

# General Purpose EMC/EMI Line Filter



- Three-phase and neutral line filter for general four-wire filtering tasks
- Choice of connection style
- Low operating leakage current
- Compliant with IEC 60950
- Suitable to meet EN 55011/14/22

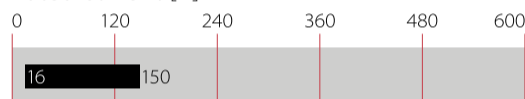


### Performance indicators

Attenuation performance



Rated current [A]



## Technical Specifications

|  |  |
|--|--|
| <b>Maximum continuous operating voltage</b>      | 3x 440/250 VAC   |
| <b>Rated currents</b>                            | 16 to 150 A @ 40°C max   |
| <b>High potential test voltage</b>               | P/N → E 2000 VAC for 2 sec<br>P → P 1900 VDC for 2 sec<br>P → N 1100 VDC for 2 sec             |
| <b>Protection category</b>                       | IP 20 (filters with connectors -29, -33, -34)<br>IP 00 (filters with connectors -06, -24, -28) |
| <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 @ 45°C/480 V (Mil-HB-217F)</b>           | 220,000 hours  |

### Approvals & Compliances



(FN 356 up to 100 A)

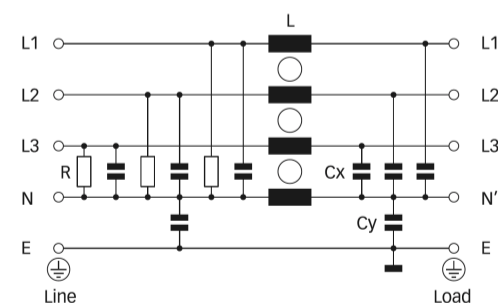
### Features and Benefits

- FN 356 represents the industry standard filter solutions for EMC compliance on three-phases and the neutral conductor, providing high attenuation of both symmetrical and asymmetrical interference
- Choice of connection style is offered for an application-specific filter selection
- Solid touch-safe terminal blocks (-29, -33, -34 versions) offer a generous contacting cross section and contribute to overall safety (IP 20)
- Used as a mains input filter, FN 356 filters increase the conducted immunity and thus contribute to system reliability
- Design compliance with IEC 60950 provides additional application flexibility







### Typical Applications

- General purpose four-wire filtering
- Mainframe computer systems
- High power office equipment
- UPS
- Installations comprising automation equipment

### Typical electrical schematic



### Filter Selection Table

| Filter*      | Buy   | Rated current<br>@ 40°C (25°C) | Leakage current**<br>@ 440 VAC/50 Hz | Power loss<br>@ 25 °C/ 50Hz | Input/Output connections |      |     | Weight<br>[kg] |
|--------------|---|--------------------------------|--------------------------------------|-----------------------------|--------------------------|------|-----|----------------|
|              |   |                                |                                      |                             | [A]                      | [mA] | [W] |                |
| FN356-16-..  |  | 16 (18.4)                      | 0.1                                  | 7.0                         | -06                      |      | -29 | 1.2            |
| FN356-25-..  |  | 25 (28.8)                      | 0.1                                  | 10.1                        |                          | -24  | -33 | 1.5            |
| FN356-36-..  |  | 36 (41.5)                      | 0.1                                  | 10.9                        |                          | -24  | -33 | 1.6            |
| FN356-50-..  |  | 50 (57.7)                      | 0.1                                  | 15.8                        |                          | -24  | -33 | 2.3            |
| FN356-100-.. |  | 100 (115.0)                    | 0.3                                  | 24.0                        |                          | -28  | -34 | 5.9            |
| FN356-150-28 |  | 150 (172.5)                    | 1.7                                  | 45.9                        |                          | -28  |     | 8.1            |

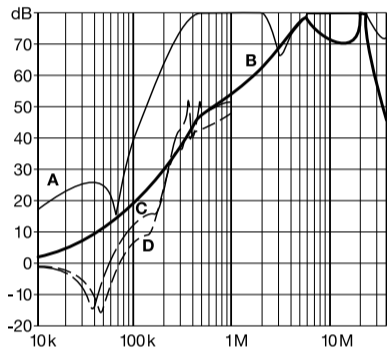
\* To compile a complete part number, please replace the .. with the required I/O connection style.

\*\* Standardized calculated leakage current acc. IEC60939 under normal operating conditions.

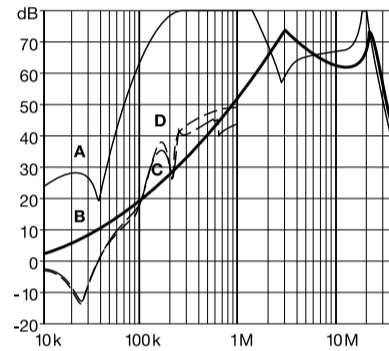
### Typical Filter Attenuation

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

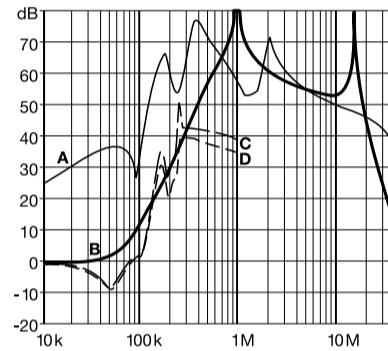
16 A types



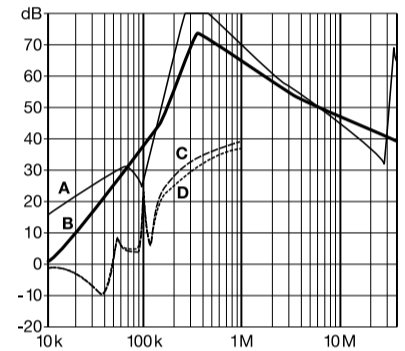
25 to 50 A types



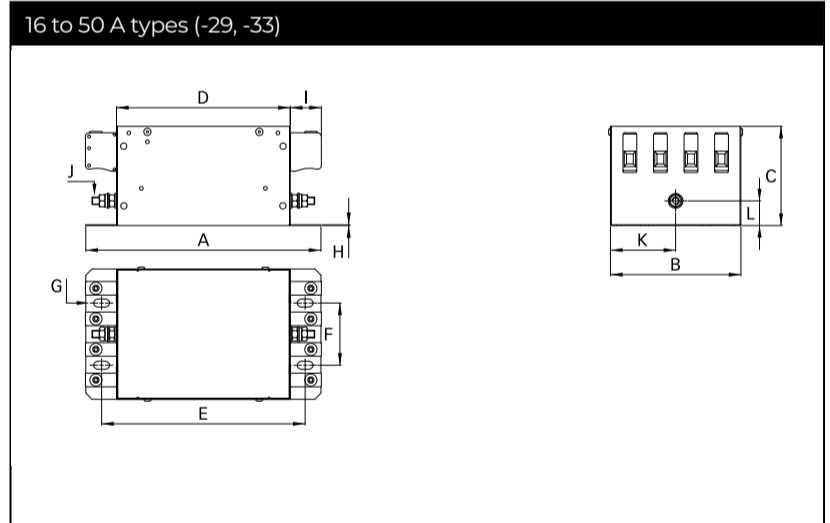
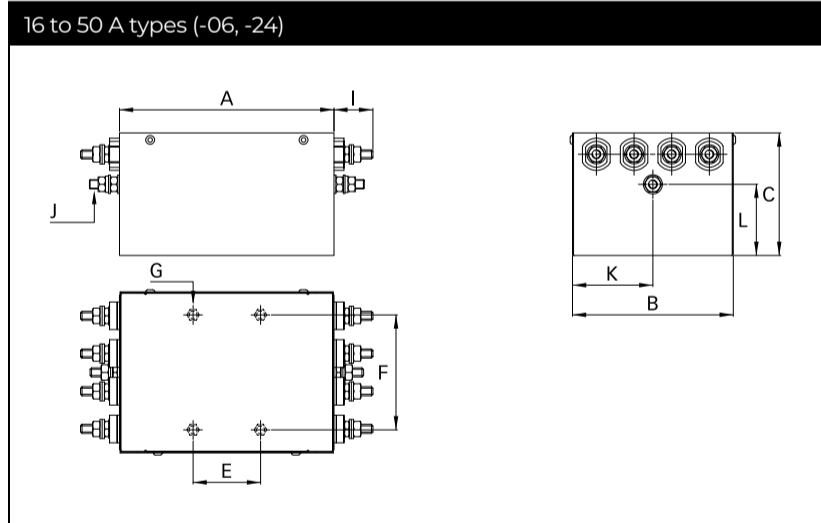
100 A types

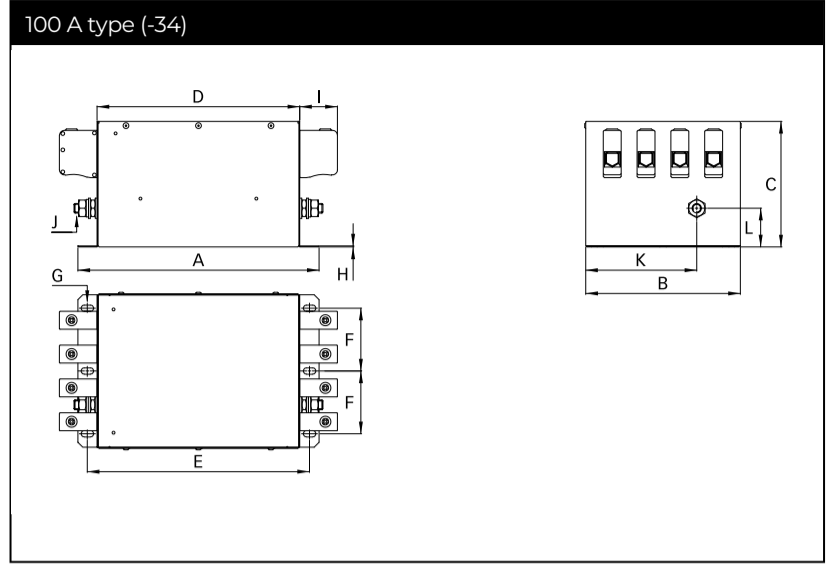
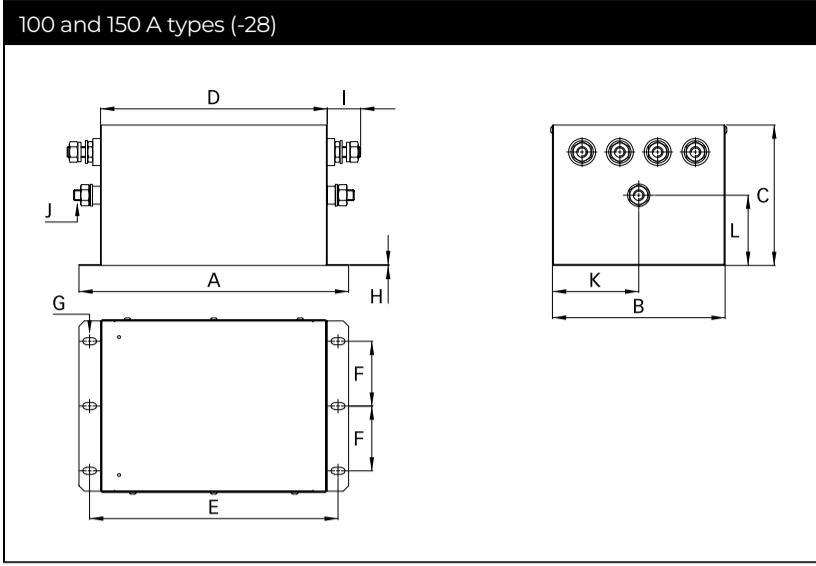


150 A types



### Mechanical Data





Note: in favour of a better readability, connectors and earth studs are not shown in the horizontal projection.

**Dimensions**

|           | 16 A (-06) | 16 A (-29) | 25 A (-24) | 25 A (-33) | 36 A (-24) | 36 A (-33) | 50 A (-24) | 50 A (-33) | 100 A (-28) | 100 A (-34) | 150 A    |
|-----------|------------|------------|------------|------------|------------|------------|------------|------------|-------------|-------------|----------|
| <b>A</b>  | 149        | 189.5      | 140        | 189.5      | 140        | 189.5      | 143.25     | 192        | 250         | 250         | 340      |
| <b>B*</b> | 104        | 105        | 105        | 105        | 105        | 105        | 122        | 122        | 160         | 160         | 160      |
| <b>C</b>  | 50         | 80         | 80         | 80         | 80         | 80         | 102        | 102        | 130         | 130         | 130      |
| <b>D</b>  |            | 140        |            | 140        |            | 140        |            | 142.5      | 210         | 210         | 300      |
| <b>E</b>  | 44 ±0.3    | 165.5      | 44 ±0.3    | 165.5      | 44 ±0.3    | 165.5      | 44 ±0.3    | 168        | 230         | 230         | 320      |
| <b>F</b>  | 75 ±0.3    | 80         | 75 ±0.3    | 50         | 75 ±0.3    | 50         | 75 ±0.3    | 98         | 60          | 65          | 60       |
| <b>G</b>  | M5 x 7     | 13 x 6.5   | M5 x 7     | 13 x 6.5   | M5 x 7     | 13 x 6.5   | M5 x 7     | 13 x 6.5   | 13 x 6.5    | 13 x 6.5    | 13 x 6.5 |
| <b>H</b>  |            | 0.7        |            | 0.7        |            | 0.7        |            | 0.7        | 1           | 1           | 1        |
| <b>I</b>  | 11         | 10.9       | 25.4       | 25         | 25.4       | 25         | 25.4       | 25         | 34          | 39          | 34       |
| <b>J</b>  | 6.3 x 0.8  | M6         | M6         | M6         | M6         | M6         | M6         | M6         | M10         | M10         | M10      |
| <b>K</b>  | 52         | 82         | 52.5       | 52.5       | 52.5       | 52.5       | 61         | 61         | 80          | 116         | 80       |
| <b>L</b>  | 22.5       | 25         | 46.5       | 20         | 46.5       | 20         | 68.5       | 35         | 65          | 40          | 65       |

\* Rivets exceed this dimension by max. 1.3mm on each side.  
 All dimensions in mm; 1 inch = 25.4 mm  
 Tolerances according: ISO 2768-m/EN 22768-m

**Filter Input/Output Connector Cross Sections**

|                           | -06 (6.3 x 0.8mm) | -24 (M6)   | -28 (M10) | -29               | -33                | -34                |
|---------------------------|-------------------|------------|-----------|-------------------|--------------------|--------------------|
|                           |                   |            |           |                   |                    |                    |
| <b>Solid wire</b>         | n/a               | n/a        | n/a       | 6 mm <sup>2</sup> | 16 mm <sup>2</sup> | 35 mm <sup>2</sup> |
| <b>Flex wire</b>          | n/a               | n/a        | n/a       | 4 mm <sup>2</sup> | 10 mm <sup>2</sup> | 25 mm <sup>2</sup> |
| <b>AWG type wire</b>      | n/a               | n/a        | n/a       | AWG 10            | AWG 6              | AWG 2              |
| <b>Recommended torque</b> | n/a               | 3.5 4.0 Nm | 15-17 Nm  | 0.6-0.8 Nm        | 1.5-1.8 Nm         | 4.0-4.5 Nm         |

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

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