

# 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

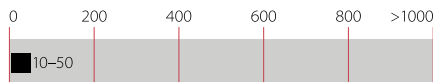


### Performance indicators

Attenuation performance



Rated current [A]



## Technical specifications

<b>Maximum continuous operating voltage</b>	3x 520/300 VAC
<b>Operating frequency</b>	DC to 60 Hz
<b>Rated currents</b>	10 to 50 A @ 50°C
<b>High potential test voltage</b>	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
<b>Protection category</b>	IP 00 (protection according to VBG 4)
<b>Overload capability</b>	4x rated current at switch on, 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>	>200,000 hours

### Approvals



Design protected by European patent (EP 1727280)

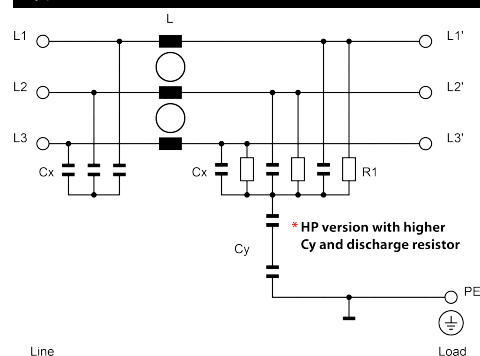
### Features and benefits

- 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 @ 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]		
<b>FN 3025 HL-10-71</b>	10 (10.7)	5.5	0.1	4.8	-71	0.52
<b>FN 3025 HL-20-71</b>	20 (21.4)	11	0.1	6.2	-71	0.52
<b>FN 3025 HL-30-71</b>	30 (32.1)	18.5	0.1	7.0	-71	0.54
<b>FN 3025 HL-50-72</b>	50 (53.5)	30	0.1	10.5	-72	0.93
<b>FN 3025 HP-10-71</b>	10 (10.7)	5.5	0.4	4.8	-71	0.52
<b>FN 3025 HP-20-71</b>	20 (21.4)	11	0.4	6.2	-71	0.52
<b>FN 3025 HP-30-71</b>	30 (32.1)	18.5	0.4	7.0	-71	0.54
<b>FN 3025 HP-50-72</b>	50 (53.5)	30	0.4	10.5	-72	0.93
<b>FN 3026 HL-10-71</b>	10 (10.7)	5.5	0.1	4.8	-71	0.56
<b>FN 3026 HL-20-71</b>	20 (21.4)	11	0.1	6.2	-71	0.56
<b>FN 3026 HL-30-71</b>	30 (32.1)	18.5	0.1	7.0	-71	0.58
<b>FN 3026 HL-50-72</b>	50 (53.5)	30	0.1	10.5	-72	0.98
<b>FN 3026 HP-10-71</b>	10 (10.7)	5.5	0.4	4.8	-71	0.56
<b>FN 3026 HP-20-71</b>	20 (21.4)	11	0.4	6.2	-71	0.56
<b>FN 3026 HP-30-71</b>	30 (32.1)	18.5	0.4	7.0	-71	0.58
<b>FN 3026 HP-50-72</b>	50 (53.5)	30	0.4	10.5	-72	0.98

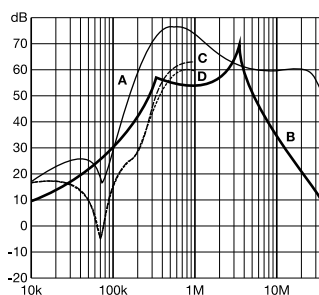
\* Calculated at rated current, 480 VAC and  $\cos \phi=0.8$ . The exact value depends upon the efficiency of the drive, the motor and the entire application.

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

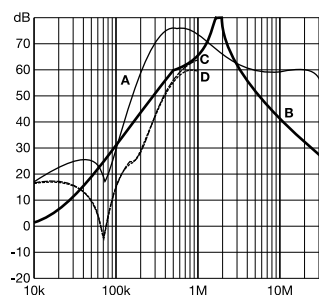
## Typical filter attenuation

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

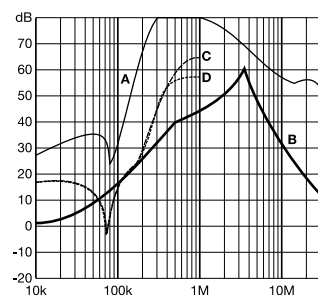
10 and 20 A HL types



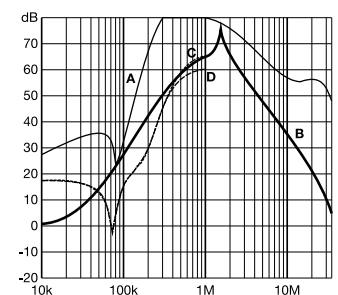
10 and 20 A HP types



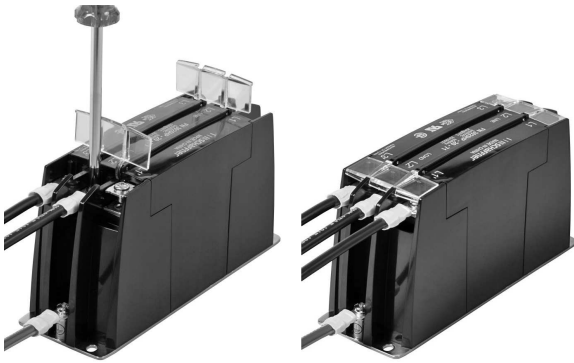
30 and 50 A HL types



30 and 50 A HP types



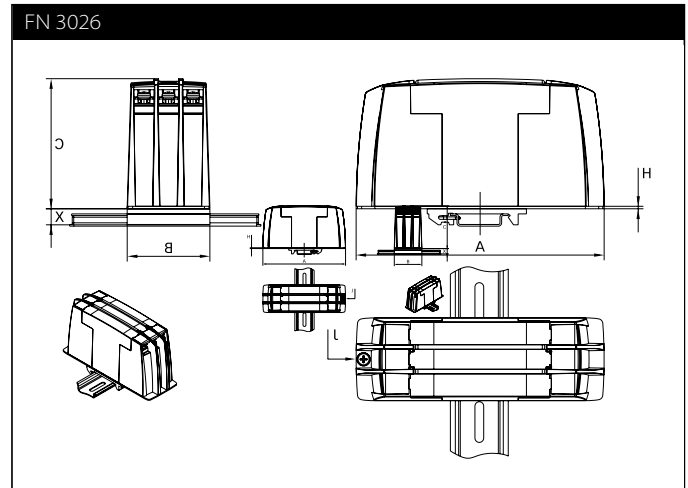
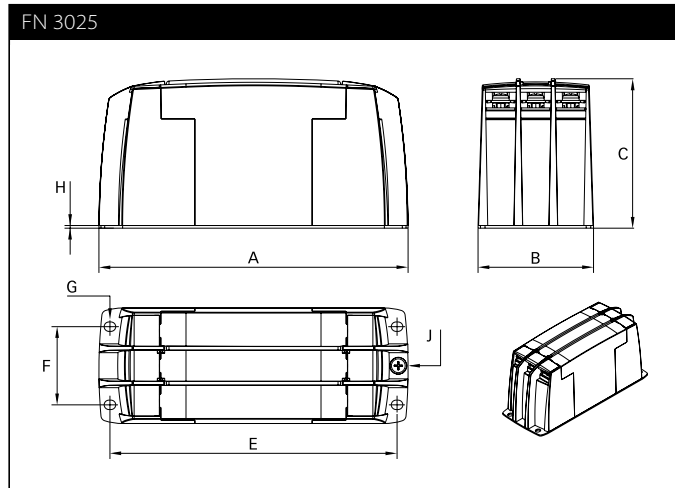
## Installation



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

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

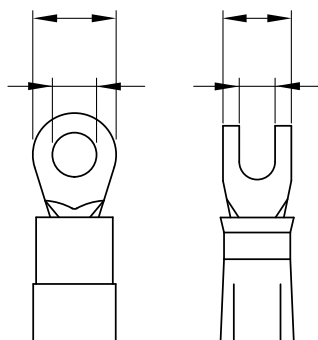
## Filter input/output connector cross sections

	-71 (10 A)	-71 (20 A)	-71 (30 A)	-72 (50 A)
				
<b>Flex wire</b>	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>
<b>AWG type wire</b>	AWG 16-AWG 13	AWG 12-AWG 10	AWG 8-AWG 7	AWG 5-AWG 4
<b>Ring/fork lug (W/d)*</b>	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**
<b>Recommended torque</b>	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.





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