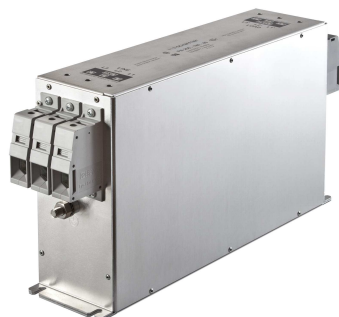


# Book-style EMC/RFI Filter for Inverters and Power Drive Systems



- 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

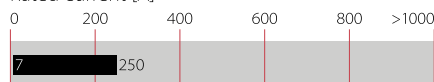


## Performance indicators

Attenuation performance



Rated current [A]



## Technical specifications

|                                                  |                                                                                                                                                                                                                                                                                                                                            |
|--------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Maximum continuous operating voltage</b>      | 3x 520/300 VAC (FN 258, FN 258 L, FN 258 P)<br>3x 760/440 VAC (FN 258 HV, FN 258 HVIT)                                                                                                                                                                                                                                                     |
| <b>Rated currents</b>                            | 7 to 250 A @50°C (480 V filters)                                                                                                                                                                                                                                                                                                           |
| <b>Operating frequency</b>                       | DC to 60 Hz                                                                                                                                                                                                                                                                                                                                |
| <b>High potential test voltage</b>               | P → E 2650 VDC for 2 sec (FN 258)<br>P → P 2100 VDC for 2 sec (FN 258)<br>P → E 2000 VAC for 2 sec (FN 258L)<br>P → P 2100 VDC for 2 sec (FN 258L)<br>P → E 3000 VDC for 2 sec (FN 258P)<br>P → P 2100 VDC for 2 sec (FN 258P)<br>P → E 3200 VDC for 2 sec (FN 258HV and FN 258HVIT)<br>P → P 3270 VDC for 2 sec (FN 258HV and FN 258HVIT) |
| <b>Protection category</b>                       | IP 20                                                                                                                                                                                                                                                                                                                                      |
| <b>Overload capability</b>                       | 4x rated current at switch on,<br>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/400 V (Mil-HB-217F)</b>           | 220,000 hours                                                                                                                                                                                                                                                                                                                              |

## Approvals



UL/CSA: FN 258 up to 180 A (ex. -180-07)

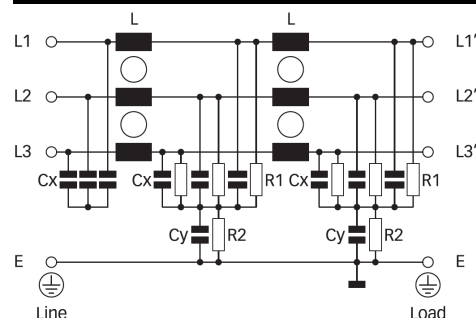
## Features and benefits

- FN 258 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, FN 258 are ready for the most diverse applications worldwide
- FN 258 HV filters up to 130 A are designed for 690 VAC distribution networks
- FN 258 HVIT filters up to 130 A meet the special requirements for the application in industrial 690 VAC IT distribution networks
- FN 258 L and FN 258 P 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

## Typical applications

- Three-phase variable speed drives and power drive systems (PDS)
- IT power distribution networks (FN 258 HVIT)
- Applications comprising energy conversion devices (inverters, converters)
- Process automation equipment
- Three-phase power supplies and UPS
- Applications with low-leakage current requirements (FN 258 L and FN 258 P)

## Typical electrical schematic



Note: HVIT versions without discharge resistor to ground.

## Filter selection table

| Filter*            | Rated current<br>@ 50°C (40°C)<br>[A] | Typical drive<br>power rating**<br>[kW] | Leakage current***<br>@ 520/760 VAC/50 Hz<br>[mA] | Power loss<br>@ 25°C/50 Hz<br>[W] | Input<br>connections | Output<br>connections |     | Weight<br>[kg] |
|--------------------|---------------------------------------|-----------------------------------------|---------------------------------------------------|-----------------------------------|----------------------|-----------------------|-----|----------------|
|                    |                                       |                                         |                                                   |                                   |                      |                       |     |                |
| FN 258-7-..        | 7 (7.7)                               | 4                                       | 2.0                                               | 9                                 | -29                  | -07                   | -29 | 1.0            |
| FN 258-16-..       | 16 (17.5)                             | 7.5                                     | 2.1                                               | 20                                | -29                  | -07                   | -29 | 1.4            |
| FN 258-30-..       | 30 (33)                               | 15                                      | 2.9                                               | 21                                | -33                  | -07                   | -33 | 1.7            |
| FN 258-42-..       | 42 (46)                               | 22                                      | 3.0                                               | 30                                | -33                  | -07                   | -33 | 2.5            |
| FN 258-55-..       | 55 (60)                               | 30                                      | 3.0                                               | 30                                | -34                  | -07                   | -34 | 2.9            |
| FN 258-75-34       | 75 (82)                               | 37                                      | 3.0                                               | 24                                | -34                  |                       | -34 | 3.9            |
| FN 258-100-35      | 100 (110)                             | 55                                      | 3.0                                               | 51                                | -35                  |                       | -35 | 5.5            |
| FN 258-130-35      | 130 (143)                             | 75                                      | 3.5                                               | 50                                | -35                  |                       | -35 | 6.9            |
| FN 258-180-..      | 180 (197)                             | 90                                      | 3.5                                               | 73                                | -40                  | -07                   | -40 | 11.0           |
| FN 258-250-..      | 250 (275)                             | 132                                     | 3.4                                               | 79                                | -40                  | -07                   | -40 | 12.0           |
| FN 258 HV-7-29     | 7 (7.7)                               | 5.5                                     | 1.6                                               | 9                                 | -29                  |                       | -29 | 1.0            |
| FN 258 HV-16-29    | 16 (17.5)                             | 11                                      | 2.3                                               | 20                                | -29                  |                       | -29 | 1.5            |
| FN 258 HV-30-33    | 30 (33)                               | 22                                      | 2.3                                               | 21                                | -33                  |                       | -33 | 1.8            |
| FN 258 HV-42-33    | 42 (46)                               | 30                                      | 2.6                                               | 30                                | -33                  |                       | -33 | 2.6            |
| FN 258 HV-55-34    | 55 (60)                               | 45                                      | 2.6                                               | 30                                | -34                  |                       | -34 | 3.0            |
| FN 258 HV-75-34    | 75 (82)                               | 55                                      | 2.6                                               | 24                                | -34                  |                       | -34 | 4.3            |
| FN 258 HV-100-35   | 100 (110)                             | 90                                      | 2.6                                               | 51                                | -35                  |                       | -35 | 5.6            |
| FN 258 HV-130-35   | 130 (143)                             | 110                                     | 2.9                                               | 50                                | -35                  |                       | -35 | 7.1            |
| FN 258 HVIT-7-29   | 7 (7.7)                               | 5.5                                     | 0.1                                               | 9                                 | -29                  |                       | -29 | 1.0            |
| FN 258 HVIT-16-29  | 16 (17.5)                             | 11                                      | 0.1                                               | 20                                | -29                  |                       | -29 | 1.5            |
| FN 258 HVIT-30-33  | 30 (33)                               | 22                                      | 0.1                                               | 21                                | -33                  |                       | -33 | 1.8            |
| FN 258 HVIT-42-33  | 42 (46)                               | 30                                      | 0.1                                               | 30                                | -33                  |                       | -33 | 2.6            |
| FN 258 HVIT-55-34  | 55 (60)                               | 45                                      | 2.6                                               | 30                                | -34                  |                       | -34 | 3.0            |
| FN 258 HVIT-75-34  | 75 (82)                               | 55                                      | 2.6                                               | 24                                | -34                  |                       | -34 | 4.3            |
| FN 258 HVIT-100-35 | 100 (110)                             | 90                                      | 2.6                                               | 51                                | -35                  |                       | -35 | 5.6            |
| FN 258 HVIT-130-35 | 130 (143)                             | 110                                     | 2.9                                               | 50                                | -35                  |                       | -35 | 7.1            |
| FN 258 L-7-..      | 7 (7.7)                               | 4                                       | 0.1                                               | 9                                 | -29                  | -07                   | -29 | 1.0            |
| FN 258 L-16-..     | 16 (17.5)                             | 7.5                                     | 0.1                                               | 20                                | -29                  | -07                   | -29 | 1.4            |
| FN 258 L-30-..     | 30 (33)                               | 15                                      | 0.1                                               | 21                                | -33                  | -07                   | -33 | 1.7            |
| FN 258 L-42-..     | 42 (46)                               | 22                                      | 0.1                                               | 30                                | -33                  | -07                   | -33 | 2.5            |
| FN 258 L-55-..     | 55 (60)                               | 30                                      | 0.1                                               | 30                                | -34                  | -07                   | -34 | 2.9            |
| FN 258 L-75-34     | 75 (82)                               | 37                                      | 0.1                                               | 24                                | -34                  |                       | -34 | 3.9            |
| FN 258 L-100-35    | 100 (110)                             | 55                                      | 0.1                                               | 51                                | -35                  |                       | -35 | 5.5            |
| FN 258 L-130-35    | 130 (143)                             | 75                                      | 0.1                                               | 50                                | -35                  |                       | -35 | 6.9            |
| FN 258 L-180-..    | 180 (197)                             | 90                                      | 0.1                                               | 73                                | -40                  | -07                   | -40 | 11.0           |
| FN 258 L-250-07    | 250 (275)                             | 132                                     | 0.1                                               | 79                                | -40                  | -07                   |     | 12.0           |
| FN 258 P-7-..      | 7 (7.7)                               | 4                                       | 0.4                                               | 9                                 | -29                  | -07                   | -29 | 1.0            |
| FN 258 P-16-..     | 16 (17.5)                             | 7.5                                     | 0.4                                               | 20                                | -29                  | -07                   | -29 | 1.4            |
| FN 258 P-30-..     | 30 (33)                               | 15                                      | 0.4                                               | 21                                | -33                  | -07                   | -33 | 1.7            |
| FN 258 P-42-..     | 42 (46)                               | 22                                      | 0.4                                               | 30                                | -33                  | -07                   | -33 | 2.5            |
| FN 258 P-55-..     | 55 (60)                               | 30                                      | 0.4                                               | 30                                | -34                  | -07                   | -34 | 2.9            |
| FN 258 P-75-34     | 75 (82)                               | 37                                      | 0.4                                               | 24                                | -34                  |                       | -34 | 3.9            |
| FN 258 P-100-35    | 100 (110)                             | 55                                      | 0.4                                               | 51                                | -35                  |                       | -35 | 5.5            |
| FN 258 P-130-35    | 130 (143)                             | 75                                      | 0.4                                               | 50                                | -35                  |                       | -35 | 6.9            |
| FN 258 P-180-..    | 180 (197)                             | 90                                      | 0.4                                               | 73                                | -40                  | -07                   | -40 | 11.0           |
| FN 258 P-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.

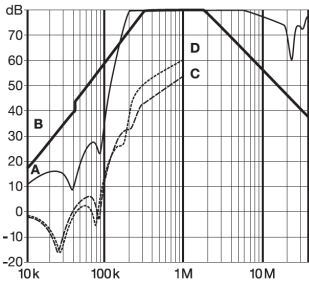
\*\* Calculated at rated current, 440 VAC (FN 258)/690 VAC (FN 258 HV) and  $\cos \phi=0.8$ . The exact value depends upon the efficiency of the drive, the motor and the entire application.

\*\*\* Standardized calculated leakage current acc. IEC60939 under normal operating conditions (FN 258 at 520 VAC and FN 258 HV at 760 VAC).

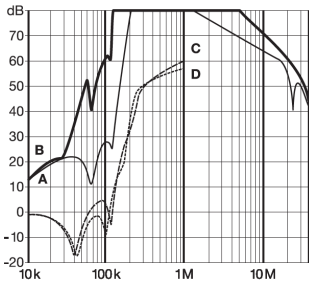
# Typical filter attenuation

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

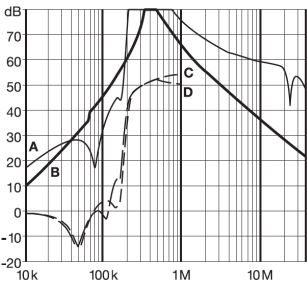
7 to 30 A types



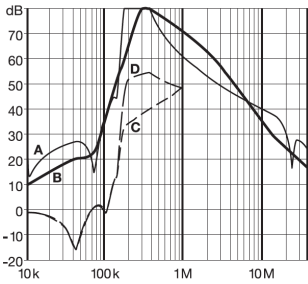
42 to 100 A types



130 A types



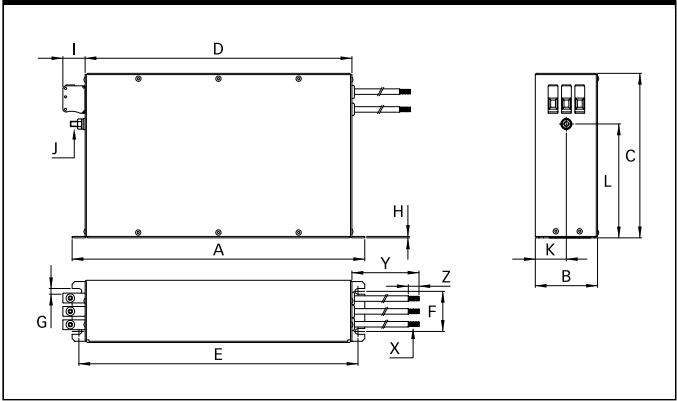
180 and 250 A types



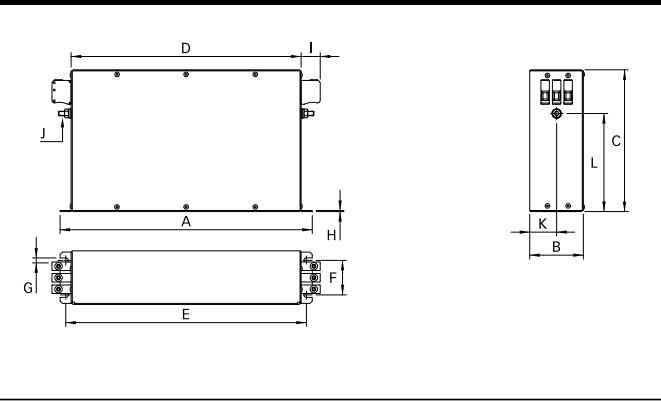
Note: typical attenuation performance of FN 258 standard filters. The behavior of FN 258 HV, FN 258 HVT, FN 258 P and FN 258 L may be slightly different.

# Mechanical data

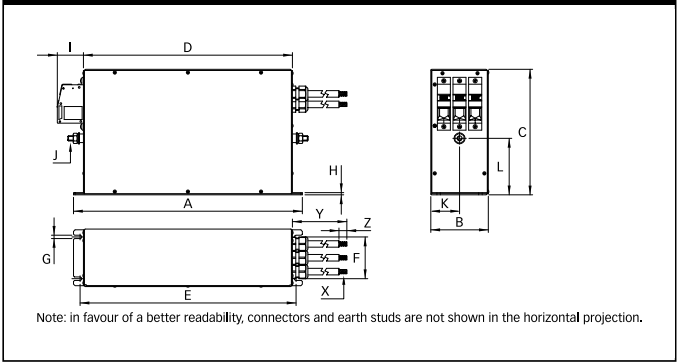
7 to 55 A types (-07)



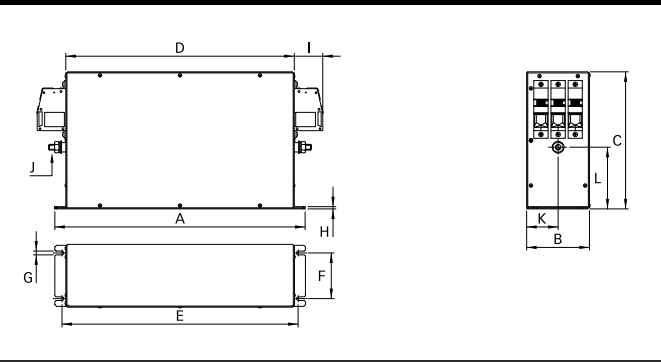
7 to 130 A types (-29, -33, -34, -35)



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.

All dimensions in mm; 1 inch = 25.4 mm

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

## Filter input/output connector cross sections

|                           | -29<br> | -33<br> | -34<br> | -35<br> | -40<br> |
|---------------------------|--------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|
| <b>Solid wire</b>         | 6 mm <sup>2</sup>                                                                          | 16 mm <sup>2</sup>                                                                         | 35 mm <sup>2</sup>                                                                         | 50 mm <sup>2</sup>                                                                           | 95 mm <sup>2</sup>                                                                           |
| <b>Flex wire</b>          | 4 mm <sup>2</sup>                                                                          | 10 mm <sup>2</sup>                                                                         | 25 mm <sup>2</sup>                                                                         | 50 mm <sup>2</sup>                                                                           | 95 mm <sup>2</sup>                                                                           |
| <b>AWG type wire</b>      | AWG 10                                                                                     | AWG 6                                                                                      | AWG 2                                                                                      | AWG 1/0                                                                                      | AWG 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                                                                                     |

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



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- Поставка электронных компонентов под контролем ВП;
- Система менеджмента качества сертифицирована по Международному стандарту ISO 9001;
- При необходимости вся продукция военного и аэрокосмического назначения проходит испытания и сертификацию в лаборатории (по согласованию с заказчиком);
- Поставка специализированных компонентов военного и аэрокосмического уровня качества (Xilinx, Altera, Analog Devices, Intersil, Interpoint, Microsemi, Actel, Aeroflex, Peregrine, VPT, Syfer, Eurofarad, Texas Instruments, MS Kennedy, Miteq, Cobham, E2V, MA-COM, Hittite, Mini-Circuits, General Dynamics и др.);

Компания «Океан Электроники» является официальным дистрибьютором и эксклюзивным представителем в России одного из крупнейших производителей разъемов военного и аэрокосмического назначения «JONHON», а так же официальным дистрибьютором и эксклюзивным представителем в России производителя высокотехнологичных и надежных решений для передачи СВЧ сигналов «FORSTAR».



## JONHON

«JONHON» (основан в 1970 г.)

Разъемы специального, военного и аэрокосмического назначения:

(Применяются в военной, авиационной, аэрокосмической, морской, железнодорожной, горно- и нефтедобывающей отраслях промышленности)

«FORSTAR» (основан в 1998 г.)

ВЧ соединители, коаксиальные кабели,  
кабельные сборки и микроволновые компоненты:

(Применяются в телекоммуникациях гражданского и специального назначения, в средствах связи, РЛС, а так же военной, авиационной и аэрокосмической отраслях промышленности).



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