

# EMC/RFI Filters for Industrial Electronics

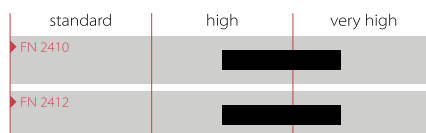


- Excellent filter performance for applications with high interference levels
- Filters for two-phase supply up to 2x 520 VAC (P-P) available
- Fast and comfortable snap-in installation on popular TS 35 DIN-rails up to 45 A
- Industrial grade terminal blocks for unsurpassed electrical safety

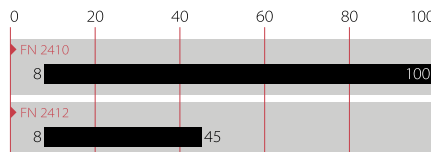


### Performance indicators

Attenuation performance



Rated current [A]



## Technical specifications

<b>Maximum continuous operating voltage</b>	1x 250 VAC (FN 2410/FN 2412) 2x 520/300 VAC (FN 2410 H/FN 2412 H)
<b>Operating frequency</b>	DC to 400 Hz
<b>Rated currents</b>	8 to 100 A @ 50°C (FN 2410) 8 to 45 A @ 50°C (FN 2412)
<b>High potential test voltage</b>	P → E 2000 VAC for 2 sec P → N 1100 VDC for 2 sec P → E 2700 VDC for 2 sec (H types) P → P 2250 VDC for 2 sec (H types)
<b>Protection category</b>	IP 20
<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 @ 50°C/250 V (Mil-HB-217F)</b>	1,200,000 hours 250,000 hours (H types)

### Approvals



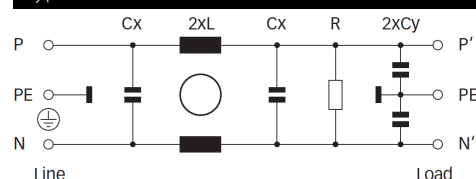
### Features and benefits

- FN 2410 filters up to 100 A are designed for traditional chassis mounting
- For extra fast installation, FN 2412 filters up to 45 A can comfortably be snapped-in on popular TS 35 DIN-rails which are common in most electrical cabinets
- Both FN 2410 and FN 2412 are also available as „H versions“. These are ideally suitable for an operation on two phases in a three-phase power network, handling voltages up to 520 VAC
- All filters provide an exceptional conducted attenuation performance, based on chokes with high saturation resistance and excellent thermal behavior. Thus, all filters retain the expected filter performance even in very noisy applications and under full load conditions
- Touch-safe industrial grade terminal blocks provide maximum electrical safety and protect humans from undeliberate contact with live conductors. They help to fulfill the most demanding installation standards


### Typical applications

- Small to medium-sized machines and industrial equipment
- High-end single-phase power supplies
- Single-phase variable speed motor drives, inverters and converters
- DIN-rail filter versions are ideal for panel building and electrical cabinets
- Various noisy applications with higher power single-phase or two-phase supply

### Typical electrical schematic



## Filter selection table

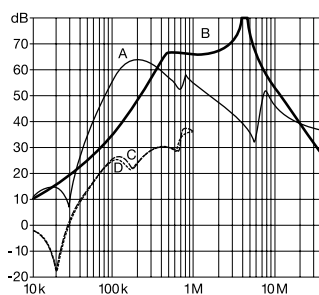
Filter	Rated current	Leakage current*	Power loss	Input/Output connections	Weight
	@ 50°C (40°C)	@ 250 VAC /50 Hz (@ 120 VAC /60 Hz)	@ 25°C/50 Hz		
	[A]	[mA]	[W]		[kg]
<b>FN 2410-8-44</b>	8 (8.8)	2.60 (1.49)	2.6	-44	0.4
<b>FN 2410-16-44</b>	16 (17.5)	2.60 (1.49)	3.5	-44	0.5
<b>FN 2410-25-33</b>	25 (27.4)	2.60 (1.49)	5.5	-33	0.6
<b>FN 2410-32-33</b>	32 (35.0)	2.60 (1.49)	5.6	-33	0.7
<b>FN 2410-45-33</b>	45 (49.3)	2.60 (1.49)	7.4	-33	0.7
<b>FN 2410-60-34</b>	60 (65.7)	2.60 (1.49)	5.5	-34	1.8
<b>FN 2410-80-34</b>	80 (87.6)	2.60 (1.49)	9.9	-34	1.8
<b>FN 2410-100-34</b>	100 (109.5)	2.60 (1.49)	15.4	-34	1.8
<b>FN 2410 H-8-44</b>	8 (8.8)	2.60 (1.49)	2.6	-44	0.5
<b>FN 2410 H-16-44</b>	16 (17.5)	2.60 (1.49)	3.5	-44	0.6
<b>FN 2410 H-25-33</b>	25 (27.4)	2.60 (1.49)	5.5	-33	0.7
<b>FN 2410 H-32-33</b>	32 (35.0)	2.60 (1.49)	5.6	-33	0.8
<b>FN 2410 H-60-34</b>	60 (65.7)	2.60 (1.49)	5.5	-34	1.9
<b>FN 2410 H-80-34</b>	80 (87.6)	2.60 (1.49)	9.9	-34	1.9
<b>FN 2410 H-100-34</b>	100 (109.5)	2.60 (1.49)	15.4	-34	1.9
<b>FN 2412-8-44</b>	8 (8.8)	2.60 (1.49)	2.6	-44	0.4
<b>FN 2412-16-44</b>	16 (17.5)	2.60 (1.49)	3.5	-44	0.6
<b>FN 2412-25-33</b>	25 (27.4)	2.60 (1.49)	5.5	-33	0.7
<b>FN 2412-32-33</b>	32 (35.0)	2.60 (1.49)	5.6	-33	0.8
<b>FN 2412-45-33</b>	45 (49.3)	2.60 (1.49)	7.4	-33	0.8
<b>FN 2412 H-8-44</b>	8 (8.8)	2.60 (1.49)	2.6	-44	0.5
<b>FN 2412 H-16-44</b>	16 (17.5)	2.60 (1.49)	3.5	-44	0.7
<b>FN 2412 H-25-33</b>	25 (27.4)	2.60 (1.49)	5.5	-33	0.8
<b>FN 2412 H-32-33</b>	32 (35.0)	2.60 (1.49)	5.6	-33	0.9

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

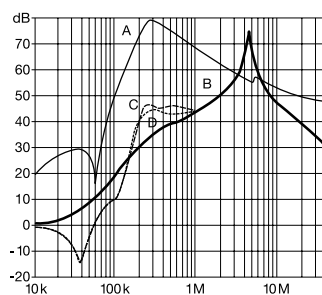
## Typical filter attenuation

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

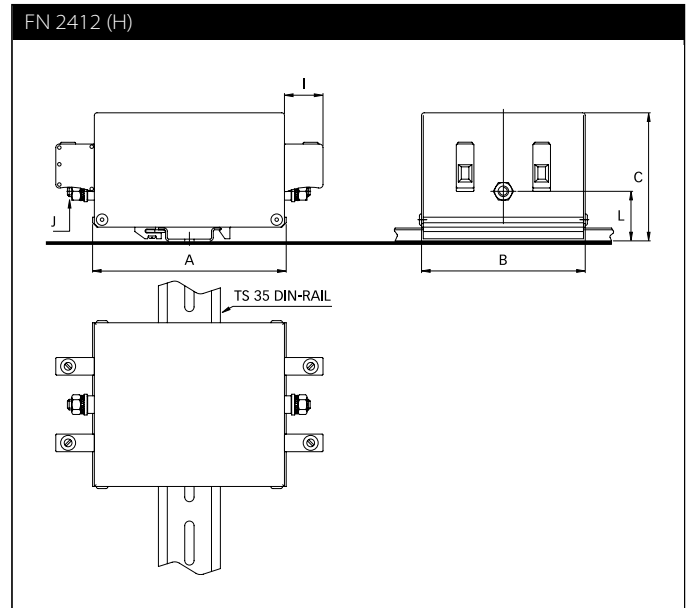
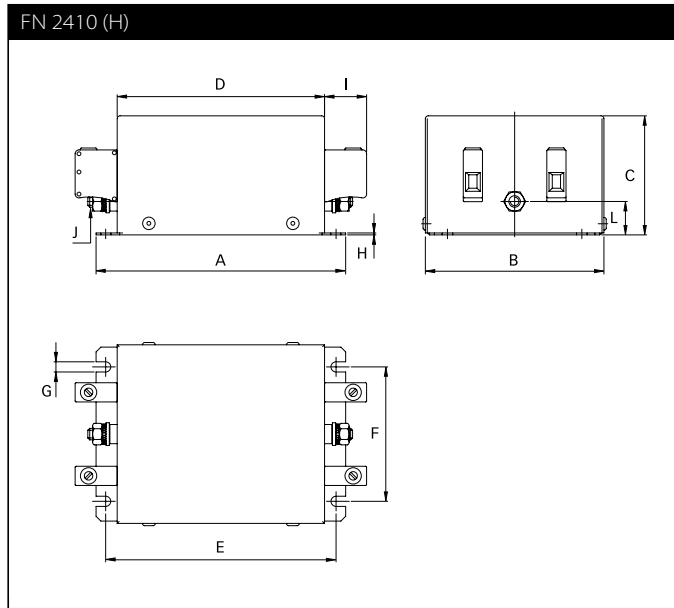
8 to 45 A types



60 to 100 A types



## Mechanical data



## Dimensions

	FN 2410					FN 2412							
	8 A	16 A	25 A	32 A	45 A	60 A	80 A	100 A	8 A	16 A	25 A	32 A	45 A
<b>A</b>	130	130	130	130	130	165	165	165	110	110	110	110	110
<b>B</b>	93	93	93	93	93	115	115	115	93	93	93	93	93
<b>C</b>	62	62	76	76	76	100	100	100	73	73	87	87	87
<b>D</b>	108	108	108	108	108	140	140	140					
<b>E</b>	120	120	120	120	120	155	155	155					
<b>F</b>	70	70	70	70	70	90	90	90					
<b>G</b>	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3					
<b>H</b>	1.0	1.0	1.0	1.0	1.0	1.2	1.2	1.2					
<b>I</b>	22	22	25	25	25	39	39	39	22	22	25	25	25
<b>J</b>	M6	M6	M6	M6	M6	M8	M8	M8	M6	M6	M6	M6	M6
<b>Rec. torque (Nm)</b>	3.5 - 4.0	3.5 - 4.0	3.5 - 4.0	3.5 - 4.0	3.5 - 4.0	8.0 - 9.0	8.0 - 9.0	8.0 - 9.0	3.5 - 4.0	3.5 - 4.0	3.5 - 4.0	3.5 - 4.0	3.5 - 4.0
<b>L</b>	17.5	17.5	31.5	31.5	31.5	39.2	39.2	39.2	28.5	28.5	42.5	42.5	42.5

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	-44
<b>Solid wire</b>	16 mm <sup>2</sup>	35 mm <sup>2</sup>	10 mm <sup>2</sup>
<b>Flex wire</b>	10 mm <sup>2</sup>	25 mm <sup>2</sup>	6 mm <sup>2</sup>
<b>AWG type wire</b>	AWG 6	AWG 2	AWG 8
<b>Recommended torque</b>	1.5-1.8 Nm	4.0-4.5 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

### Switzerland

#### Schaffner Group

Nordstrasse 11  
4542 Luterbach  
T +41 32 681 66 26  
[info@schaffner.com](mailto:info@schaffner.com)  
[www.schaffner.com](http://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](mailto:cschina@schaffner.com)  
[www.schaffner.com.cn](http://www.schaffner.com.cn)

### Finland

#### Schaffner Oy

Sauvonrinne 19 H  
08500 Lohja  
T +358 50 468 7284  
[finlandsales@schaffner.com](mailto: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](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)

### 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](mailto:indiasales@schaffner.com)

### Italy

#### Schaffner EMC S.r.l.

Via Ticino, 30  
20900 Monza (MB)  
T +39 039 21 41 070  
[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)  
[www.schaffner.jp](http://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](mailto: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](mailto:spainsales@schaffner.com)

### Sweden

#### Schaffner EMC AB

Tegeluddsvägen 76, 2tr  
115 28 Stockholm  
T +46 8 5050 2425  
[swedensales@schaffner.com](mailto:swedensales@schaffner.com)  
[www.schaffner.com](http://www.schaffner.com)

### Switzerland

#### Schaffner EMV AG

Nordstrasse 11  
4542 Luterbach  
T +41 32 681 66 26  
[switzerlandsales@schaffner.com](mailto: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](mailto:taiwansales@schaffner.com)  
[www.schaffner.com.tw](http://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](mailto: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](mailto: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](mailto:usasales@schaffner.com)  
[www.schaffnerusa.com](http://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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#### Как с нами связаться

**Телефон:** 8 (812) 309 58 32 (многоканальный)

**Факс:** 8 (812) 320-02-42

**Электронная почта:** [org@eplast1.ru](mailto:org@eplast1.ru)

**Адрес:** 198099, г. Санкт-Петербург, ул. Калинина, дом 2, корпус 4, литера А.