

Single and Two-phase EMC/RFI Filters for Industrial Electronics

SCHAFFNER
energy efficiency and reliability



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

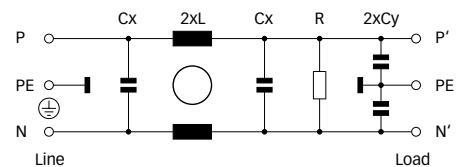
Approvals



Technical specifications

Maximum continuous operating voltage:	1x 250VAC (FN 2410 / FN 2412) 2x 520/300VAC (FN 2410H / FN 2412H)
Operating frequency:	dc to 400Hz (except FN 2410H-60/-80/-100: 250Hz)
Rated currents:	8 to 100A @ 50°C (FN 2410) 8 to 45A @ 50°C (FN 2412)
High potential test voltage:	P → E 2000VAC for 2 sec P → N 1100VDC for 2 sec P → E 2700VDC for 2 sec (H types) P → P 2250VDC for 2 sec (H types)
Protection category:	IP20
Overload capability:	4x rated current at switch on, 1.5x rated current for 1 minute, once per hour
Temperature range (operation and storage):	-25°C to +100°C (25/100/21)
Flammability corresponding to:	UL 94V-2 or better
Design corresponding to:	UL 1283, CSA 22.2 No. 8 1986, IEC/EN 60939
MTBF @ 50°C/250V (Mil-HB-217F):	1,200,000 hours
MTBF @ 50°C/520V (Mil-HB-217F):	250,000 hours (H types)

Typical electrical schematic




Features and benefits

- FN 2410 filters up to 100A are designed for traditional chassis mounting.
- For extra fast installation, FN 2412 filters up to 45A 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 520VAC.
- 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

Filter selection table

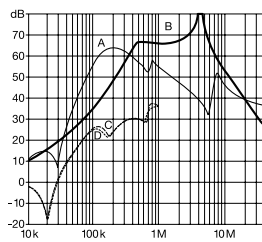
Filter	Rated current @ 50°C (40°C)	Leakage current* @ 230VAC/50Hz	Power loss @ 25°C/50Hz	Input/Output connections	Weight
	[A]	[mA]	[W]		[kg]
FN 2410-8-44	8 (8.8)	3.4	2.6	-44	0.4
FN 2410-16-44	16 (17.5)	3.4	3.5	-44	0.5
FN 2410-25-33	25 (27.4)	3.4	5.5	-33	0.6
FN 2410-32-33	32 (35.0)	3.4	5.6	-33	0.7
FN 2410-45-33	45 (49.3)	3.4	7.4	-33	0.7
FN 2410-60-34	60 (65.7)	3.4	5.5	-34	1.8
FN 2410-80-34	80 (87.6)	3.4	9.9	-34	1.8
FN 2410-100-34	100 (109.5)	3.4	15.4	-34	1.8
FN 2410H-8-44	8 (8.8)	3.4	2.6	-44	0.5
FN 2410H-16-44	16 (17.5)	3.4	3.5	-44	0.6
FN 2410H-25-33	25 (27.4)	3.4	5.5	-33	0.7
FN 2410H-32-33	32 (35.0)	3.4	5.6	-33	0.8
FN 2410H-45-33	45 (49.3)	3.4	7.4	-33	0.8
FN 2410H-60-34	60 (65.7)	3.4	5.5	-34	1.9
FN 2410H-80-34	80 (87.6)	3.4	9.9	-34	1.9
FN 2410H-100-34	100 (109.5)	3.4	15.4	-34	1.9
FN 2412-8-44	8 (8.8)	3.4	2.6	-44	0.4
FN 2412-16-44	16 (17.5)	3.4	3.5	-44	0.6
FN 2412-25-33	25 (27.4)	3.4	5.5	-33	0.7
FN 2412-32-33	32 (35.0)	3.4	5.6	-33	0.8
FN 2412-45-33	45 (49.3)	3.4	7.4	-33	0.8
FN 2412H-8-44	8 (8.8)	3.4	2.6	-44	0.5
FN 2412H-16-44	16 (17.5)	3.4	3.5	-44	0.7
FN 2412H-25-33	25 (27.4)	3.4	5.5	-33	0.8
FN 2412H-32-33	32 (35.0)	3.4	5.6	-33	0.9
FN 2412H-45-33	45 (49.3)	3.4	7.4	-33	0.9

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

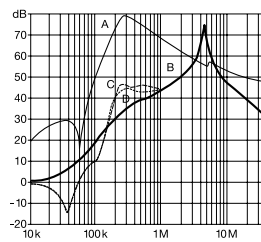
Typical filter attenuation

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

8 to 45A types

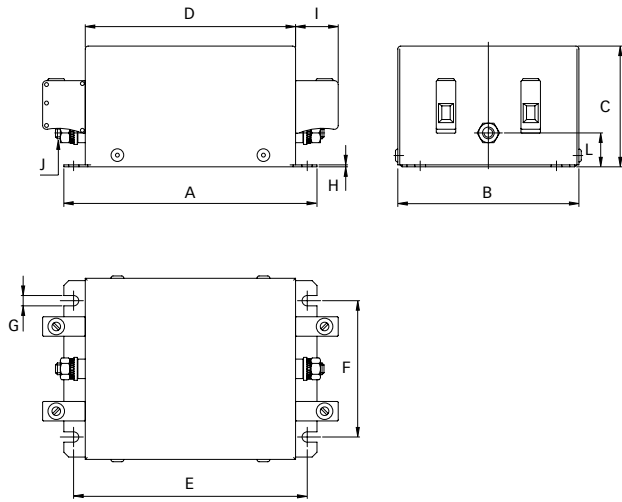


60 to 100A types

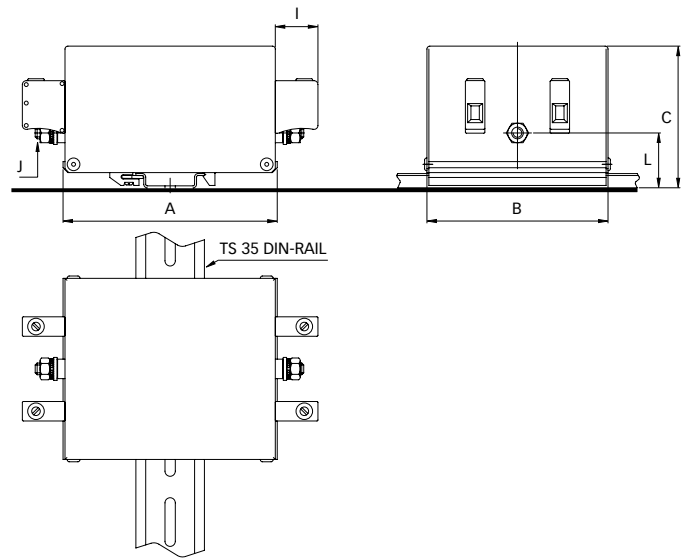


Mechanical data

FN 2410(H)



FN 2412(H)



Dimensions

	FN 2410								FN 2412				
	8A	16A	25A	32A	45A	60A	80A	100A	8A	16A	25A	32A	45A
A	130	130	130	130	130	165	165	165	110	110	110	110	110
B	93	93	93	93	93	115	115	115	93	93	93	93	93
C	62	62	76	76	76	100	100	100	73	73	87	87	87
D	108	108	108	108	108	140	140	140					
E	120	120	120	120	120	155	155	155					
F	70	70	70	70	70	90	90	90					
G	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3					
H	1.0	1.0	1.0	1.0	1.0	1.2	1.2	1.2					
I	22	22	25	25	25	39	39	39	22	22	25	25	25
J	M6	M6	M6	M6	M6	M8	M8	M8	M6	M6	M6	M6	M6
L	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 = 25.4mm
Tolerances according: ISO 2768-m / EN 22768-m

Filter input/output connector cross sections

	-33	-34	-44
Solid wire	16mm ²	35mm ²	10mm ²
Flex wire	10mm ²	25mm ²	6mm ²
AWG type wire	AWG 6	AWG 2	AWG 8
Recommended torque	1.5 - 1.8Nm	4.0 - 4.5Nm	1.5 - 1.8Nm

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

**Headquarters and
global innovation and
development center**

Schaffner Group
Nordstrasse 11
4542 Luterbach
Switzerland
T +41 32 681 66 26
F +41 32 681 66 30
info@schaffner.ch
www.schaffner.com

Sales and application centers

China
Schaffner EMC Ltd. Shanghai
Building 11, Lane 1365
East Kangqiao Road
Shanghai 201319
T +86 21 6813 9855
F +86 21 6813 9811
cschina@schaffner.com
www.schaffner.com

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

Finland
Schaffner Oy
Tynninkuja 7
08700 Lohja
T +358 19 35 72 71
F +358 19 32 66 10
finlandsales@schaffner.com

France
Schaffner EMC S.A.S.
112, Quai de Bezons
95103 Argenteuil
T +33 1 34 34 30 60
F +33 1 39 47 02 28
francesales@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.
Mitsui-Seimei Sangenjaya Bldg. 7F
1-32-12, Kamiyama, Setagaya-ku
Tokyo 154-0011
T +81 3 5712 3650
F +81 3 5712 3651
japansales@schaffner.com
www.schaffner.jp

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 32 681 66 26
F +41 32 681 66 41
sales@schaffner.ch

Singapore
Schaffner EMC Pte Ltd.
Blk 3015A Ubi Road 1
05-09 Kampong Ubi Industrial
Estate
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 la Moraleja,
Alcobendas
28109 Madrid
T +34 618 176 133
spainsales@schaffner.com

Taiwan
Schaffner EMV Ltd.
6th Floor, No 413
Rui Guang Road
Neihu District
Taipei City 114
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
Lamphun 51000
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
Berkshire RG41 2PL
T +44 118 9770070
F +44 118 9792969
uksales@schaffner.com
www.schaffner.uk.com

USA
Schaffner EMC Inc.
52 Mayfield Avenue
Edison, New Jersey 08837
T +1 732 225 9533
F +1 732 225 4789
usasales@schaffner.com
www.schaffner.com/us

To find your local partner within
Schaffner's global network, please go to

www.schaffner.com

May 2011

© 2011 Schaffner EMC.
Specifications subject to change without
notice. All trademarks recognized.

Schaffner is an ISO-registered company.
Its products are designed and manufac-
tured under the strict quality and environ-
mental requirements of the ISO 9001 and
ISO 14001 standards.

This document has been carefully
checked. However, Schaffner does not
assume any liability for errors or inac-
curacies.