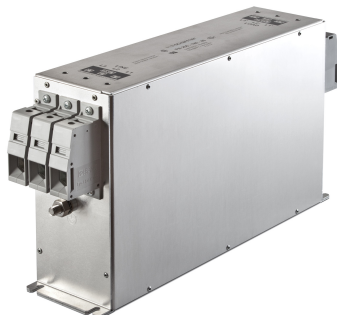


# Book-style EMC/RFI Filter for Inverters and Power Drive Systems



- Industry standard EMC solution for three-phase PDS filtering
- Slim space-saving book-style housing
- Solid safety connector blocks or optional wire output connections
- Excellent attenuation performance
- HV versions for up to 690 VAC
- HVIT versions for IT distribution networks
- P/L versions with low leakage current



### Performance indicators

Attenuation performance



Rated current [A]



### Approvals & Compliances



UL/CSA: 600VAC for FN258 up to 180 A (ex. -180-07);  
ENEC: 690VAC

### Features and benefits

- FN258 range of filters provides state-of-the-art EMI attenuation based on an innovative multi-stage filter topology. They help to ensure compliance with Class A or even Class B limits
- The slim book-style shape allows a convenient and space-saving installation next to inverters and motor drives
- With 480 VAC rating and filter modules from 7 to 250 A, FN258 are ready for the most diverse applications worldwide
- FN258HV filters up to 130 A are designed for 690 VAC distribution networks
- FN258HVIT filters up to 130 A meet the special requirements for the application in industrial 690 VAC IT distribution networks
- FN258L and FN258P filters help to fulfill tough requirements in respect of leakage current limitation and provide an excellent solution to overcome problems with nuisance tripping of sensitive earth leakage detectors

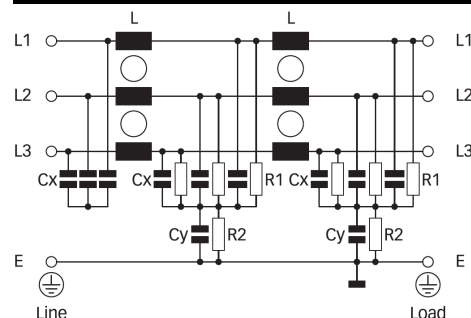
## Technical specifications

<b>Maximum continuous operating voltage</b>	3x 520/300 VAC (FN258, FN258L, FN258P) 3x 760/440 VAC (FN258HV, FN258HVIT)
<b>Rated currents</b>	7 to 250 A @50°C (FN258, FN258L, FN258P) 7 to 130 A @50°C ((FN258HV, FN258HVIT))
<b>Operating frequency</b>	DC to 60 Hz
<b>High potential test voltage</b>	P → E 2650 VDC for 2 sec (FN258) P → P 2100 VDC for 2 sec (FN258) P → E 2000 VAC for 2 sec (FN258L) P → P 2100 VDC for 2 sec (FN258L) P → E 3000 VDC for 2 sec (FN258P) P → P 2100 VDC for 2 sec (FN258P) P → E 3200 VDC for 2 sec (FN258HV and FN258HVIT) P → P 3270 VDC for 2 sec (FN258HV and FN258HVIT)
<b>Protection category</b>	IP 20 acc. to IEC 60529, Nema 1
<b>Temperature range (operation and storage)</b>	-25°C to +100°C (derating applies above 50°C)
<b>Climatic class</b>	25/100/21 acc. to IEC 60068-1
<b>Altitude</b>	2000m above derating applies acc. to IEC60664-1
<b>Overvoltage category</b>	III acc. IEC 60664-1
<b>Pollution degree</b>	3 acc. IEC 60664-1
<b>Overload capability</b>	4x rated current for 1 sec, once per hour 1.5x rated current for 1 minute, once per hour
<b>Design corresponding to</b>	UL 1283, CSA 22.2 No. 8 1986, IEC/EN 60939
<b>MTBF @ 50°C/400 V (Mil-HB-217F)</b>	220,000 hours > 220,000 hours
<b>Flammability according to</b>	UL 94 V-2 or better

### Typical applications

- Three-phase variable speed drives and power drive systems (PDS)
- IT power distribution networks (FN258HVIT)
- Applications comprising energy conversion devices (inverters, converters)
- Process automation equipment
- Three-phase power supplies and UPS
- Applications with low-leakage current requirements (FN258L and FN258P)

### Typical electrical schematic



Note: HVIT versions without discharge resistor to ground.

## Filter selection table

Filter*	Rated current	Typical drive	Leakage current***	Power loss	Input connections	Output connections		Weight [kg]
	@ 50°C (40°C)	power rating**	@ 520/760 VAC/50 Hz	@ 25°C/50 Hz				
	[A]	[kW]	[mA]	[W]				
FN258-7-..	7 (7.7)	4	2.0	9	-29	-07	-29	1.0
FN258-16-..	16 (17.5)	7.5	2.1	20	-29	-07	-29	1.4
FN258-30-..	30 (33)	15	2.9	23	-33	-07	-33	1.7
FN258-42-..	42 (46)	22	3.0	30	-33	-07	-33	2.5
FN258-55-..	55 (60)	30	3.0	30	-34	-07	-34	2.9
FN258-75-34	75 (82)	37	3.0	24	-34		-34	3.9
FN258-100-35	100 (110)	55	3.0	51	-35		-35	5.5
FN258-130-35	130 (143)	75	3.5	50	-35		-35	6.9
FN258-180-..	180 (197)	90	3.5	73	-40	-07	-40	11.0
FN258-250-..	250 (275)	132	3.4	79	-40	-07	-40	12.0
FN258HV-7-29	7 (7.7)	5.5	1.6	9	-29		-29	1.0
FN258HV-16-29	16 (17.5)	11	2.3	20	-29		-29	1.5
FN258HV-30-33	30 (33)	22	2.3	21	-33		-33	1.8
FN258HV-42-33	42 (46)	30	2.6	30	-33		-33	2.6
FN258HV-55-34	55 (60)	45	2.6	30	-34		-34	3.0
FN258HV-75-34	75 (82)	55	2.6	24	-34		-34	4.3
FN258HV-100-35	100 (110)	90	2.6	51	-35		-35	5.6
FN258HV-130-35	130 (143)	110	2.9	50	-35		-35	7.1
FN258HVIT-7-29	7 (7.7)	5.5	0.1	9	-29		-29	1.0
FN258HVIT-16-29	16 (17.5)	11	0.1	20	-29		-29	1.5
FN258HVIT-30-33	30 (33)	22	0.1	21	-33		-33	1.8
FN258HVIT-42-33	42 (46)	30	0.1	30	-33		-33	2.6
FN258HVIT-55-34	55 (60)	45	2.6	30	-34		-34	3.0
FN258HVIT-75-34	75 (82)	55	2.6	24	-34		-34	4.3
FN258HVIT-100-35	100 (110)	90	2.6	51	-35		-35	5.6
FN258HVIT-130-35	130 (143)	110	2.9	50	-35		-35	7.1
FN258L-7-..	7 (7.7)	4	0.1	9	-29	-07	-29	1.0
FN258L-16-..	16 (17.5)	7.5	0.1	20	-29	-07	-29	1.4
FN258L-30-..	30 (33)	15	0.1	23	-33	-07	-33	1.7
FN258L-42-..	42 (46)	22	0.1	30	-33	-07	-33	2.5
FN258L-55-..	55 (60)	30	0.1	30	-34	-07	-34	2.9
FN258L-75-34	75 (82)	37	0.1	24	-34		-34	3.9
FN258L-100-35	100 (110)	55	0.1	51	-35		-35	5.5
FN258L-130-35	130 (143)	75	0.1	50	-35		-35	6.9
FN258L-180-..	180 (197)	90	0.1	73	-40	-07	-40	11.0
FN258L-250-07	250 (275)	132	0.1	79	-40	-07		12.0
FN258P-7-..	7 (7.7)	4	0.4	9	-29	-07	-29	1.0
FN258P-16-..	16 (17.5)	7.5	0.4	20	-29	-07	-29	1.4
FN258P-30-..	30 (33)	15	0.4	23	-33	-07	-33	1.7
FN258P-42-..	42 (46)	22	0.4	30	-33	-07	-33	2.5
FN258P-55-..	55 (60)	30	0.4	30	-34	-07	-34	2.9
FN258P-75-34	75 (82)	37	0.4	24	-34		-34	3.9
FN258P-100-35	100 (110)	55	0.4	51	-35		-35	5.5
FN258P-130-35	130 (143)	75	0.4	50	-35		-35	6.9
FN258P-180-..	180 (197)	90	0.4	73	-40	-07	-40	11.0
FN258P-250-07	250 (275)	132	0.4	79	-40	-07		12.0

\* To compile a complete part number, please replace the -.. with the required output connection style.

\*\* Calculated at rated current, 440 VAC (FN258)/690 VAC (FN258HV) 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 (FN258 at 520 VAC and FN258HV at 760 VAC).

### Typical filter attenuation

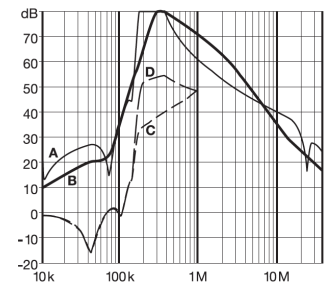
Per CISPR 17; A=50 Ω/50 Ω sym; B=50 Ω/50 Ω asym; C=0.1 Ω/100 Ω sym; D=100 Ω/0.1 Ω sym

7 to 30 A types

42 to 100 A types

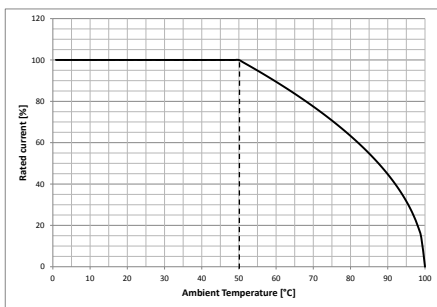
130 A types

180 and 250 A types



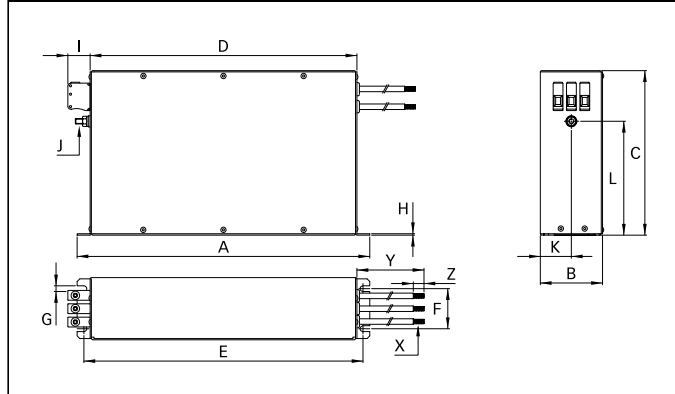
Note: typical attenuation performance of FN258 standard filters. The behavior of FN258HV, FN258HVT, FN258P and FN258L may be slightly different.

### Current derating for higher ambient temperatures

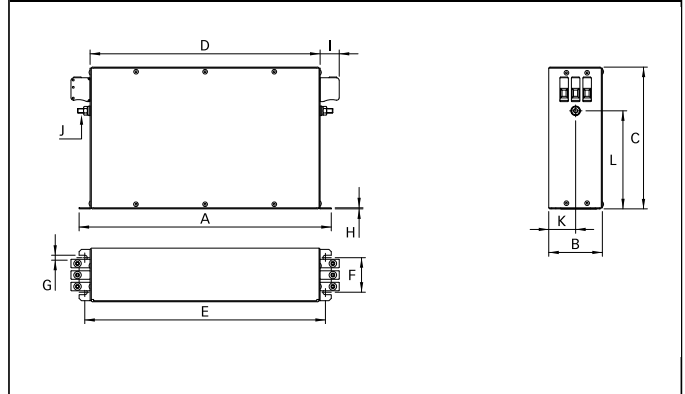


### Mechanical data

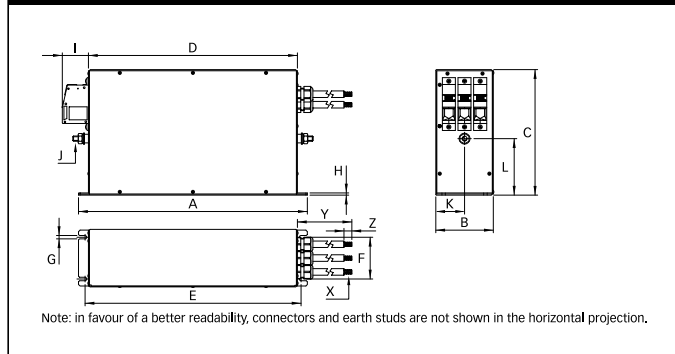
7 to 55 A types (-07)



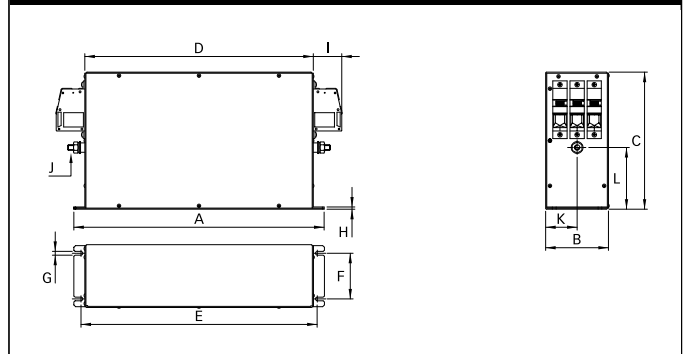
7 to 130 A types (-29, -33, -34, -35)



180 and 250 A types (-07)



180 and 250 A types (-40)



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	250 A
<b>A</b>	255	305	335	329	329	329	379	439	438	478
<b>B</b>	50	55	60	70	80	80	90	110	110	110
<b>C</b>	126	142	150	185	185	220	220	240	240	240
<b>D</b>	225	275	305	300	300	300	350	400	400	440
<b>E</b>	240	290	320	314	314	314	364	414	413	453
<b>F</b>	25	30	35	45	55	55	65	80	80	80
<b>G</b>	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5
<b>H</b>	1	1	1	1.5	1.5	1.5	1.5	3	4	4
<b>I</b>	10.9	10.9	25	25	39	39	45	45	51	51
<b>J**</b>	M5	M5	M5	M6	M6	M6	M10	M10	M10	M10
<b>K</b>	25	27.5	30	35	40	40	45	55	55	55
<b>L</b>	85	100	110	130	105	140	130	140	110	110
<b>X*</b>	AWG 16	AWG 14	AWG 10	AWG 8	AWG 6				50 mm <sup>2</sup>	70 mm <sup>2</sup>
<b>Y*</b>	300 ±10	300 ±10	400 ±10	500 ±10	500 ±10				500 ±10	500 ±10
<b>Z*</b>	9	9	9	12	12				15	15






\* Filters with output wire connections (-07) only.

\*\* Earth screw torque: M5 2.0-2.2 Nm; M6 3.5-4.0 Nm; M8 8.0-9.0 Nm; M10 15-17 Nm

All dimensions in mm; 1 inch = 25.4 mm

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

## Filter input/output connector cross sections

	-29	-33	-34	-35	-40
					
<b>Solid wire</b>	0.2-6 mm <sup>2</sup>	0.5-16 mm <sup>2</sup>	6-35 mm <sup>2</sup>	10-50 mm <sup>2</sup>	25-95 mm <sup>2</sup>
<b>Flex wire</b>	0.2-4 mm <sup>2</sup>	0.5-10 mm <sup>2</sup>	6-25 mm <sup>2</sup>	10-50 mm <sup>2</sup>	25-95 mm <sup>2</sup>
<b>AWG type wire</b>	AWG 24-10	AWG 22-6	AWG 6-2	AWG 6-1/0	AWG 0-4/0
<b>Recommended torque</b>	0.6-0.8 Nm	1.5-1.8 Nm	4.0-4.5 Nm	7-8 Nm	17-20 Nm

Terminal blocks certified acc. to UL1059 for factory wiring. Max. temperature 100°C

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



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