

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

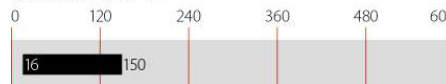


Performance indicators

Attenuation performance



Rated current [A]



Technical specifications

| | |
|--|--|
| Maximum continuous operating voltage | 3x 440/250 VAC |
| Operating frequency | dc to 60 Hz |
| Rated currents | 16 to 150 A @ 40 °C |
| High potential test voltage | P → E 2000 VAC for 2 sec P → P 1900 VDC for 2 sec |
| Protection category | IP20 (filters with connectors -29, -33, -34) IP00 (filters with connectors -06, -24, -28) |
| 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 @ 40°C/400V (Mil-HB-217F) | 220,000 hours |

Approvals



(FN 356 up to 100 A)

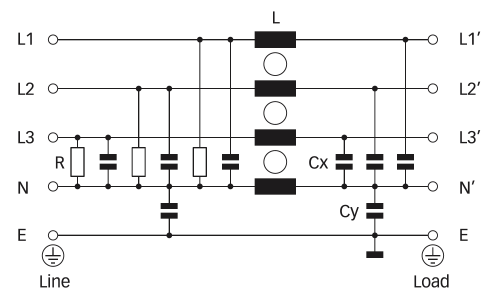
Features and benefits

- 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 (IP20)
- 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* | Rated current @ 40 °C (25 °C) | Leakage current** @ 400 VAC/50 Hz | Power loss @ 25 °C/ 50Hz | Input/Output connections | | | Weight |
|---------------|----------------------------------|--------------------------------------|-----------------------------|---|---|--|--------|
| | [A] | [mA] | [W] |  -06 |  -24 |  -29  -33 | [kg] |
| FN 356-16-.. | 16 (18.4) | 0.43 | 7.0 | -06 | -24 | -29 | 1.2 |
| FN 356-25-.. | 25 (28.8) | 0.43 | 10.1 | -06 | -24 | -33 | 1.5 |
| FN 356-36-.. | 36 (41.5) | 0.43 | 10.9 | -06 | -24 | -33 | 1.6 |
| FN 356-50-.. | 50 (57.7) | 0.43 | 15.8 | -06 | -24 | -33 | 2.3 |
| FN 356-100-.. | 100 (115.0) | 1.33 | 24.0 | -06 | -28 | -34 | 5.9 |
| FN 356-150-28 | 150 (172.5) | 8.00 | 45.9 | -06 | -28 | -34 | 8.1 |

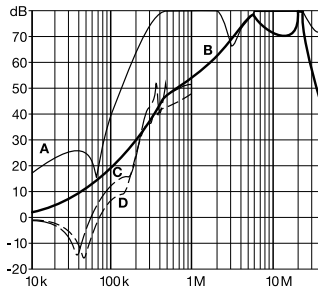
* To compile a complete part number, please replace the .. with the required I/O connection style.

** Maximum leakage under normal operating conditions, based on the assumption that all three phases and the neutral conductor are connected to the supply and the consumer. In this case, the current will mainly return through the neutral line, not as earth leakage.

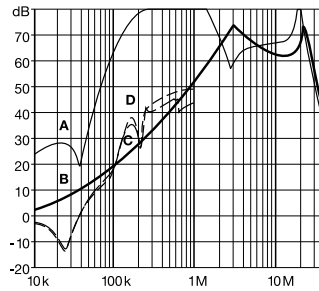
Typical filter attenuation

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

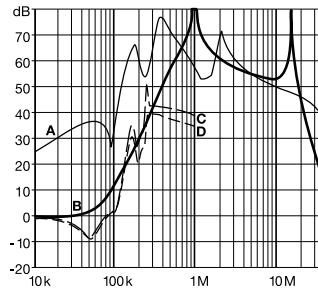
16 A types



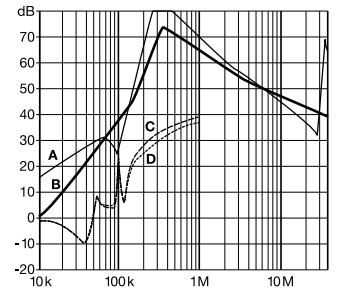
25 to 50 A types



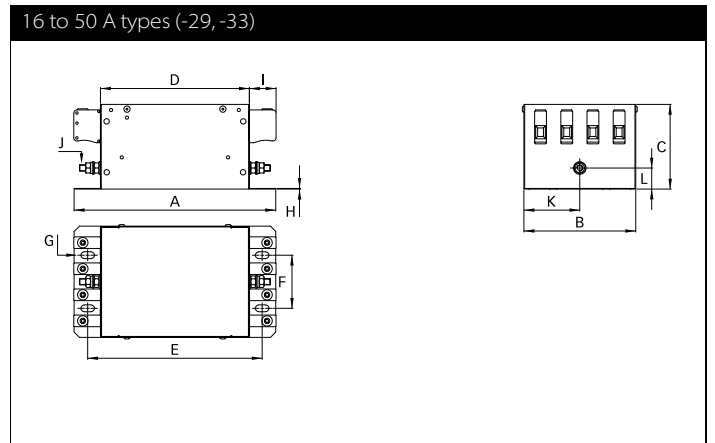
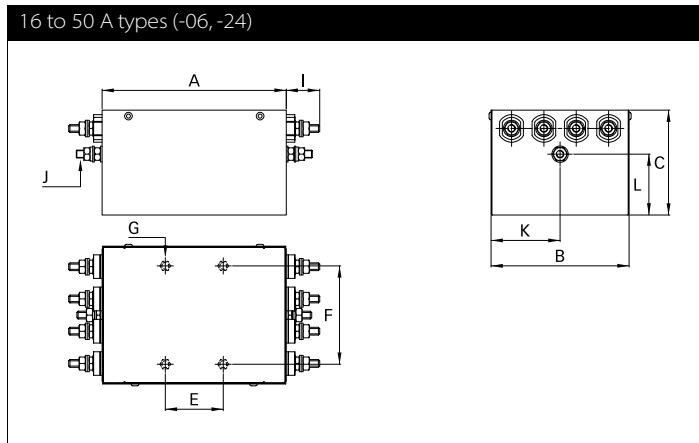
100 A types

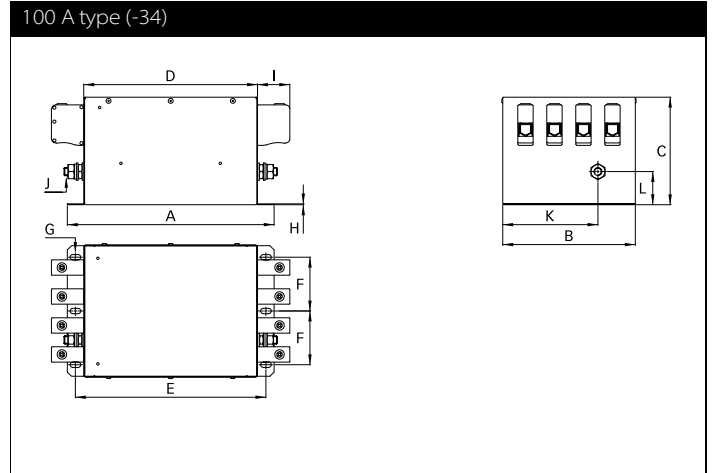
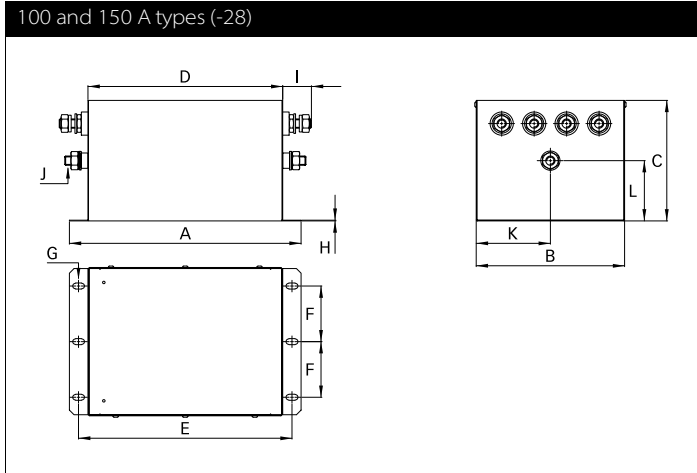


150 A types



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 |
|-----------|------------|------------|------------|------------|------------|------------|------------|------------|-------------|-------------|----------|
| A | 149 | 189.5 | 140 | 189.5 | 140 | 189.5 | 143.25 | 192 | 250 | 250 | 340 |
| B* | 104 | 105 | 105 | 105 | 105 | 105 | 122 | 122 | 160 | 160 | 160 |
| C | 50 | 80 | 80 | 80 | 80 | 80 | 102 | 102 | 130 | 130 | 130 |
| D | | 140 | | 140 | | 140 | | 142.5 | 210 | 210 | 300 |
| E | 44 ±0.3 | 165.5 | 44 ±0.3 | 165.5 | 44 ±0.3 | 165.5 | 44 ±0.3 | 168 | 230 | 230 | 320 |
| F | 75 ±0.3 | 80 | 75 ±0.3 | 50 | 75 ±0.3 | 50 | 75 ±0.3 | 98 | 60 | 65 | 60 |
| G | 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 |
| H | | 0.7 | | 0.7 | | 0.7 | | 0.7 | 1 | 1 | 1 |
| I | 11 | 10.9 | 25.4 | 25 | 25.4 | 25 | 25.4 | 25 | 34 | 39 | 34 |
| J | 6.3 x 0.8 | M6 | M6 | M6 | M6 | M6 | M6 | M6 | M10 | M10 | M10 |
| K | 52 | 82 | 52.5 | 52.5 | 52.5 | 52.5 | 61 | 61 | 80 | 116 | 80 |
| L | 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 |
|---------------------------|-------------------|------------|-----------|-------------------|--------------------|--------------------|
| | | | | | | |
| Solid wire | n/a | n/a | n/a | 6 mm ² | 16 mm ² | 35 mm ² |
| Flex wire | n/a | n/a | n/a | 4 mm ² | 10 mm ² | 25 mm ² |
| AWG type wire | n/a | n/a | n/a | AWG 10 | AWG 6 | AWG 2 |
| Recommended torque | 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 to find more details on filter connectors.



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