

DIN-Rail EMC/RFI Filter with Minimum Leakage Current



- Compact state-of-the-art filter concept
- Light weight plastic enclosure design
- Minimized filter leakage current
- Hinged safety covers
- Revolutionary embedded filter terminals
- Chassis or DIN-rail mounting option
- Selectable performance level
- Environmental friendly design without potting compound

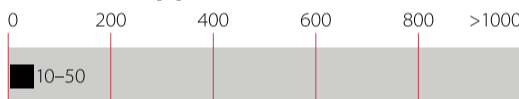


Performance indicators

Attenuation performance



Rated current [A]



Technical Specifications

| | |
|--|--|
| Maximum continuous operating voltage | 3x 520/300 VAC |
| Operating frequency | DC to 60 Hz |
| Rated currents | 10 to 50 A @ 50°C |
| High potential test voltage | P → E 2000 VAC for 2 sec (HL types) P → E 3000 VDC for 2 sec (HP types) P → P 2250 VDC for 2 sec |
| Protection category | IP 00 (protection according to VBG 4) |
| 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) | >200,000 hours |

Approvals & Compliances



Design protected by European patent (EP 1727280)

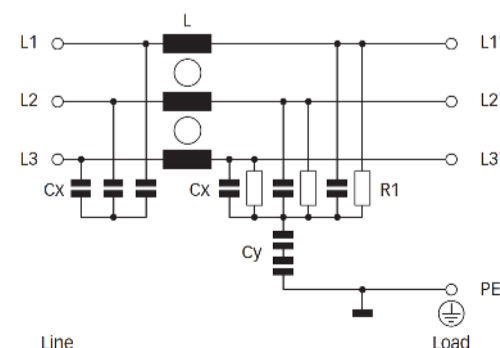
Features and Benefits

- Two different mounting versions: FN 3025 for chassis mounting and FN3026 for DIN rail mounting
- Two different performance levels (L types, P types)
- A plastic housing and a metal ground plate are cleverly combined to get the lowest possible product weight without compromising EMC behavior
- The embedded jump-terminal system from Schaffner guarantees user-friendly handling as well as fast and reliable electrical connection
- Captive hinged protective covers contribute to overall safety by offering protection against unintended contact with live conductors. They are included in the standard delivery package without causing extra cost
- Very low leakage current values make these filter ranges ideally suitable for use in Japanese electricity networks as well as in applications which set value on safety and reliability


Typical Applications

- Applications with the requirement for extremely compact filter solutions
- Applications with tough leakage current requirements or sensitive earth leakage detectors
- Applications with insufficient internal filtering or moderate interference levels
- Automation equipment
- Motor drives and servo drives with short motor cables
- Applications including stepping motors
- Semiconductor manufacturing equipment
- Three-phase power supplies
- Medical equipment (not patient-coupled)

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 [kg] |
|------------------|--------------------------------|--------------------------------|--------------------------------------|----------------------------|--|----------------|
| | [A] | [kW] | [mA] | [W] | | |
| FN 3025 HL-10-71 | 10 (10.7) | 5.5 | 0.1 | 4.8 | -71 | 0.52 |
| FN 3025 HL-20-71 | 20 (21.4) | 11 | 0.1 | 6.2 | -71 | 0.52 |
| FN 3025 HL-30-71 | 30 (32.1) | 18.5 | 0.1 | 7.0 | -71 | 0.54 |
| FN 3025 HL-40-71 | 40 (43.8) | 25 | 0.1 | 8.5 | -71 | 0.63 |
| FN 3025 HL-50-72 | 50 (53.5) | 30 | 0.1 | 10.5 | -72 | 0.93 |
| FN 3025 HP-10-71 | 10 (10.7) | 5.5 | 0.4 | 4.8 | -71 | 0.52 |
| FN 3025 HP-20-71 | 20 (21.4) | 11 | 0.4 | 6.2 | -71 | 0.52 |
| FN 3025 HP-30-71 | 30 (32.1) | 18.5 | 0.4 | 7.0 | -71 | 0.54 |
| FN 3025 HP-40-71 | 40 (43.8) | 25 | 0.4 | 8.5 | -71 | 0.63 |
| FN 3025 HP-50-72 | 50 (53.5) | 30 | 0.4 | 10.5 | -72 | 0.93 |
| FN 3026 HL-10-71 | 10 (10.7) | 5.5 | 0.1 | 4.8 | -71 | 0.56 |
| FN 3026 HL-20-71 | 20 (21.4) | 11 | 0.1 | 6.2 | -71 | 0.56 |
| FN 3026 HL-30-71 | 30 (32.1) | 18.5 | 0.1 | 7.0 | -71 | 0.58 |
| FN 3026 HL-40-71 | 40 (43.8) | 25 | 0.1 | 8.5 | -71 | 0.74 |
| FN 3026 HL-50-72 | 50 (53.5) | 30 | 0.1 | 10.5 | -72 | 0.98 |
| FN 3026 HP-10-71 | 10 (10.7) | 5.5 | 0.4 | 4.8 | -71 | 0.56 |
| FN 3026 HP-20-71 | 20 (21.4) | 11 | 0.4 | 6.2 | -71 | 0.56 |
| FN 3026 HP-30-71 | 30 (32.1) | 18.5 | 0.4 | 7.0 | -71 | 0.58 |
| FN 3026 HP-40-71 | 40 (43.8) | 25 | 0.4 | 8.5 | -71 | 0.74 |
| FN 3026 HP-50-72 | 50 (53.5) | 30 | 0.4 | 10.5 | -72 | 0.98 |

* Calculated at rated current, 480 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

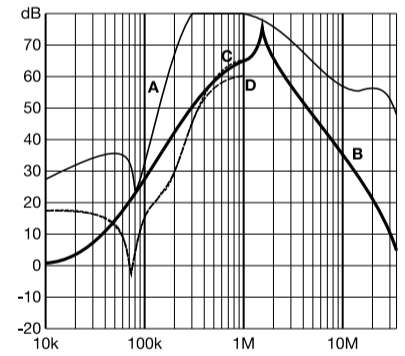
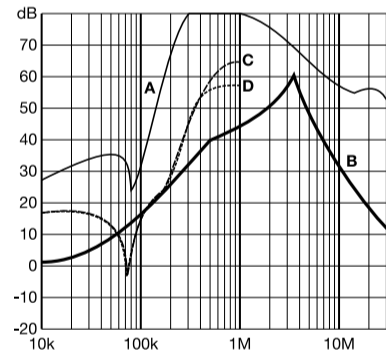
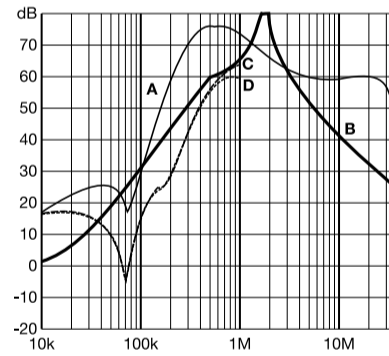
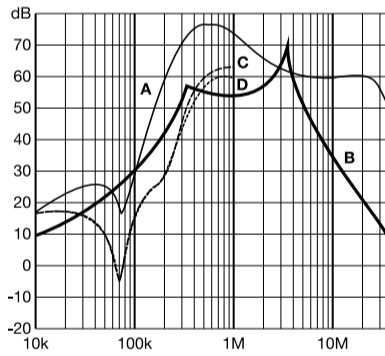
Per CISPR 17; A=50 Ω/50 Ω sym; B=50 Ω/50 Ω asym; C=0.1 Ω/100 Ω sym; D=100 Ω/0.1 Ω sym

10 and 20 A HL types

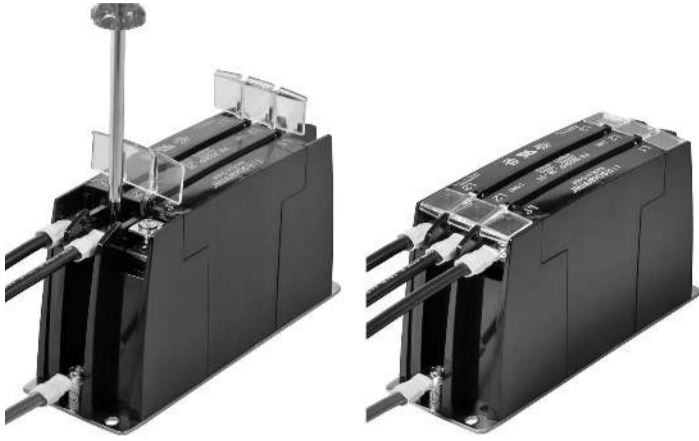
10 and 20 A HP types

30 to 50 A HL types

30 to 50 A HP types



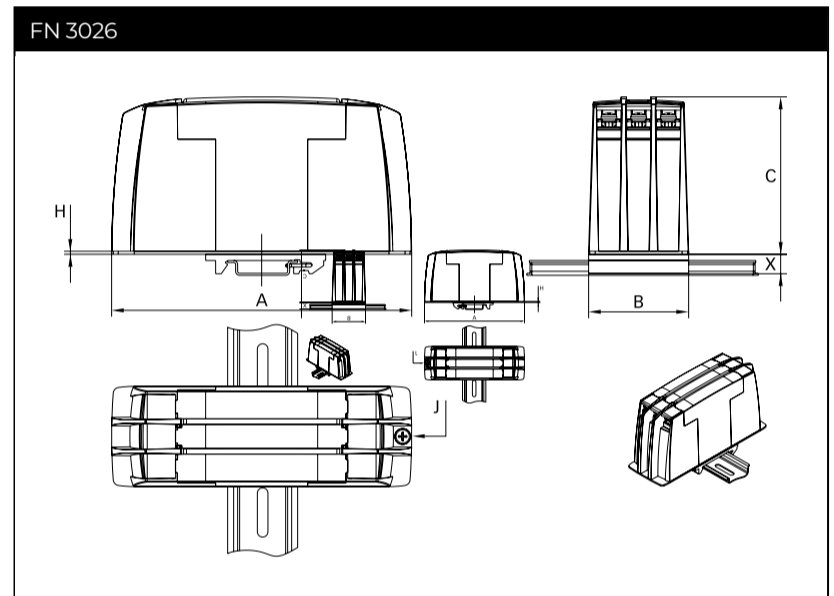
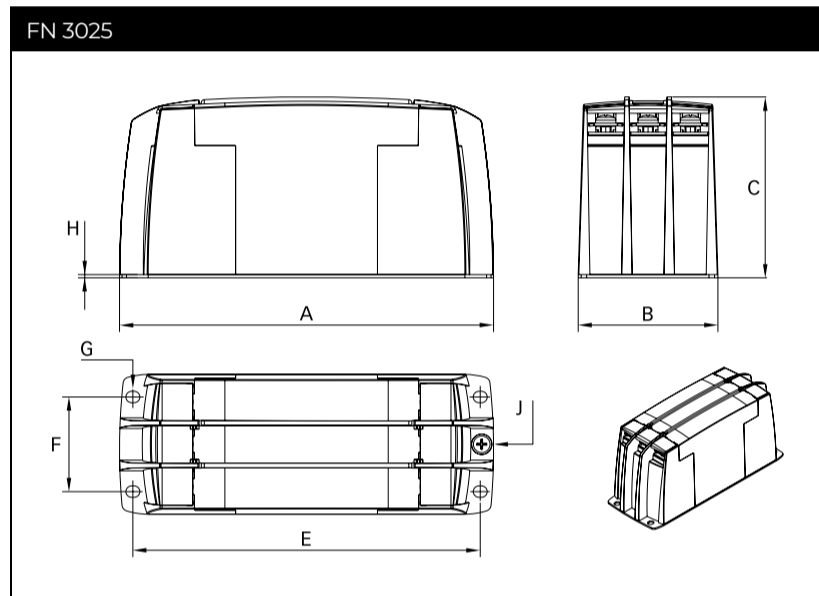
Installation



FN 3025/FN 3026 are delivered with closed plastic covers and unfastened terminals. To install the filter please proceed as follows:

- Mount the filter on a metal surface with four screws or snap it onto a TS 35 DIN- rail.
- First connect the green/yellow wire to the earth stud of the filter.
- Gently lift the two hinged plastic covers.
- Connect phase wires with cable lugs by pushing down and tightening the screws.
- Please note the torque recommendation on top of the filter.
- Push the covers back into their locked position to finish the filter installation.

Mechanical Data



Dimensions





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| | FN 3025 | | | | | FN 3026 | | | | |
|----------|-----------|-----------|-----------|-----------|-----------|---------|------|------|------|------|
| | 10 A | 20 A | 30 A | 40 A | 50 A | 10 A | 20 A | 30 A | 40 A | 50 A |
| A | 150 | 150 | 150 | 150 | 177 | 150 | 150 | 150 | 150 | 177 |
| B | 50 | 50 | 50 | 50 | 65 | 50 | 50 | 50 | 50 | 65 |
| C | 78 | 78 | 78 | 78 | 84 | 78 | 78 | 78 | 78 | 84 |
| E | 140 | 140 | 140 | 140 | 162 | | | | | |
| F | 32 | 32 | 32 | 32 | 44 | | | | | |
| G | 4.3 x 5.5 | 4.3 x 5.5 | 4.3 x 5.5 | 4.3 x 5.5 | 5.3 x 6.5 | | | | | |
| H | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 |
| J | M4 | M4 | M4 | M4 | M5 | M4 | M4 | M4 | M4 | M5 |
| X | | | | | | 9.7 | 9.7 | 9.7 | 9.7 | 9.7 |

All dimensions in mm; 1 inch = 25.4 mm

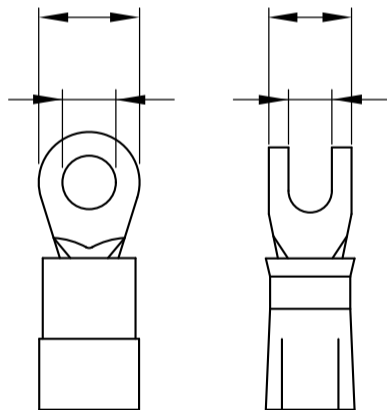
Tolerances according: ISO 2768-m/EN 22768-m

Filter Input/Output Connector Cross Sections

| | -71 (10 A) | -71 (20 A) | -71 (30 A and 40 A) | -72 (50 A) |
|-----------------------------|---|---|---|---|
| |  |  |  |  |
| Flex wire | 1.3-2.5 mm ² | 4-6 mm ² | 8-10 mm ² | 16-20 mm ² |
| AWG type wire | AWG 16-AWG 13 | AWG 12-AWG 10 | AWG 8-AWG 7 | AWG 5-AWG 4 |
| Ring/fork lug (W/d)* | max. 11 mm (9.5 mm)/ min. Ø4.3 mm** | max. 11 mm (9.5 mm)/ min. Ø4.3 mm** | max. 11 mm (9.5 mm)/ min. Ø4.3 mm** | max. 16.5 mm (15 mm)/ min. Ø5.3 mm** |
| Recommended torque | 1.0-1.2 Nm | 1.0-1.2 Nm | 1.0-1.2 Nm | 1.9-2.2 Nm |

* Schaffner recommends the use of insulated and UL-recognized ring lugs or fork lugs of the appropriate size.

** Specification in () relates to earth connector.

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

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