

# 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

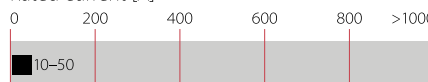


## Performance indicators

### Attenuation performance



### Rated current [A]



勝特力材料 886-3-5753170  
勝特力电子(上海) 86-21-34970699  
勝特力电子(深圳) 86-755-83298787  
[Http://www.100y.com.tw](http://www.100y.com.tw)

## 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)<br>P → E 3000 VDC for 2 sec (HP types)<br>P → P 2250 VDC for 2 sec |
| Protection category                       | IP 00 (protection according to VBG 4)                                                                  |
| Overload capability                       | 4x rated current at switch on,<br>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)

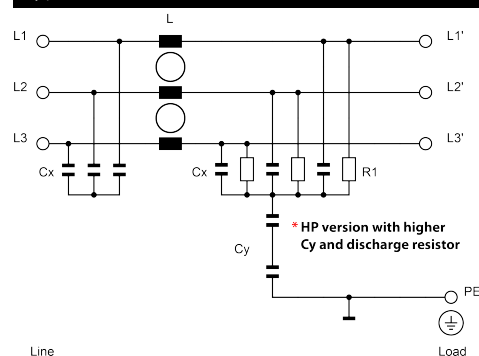
## Features and benefits

- 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 of HL version



## Filter selection table

| Filter           | Rated current<br>@ 50°C (40°C) | Typical drive<br>power rating* | Leakage current**<br>@ 520 VAC/50 Hz | Power loss<br>@ 25°C/50 Hz | Input/Output<br>connections                                                         | Weight |
|------------------|--------------------------------|--------------------------------|--------------------------------------|----------------------------|-------------------------------------------------------------------------------------|--------|
|                  | [A]                            | [kW]                           | [mA]                                 | [W]                        |  | [kg]   |
| 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   |

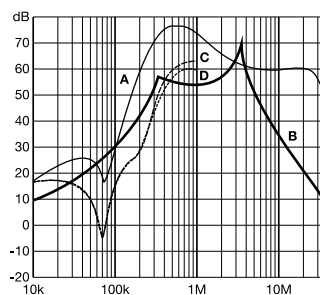
\* Calculated at rated current, 480 VAC and  $\cos \phi=0.8$ . The exact value depends upon the efficiency of the drive, the motor and the entire application.

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

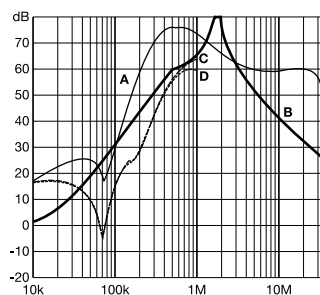
## Typical filter attenuation

Per CISPR 17; A=50  $\Omega$ /50  $\Omega$  sym; B=50  $\Omega$ /50  $\Omega$  asym; C=0.1  $\Omega$ /100  $\Omega$  sym; D=100  $\Omega$ /0.1  $\Omega$  sym

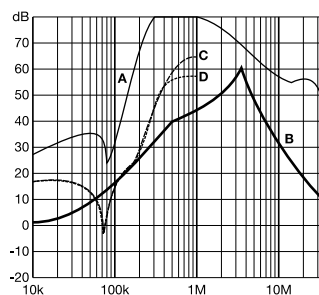
10 and 20 A HL types



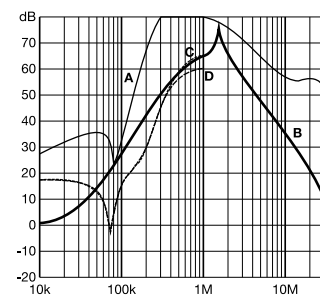
10 and 20 A HP types



30 to 50 A HL types

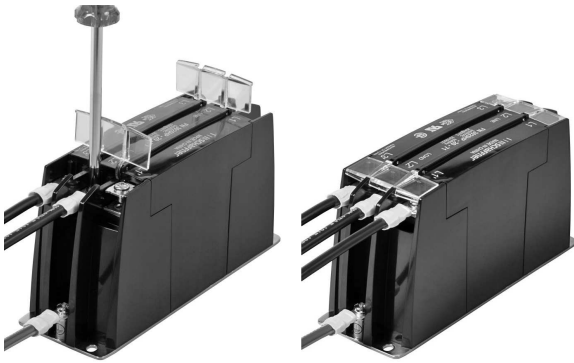


30 to 50 A HP types



勝特力材料 886-3-5753170  
 勝特力电子(上海) 86-21-34970699  
 勝特力电子(深圳) 86-755-83298787  
[Http://www.100y.com.tw](http://www.100y.com.tw)

## Installation

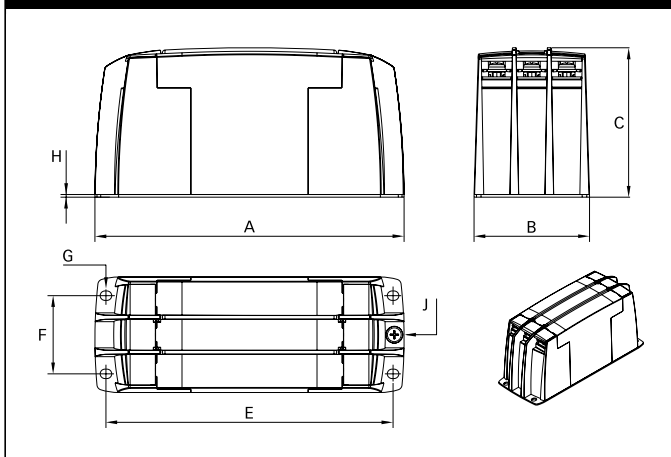


FN 3025/FN 3026 are delivered with closed plastic covers and unfastened terminals. To install the filter please proceed as follows:

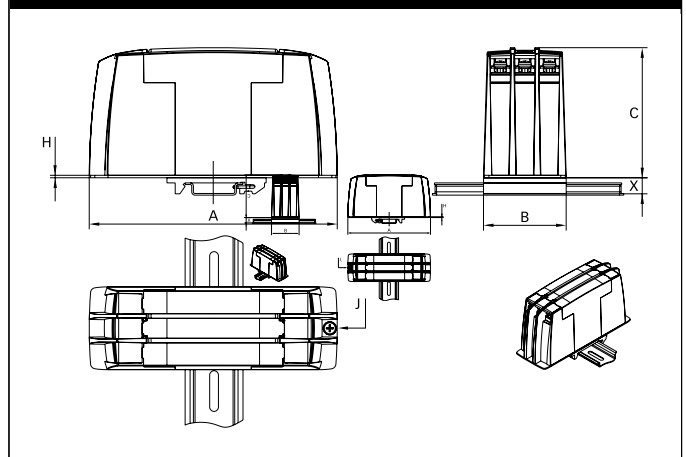
- Mount the filter on a metal surface with four screws or snap it onto a TS 35 DIN- rail.
- First connect the green/yellow wire to the earth stud of the filter.
- Gently lift the two hinged plastic covers.
- Connect phase wires with cable lugs by pushing down and tightening the screws.
- Please note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

## Mechanical data

FN 3025



FN 3026



勝特力材料 886-3-5753170  
 勝特力电子(上海) 86-21-34970699  
 勝特力电子(深圳) 86-755-83298787  
[Http://www.100y.com.tw](http://www.100y.com.tw)

Dimensions

50

|   | 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  |

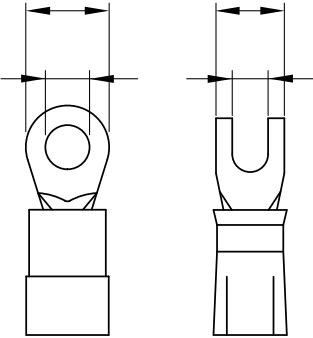
All dimensions in mm; 1 inch = 25.4 mm  
Tolerances according: ISO 2768-m/EN 22768-m

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 <sup>2</sup>                                                           | 4-6 mm <sup>2</sup>                                                               | 8-10 mm <sup>2</sup>                                                               | 16-20 mm <sup>2</sup>                                                               |
| 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)/<br>min. Ø4.3 mm**                                            | max. 11 mm (9.5 mm)/<br>min. Ø4.3 mm**                                            | max. 11 mm (9.5 mm)/<br>min. Ø4.3 mm**                                             | max. 16.5 mm (15 mm)/<br>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](http://www.schaffner.com) to find more details on filter connectors.



勝特力材料 886-3-5753170  
胜特力电子(上海) 86-21-34970699  
胜特力电子(深圳) 86-755-83298787  
Http://www.100y.com.tw