 3258 H-130-35 | 130 (142.4) | 75 | 4.7 | 43.1 | -35 | 4.5 |
| FN 3258 H-180-40 | 180 (197.1) | 110 | 4.7 | 58.3 | -40 | 6.0 |

* Calculated at rated current, 440 VAC (FN 3258)/480 VAC (FN 3258 H) and $\cos \phi=0.8$. The exact value depends upon the efficiency of the drive, the motor and the entire application.

** Standardized calculated leakage current acc. IEC60939 under normal operating conditions (FN 3258 at 480 VAC and FN 3258H at 520 VAC).

Typical filter attenuation

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

7 to 42 A types



55 to 100 A types



130 and 180 A types





Note: in favour of a better readability, connectors and earth studs are not shown in the horizontal projection.

Dimensions

| | 7 A | 16 A | 30 A | 42 A | 55 A | 75 A | 100 A | 130 A | 180 A |
|-----------|------|------|------|------|------|------|-------|-------|-------|
| A | 190 | 250 | 270 | 310 | 250 | 270 | 270 | 270 | 380 |
| B | 40 | 45 | 50 | 50 | 85 | 80 | 90 | 90 | 120 |
| C | 70 | 70 | 85 | 85 | 90 | 135 | 150 | 150 | 170 |
| D | 160 | 220 | 240 | 280 | 220 | 240 | 240 | 240 | 350 |
| E | 180 | 235 | 255 | 295 | 235 | 255 | 255 | 255 | 365 |
| F | 20 | 25 | 30 | 30 | 60 | 60 | 65 | 65 | 102 |
| G | 4.5 | 5.4 | 5.4 | 5.4 | 5.4 | 6.5 | 6.5 | 6.5 | 6.5 |
| H | 1 | 1 | 1 | 1 | 1 | 1.5 | 1.5 | 1.5 | 1.5 |
| I | 22 | 22 | 25 | 25 | 39 | 39 | 45 | 45 | 51 |
| J | M5 | M5 | M5 | M6 | M6 | M6 | M10 | M10 | M10 |
| K | 20 | 22.5 | 25 | 25 | 42.5 | 40 | 45 | 45 | 60 |
| L2 | 29.5 | 29.5 | 39.5 | 37.5 | 26.5 | 70.5 | 64 | 64 | 47 |

All dimensions in mm; 1 inch = 25.4 mm

Tolerances according: ISO 2768-m/EN 22768-m

Filter input/output connector cross sections

| | -33 | -34 | -35 | -40 | -44 |
|---------------------------|--------------------|--------------------|--------------------|--------------------|--------------------|
| | | | | | |
| Solid wire | 16 mm ² | 35 mm ² | 50 mm ² | 95 mm ² | 10 mm ² |
| Flex wire | 10 mm ² | 25 mm ² | 50 mm ² | 95 mm ² | 6 mm ² |
| AWG type wire | AWG 6 | AWG 2 | AWG 1/0 | AWG 4/0 | AWG 8 |
| Recommended torque | 1.5-1.8 Nm | 4.0-4.5 Nm | 7-8 Nm | 17-20 Nm | 1.5-1.8 Nm |

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



Headquarters, global innovation and development

Switzerland

Schaffner Group

Nordstrasse 11
4542 Luterbach
T +41 32 681 66 26
info@schaffner.com
www.schaffner.com



Sales and application centers

China

Schaffner EMC Ltd. Shanghai

T20-3 C, No 565 Chuangye Road,
Pudong district
201201 Shanghai
T +86 21 3813 9500
cschina@schaffner.com
www.schaffner.com.cn

Finland

Schaffner Oy

Sauvonrinne 19 H
08500 Lohja
T +358 50 468 7284
finlandsales@schaffner.com

France

Schaffner EMC S.A.S.

16-20 Rue Louis Rameau
95875 Bezons
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

India

Schaffner India Pvt. Ltd

REGUS WORLD TRADE CENTRE
WTC, 22nd Floor Unit No 2238, Brigade
Gateway Campus, 26/1, Dr. Rajkumar Road
Malleswaram (W)
560055 Bangalore
T +91 80 67935355
indiasales@schaffner.com

Italy

Schaffner EMC S.r.l.

Via Ticino, 30
20900 Monza (MB)
T +39 039 21 41 070
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
www.schaffner.jp

Singapore

Schaffner EMC Pte Ltd.

#05-09, Kg Ubi Ind. 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
El Soto de Moraleja, Alcobendas
28109 Madrid
T +34 917 912 900
F +34 917 912 901
spainsales@schaffner.com

Sweden

Schaffner EMC AB

Tegeluddsvägen 76, 2tr
115 28 Stockholm
T +46 8 5050 2425
swedensales@schaffner.com
www.schaffner.com

Switzerland

Schaffner EMV AG

Nordstrasse 11
4542 Luterbach
T +41 32 681 66 26
switzerlandsales@schaffner.com

Taiwan R.O.C.

Schaffner EMV Ltd.

20 Floor-2, No 97, Section 1, XinTai 5th Road
22175 XiZhi District New Taipei City 22175
T +886 2 2697 5500
F +886 2 2697 5533
taiwansales@schaffner.com
www.schaffner.com.tw

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

United Kingdom

Schaffner Ltd.

5 Ashville Way, Molly Millars Lane
Wokingham
RG41 2PL Berkshire
T +44 118 9770070
F +44 118 9792969
uksales@schaffner.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
www.schaffnerusa.com

Schaffner North America

6722 Thirlane Road
24019 Roanoke, Virginia
T +1 276 228 7943
F +1 276 228 7953

Schaffner North America

823 Fairview Road
24382 Wytheville, Virginia
T +1 276 228 7943
F +1 276 228 7258

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Телефон: 8 (812) 309-75-97 (многоканальный)

Факс: 8 (812) 320-03-32

Электронная почта: ocean@oceanchips.ru

Web: <http://oceanchips.ru/>

Адрес: 198099, г. Санкт-Петербург, ул. Калинина, д. 2, корп. 4, лит. А