

EMC/EMI Filter for Installations with Residual Current Device (RCD)



- Full functionality with RCDs according to IEC 61008 and new VDE 0664-110*
- Compatible with 30 mA RCDs up to 30 m motor cable for electric shock protection according to IEC 61008
- Compatible with 300 mA RCDs up to 100 m motor cable for fire protection according to IEC 60364-4-42 (VDE 0100-482)

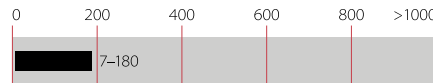


Performance indicators

Attenuation performance



Rated current [A]



Approvals



Features and benefits

- Innovative low-leakage current filter with same smallest dimensions as FN 3258
- Significant reduction of leakage and ground currents caused by long motor cables
- Prevents unwanted fault shut-downs from RCDs in machines and process automation equipment
- Patented filter design avoiding early saturation and ringing effects
- Excellent attenuation compliant with: C1 limits EN 61800-3 with 30 meter motor cable and 30 mA RCD (electric shock protection)**
- C2 limits EN 61800-3 with 100 meter motor cable and 300 mA RCD (fire protection)

Technical specifications

Maximum continuous operating voltage	3x 520/300 VAC
Operating frequency	DC to 60 Hz
Rated currents	7 to 180 A @ 50°C
High potential test voltage	P → E 2750 VDC for 2 sec P → P 2250 VDC for 2 sec
Protection category	IP 20
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 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

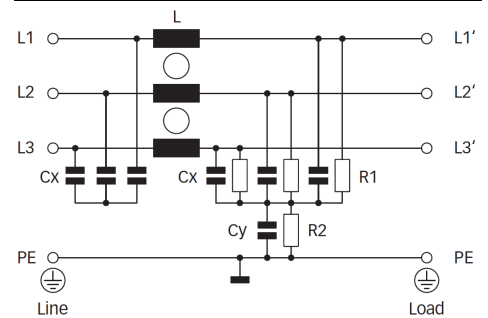
* If supply voltage is contaminated with harmonics according to IEC 61000-2-4, class 2, where odd-numbered multiplies of three are limited to 30%.

** Filter types 7 A up to 42 A: C1, 30 m, 30 mA; 55 A: C2, 30 m, 30 mA; 75 A up to 180 A: C2, 100 m, 300 mA


Typical applications

- Three-phase variable speed drives (VSD), servo drives, and inverters
- Machinery and process automation equipment
- Building automation, HVAC equipment, pumps, ventilation, and elevators
- Conveyors, handling and storage systems, and cranes
- Machine tools, wood working machines, and printing machines

Typical electrical schematic



Filter selection table

Filter	Rated current @ 50°C (40°C)	Typical drive power rating*	Leakage current @ 520 VAC/50 Hz	Power loss @ 25°C/50 Hz	Input/Output connections	Weight
	[A]	[kW]	[mA]**	[W]		[kg]
FN 3268-7-44	7 (7.7)	4	2.5	4.5	-44	0.5
FN 3268-16-44	16 (17.5)	7.5	2.6	6.1	-44	0.8
FN 3268-30-33	30 (32.9)	18.5	2.6	13.5	-33	1.2
FN 3268-42-33	42 (46.0)	22	2.6	17.4	-33	1.4
FN 3268-55-34	55 (60.2)	37	2.6	18.1	-34	2.2
FN 3268-75-34	75 (82.2)	45	10.8	25.3	-34	2.9
FN 3268-100-35	100 (109.5)	55	9.6	30.0	-35	4.1
FN 3268-130-35	130 (142.4)	75	14.2	38.0	-35	4.6
FN 3268-180-40	180 (197.1)	110	17.4	48.6	-40	6.0

* Calculated at rated current, 440 VAC 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.

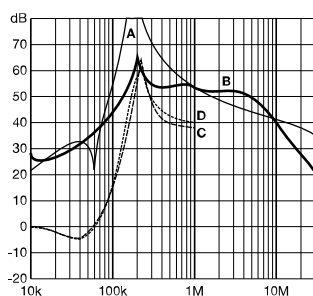
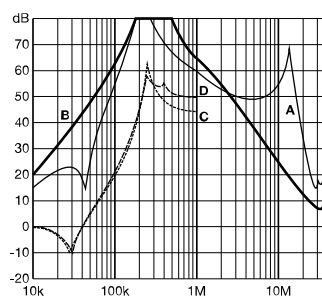
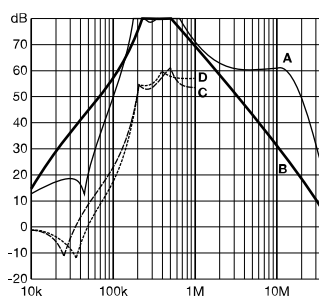
Typical filter attenuation

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

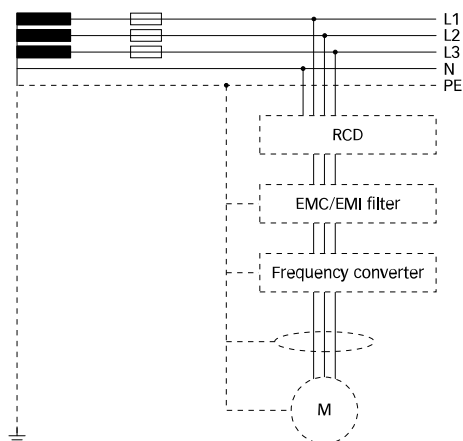
7 to 42 A types

55 to 100 A types

130 and 180 A types



Installation



Typical installation with RCD, EMC/EMI filter and motor drive system

EMC/EMI filter FN 3268

Filter types from 7 to 55 A are designed to be compatible with 30 mA RCDs according to IEC 61008 and new VDE 0664-110 standards. Filters from 75 up to 180 A are designed to be compatible with 300 mA RCDs. Install the filter as close as possible at line side of the motor drive. Regarding correct EMC installation, please refer to the EMC installation guide in the manual from motor drive supplier.

Motor drive

Please set the PWM pulse pattern of the variable speed motor drive fixed to 4 kHz. Other pulse patterns cause higher leakage currents. Filter designs with other pulse pattern than 4 kHz are possible upon request.

Motor cable length

Motor cable length should not exceed 30 meters for 7 up to 55 A filter types to fulfill class C1 of recommended standard EN 61800-3. For 75 up to 180 A filters, cable length should not exceed 100 meters to fulfill class C2.

Internal EMC/EMI components

Please disconnect all internal Y-capacitors (internal EMC/EMI filters) in the motor drive, because these capacitors cause additional leakage currents.

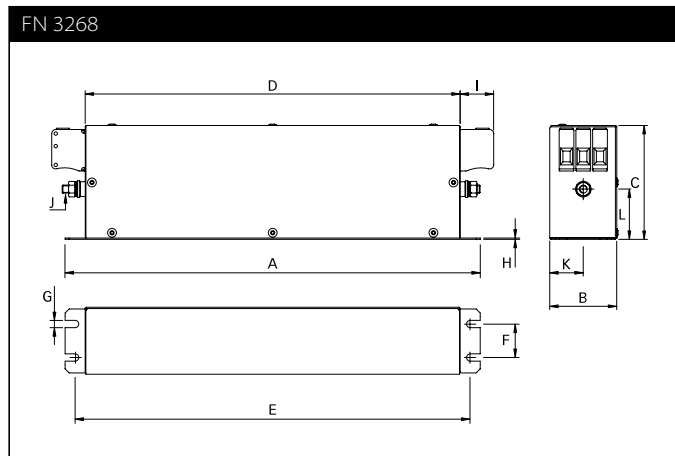
Harmonics on line voltage

High voltage harmonics can create additional system leakage currents. FN 3268 filters are tested under following conditions: Supply voltage is contaminated with harmonics according to IEC 61000-2-4, class 2, where odd-numbered multiples of three are limited to 30%.

RCD

Please note that for electrical devices with 6-pulse rectifiers at line input, like three-phase motor drives, a RCD type B or B+ is required. RCD with time delay are needed to prevent unwanted fault trip at switch on or voltage spikes. These RCD types B with time delay have often an added letter "S" or "K", please ask the supplier for correct type. Caution: Please validate system with chosen RCD to guarantee functionality.

Mechanical data



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
L	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	1.0-1.2 Nm

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



Headquarters, global innovation and development

Switzerland

Schaffner Group

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

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

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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 10 567 2855
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
Malleshwaram (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.

Taiju-Seimei Sangenjaya Bldg.
1-32-12, Kamiuma, Setagaya-ku
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

Östermalmstorg 1
114 42 Stockholm
T +46 8 5050 2425
swedensales@schaffner.com
www.schaffner.com

Switzerland

Schaffner EMV AG

Industrie Nord
Nordstrasse 11e
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.

1, Oakmede Place
Binfield
RG42 4JF Berkshire
T +44 118 9770070
F +44 118 9792969
uksales@schaffner.com

USA

Schaffner EMC Inc.

52 Mayfield Avenue
Edison, New Jersey
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