

# Ultra Compact and Versatile Filtered Power Entry Module

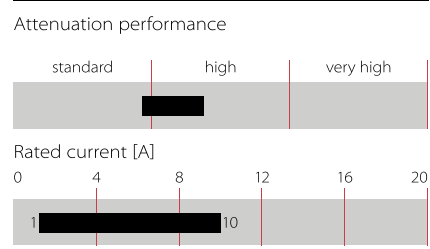


- Single stage filter
- Ultra compact design
- Rated currents up to 10 A
- dual-fuse holder
- Fuses Ø5x20 mm
- 2-pole rocker switch
- Good attenuation performance
- Faston or spring cage terminals

Check the video of our IEC Inlet Filters FN 9280 and FN 9290 on Youtube!



### Performance indicators



### Approvals



(CQC except HI-types; Patent US 20110227692/US 8766761; CN ZL201080069589.0)

Choosing FN 9280/90 product line brings you the rapid availability of a standard filter associated with the necessary safety acceptances and a high attenuation performance. For higher attenuation performance the FN 9290 family with a dual stage filter and identical panel cut-out can be used.

Standard IEC connector filters are a practical solution to pass EMI system approval in a short time. A wide selection of amperage ratings, mounting possibilities and also filters for medical applications are designed to offer you the best solution.

### Features and benefits

- Good conducted attenuation performance, based on chokes with high saturation resistance and excellent thermal behavior
- Deep-drawn iron-sheet housing for best possible shielding against magnetic fields
- Rear/front flange mounting or snap-in versions
- Dual and additional spare fuse holder
- 2-pole rocker switch
- Faston or spring cage terminals
- Medical version (B Type) according IEC/EN 60601-1
- All versions according IEC/EN 62368-1

### Technical specifications

<b>Mechanical life</b>	50,000 cycles
<b>High potential test voltage</b>	P → PE 2000 VAC for 2 sec (standard types) P → PE 2500 VAC for 2 sec (B types) P → N 760 VAC for 2 sec
<b>MTBF @ 40°C/230 V (Mil-HB-217F)</b>	>1,000,000 hours
<b>Temperature range (operation and storage)</b>	-25°C to +85°C (25/85/21)
<b>Design corresponding to</b>	UL 1283, CSA 222 No. 8 1986, EN 60939, EN 60950, EN 60601-1, UL 544, EN 60320
<b>Flammability corresponding to</b>	UL 94 V-2 or better
<b>Maximum continuous operating voltage</b>	250 VAC, 50/60 Hz
<b>Rated currents</b>	1 to 10 A @ 40°C max.
<b>Operating frequency</b>	DC to 400 Hz
<b>Switch ratings</b>	
<b>USA (UL) and Canada (C-UL)</b>	10 A, 125 VAC; 10 A, 250 VAC; 1/3 HP
<b>Europe (ENEC)</b>	10 A (4 A), 250 VAC**
<b>Electrical specifications</b>	Inrush current 82 A 6,000 on-off operations according to UL 1054 10,000 on-off operations according to ENEC
<b>Leakage current</b>	Standard: <500 uA at 250 VAC/50 Hz Medical: <5 uA at 250 VAC/50 Hz
<b>Protection category</b>	IP 40 according to IEC 60529 (front side)
<b>Fuse holder</b>	2 fuses (Ø5 x 20 mm) max. 250 V (certified to IEC 60127-6)
<b>Terminals</b>	IP 20 spring cage safe against finger touch
<b>Spring cage wire range</b>	0.2 - 1.5 mm <sup>2</sup> / 24 - 16 AWG single or flexible wire
<b>Rocker switch</b>	2-pole, dark not illuminated, Marking I - 0

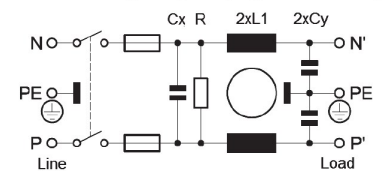
\* 10 A version is 8 A UL and CSA approved  
\*\* Value in () relates to the inductive current charge: cos γ = 0.65

### Typical applications



- Portable electrical and electronic equipment
- Consumer goods
- EDP and office equipment
- Single-phase and switch-mode power supplies
- Test and measurement equipment
- Medical electrical devices (MD) and *In-Vitro*-Diagnostics (IVD) equipment
- Audio/Video, information and communication technologies

### Typical electrical schematic

Standard types (see page 3 for all options):



## Filter selection table

Filter*	Rated current @ 40°C	Leakage current** @ 250 VAC /50 Hz (@ 120 VAC /60 Hz)	Inductance		Capacitance		Resistance R	Output connections		Weight [g]
			L1	L2	Cx	Cy				
	[A]	[mA]	[mH]	[mH]	[nF]	[nF]	[kOhm]			
FN 9280-1-..	1	0.31 (0.18)	109	0	220	22	1000	-06	-100	101
FN 9280-2-..	2	0.31 (0.18)	44	0	220	22	1000	-06	-100	102
FN 9280-4-..	4	0.31 (0.18)	1.7	0	220	22	1000	-06	-100	105
FN 9280-6-..	6	0.31 (0.18)	0.78	0	220	22	1000	-06	-100	104
FN 9280-10-..	10	0.31 (0.18)	0.32	0	220	22	1000	-06	-100	106
FN 9280 B-1-..	1	0.00	109	0	220	0	1000	-06	-100	101
FN 9280 B-2-..	2	0.00	44	0	220	0	1000	-06	-100	102
FN 9280 B-4-..	4	0.00	1.7	0	220	0	1000	-06	-100	105
FN 9280 B-6-..	6	0.00	0.78	0	220	0	1000	-06	-100	104
FN 9280 B-10-..	10	0.00	0.32	0	220	0	1000	-06	-100	106
FN 9289-1-..	1	0.31 (0.18)	109	0	220	22	1000	-06	-100	101
FN 9289-2-..	2	0.31 (0.18)	44	0	220	22	1000	-06	-100	102
FN 9289-4-..	4	0.31 (0.18)	1.7	0	220	22	1000	-06	-100	105
FN 9289-6-..	6	0.31 (0.18)	0.78	0	220	22	1000	-06	-100	104
FN 9289-10-..	10	0.31 (0.18)	0.32	0	220	22	1000	-06	-100	106
FN 9289 B-1-..	1	0.00	109	0	220	0	1000	-06	-100	101
FN 9289 B-2-..	2	0.00	44	0	220	0	1000	-06	-100	102
FN 9289 B-4-..	4	0.00	1.7	0	220	0	1000	-06	-100	105
FN 9289 B-6-..	6	0.00	0.78	0	220	0	1000	-06	-100	104
FN 9289 B-10-..	10	0.00	0.32	0	220	0	1000	-06	-100	106
FN 9280 E-1-..	1	0.31 (0.18)	109	0.4	220	22	1000	-06	-100	135
FN 9280 E-2-..	2	0.31 (0.18)	44	0.4	220	22	1000	-06	-100	136
FN 9280 E-4-..	4	0.31 (0.18)	1.66	0.4	220	22	1000	-06	-100	137
FN 9280 E-6-..	6	0.31 (0.18)	0.78	0.4	220	22	1000	-06	-100	138
FN 9280 E-10-..	10	0.31 (0.18)	0.32	0.4	220	22	1000	-06	-100	139
FN 9280 EB-1-..	1	0.00	109	0.4	220	0	1000	-06	-100	135
FN 9280 EB-2-..	2	0.00	44	0.4	220	0	1000	-06	-100	136
FN 9280 EB-4-..	4	0.00	1.66	0.4	220	0	1000	-06	-100	137
FN 9280 EB-6-..	6	0.00	0.78	0.4	220	0	1000	-06	-100	138
FN 9280 EB-10-..	10	0.00	0.32	0.4	220	0	1000	-06	-100	139
FN 9289 E-1-..	1	0.31 (0.18)	109	0.4	220	22	1000	-06	-100	135
FN 9289 E-2-..	2	0.31 (0.18)	44	0.4	220	22	1000	-06	-100	136
FN 9289 E-4-..	4	0.31 (0.18)	1.66	0.4	220	22	1000	-06	-100	137
FN 9289 E-6-..	6	0.31 (0.18)	0.78	0.4	220	22	1000	-06	-100	138
FN 9289 E-10-..	10	0.31 (0.18)	0.32	0.4	220	22	1000	-06	-100	139
FN 9289 EB-1-..	1	0.00	109	0.4	220	0	1000	-06	-100	135
FN 9289 EB-2-..	2	0.00	44	0.4	220	0	1000	-06	-100	136
FN 9289 EB-4-..	4	0.00	1.66	0.4	220	0	1000	-06	-100	137
FN 9289 EB-6-..	6	0.00	0.78	0.4	220	0	1000	-06	-100	138
FN 9289 EB-10-..	10	0.00	0.32	0.4	220	0	1000	-06	-100	139

\*To compile a complete part number, please replace the -.. with the required output connection style (e.g. FN 9289-1-06, FN 9282-4-100)

\*\* Maximum leakage current under normal conditions (according to IEC60939-3)

Product selector

FN 92www-xx-yy-zz

- Blank: Snap in range 1.0 to 2.5 mm
- Optional: 30: Snap in range >2.5 to 3.5 mm
- 06: Fast-On 6.3 x 0.8 mm (spade/soldering)
- 100: Spring cage
- 1 to 10: Rated current [A]
- Blank: Standard version
- B: Medical version (without Y2-capacitor)
- Optional: E: Earth line choke
- EB: Medical version (without YZ-capacitor) with earth line choke
- 0: Flange version vertical/horizontal/front/rear mounting set
- 9: Snap-in version, snapper on horizontal side (top / bottom)
- Optional: 1: Rear Flange mounting (top / bottom)
- 2: Front Flange mounting (top / bottom)
- 3: Rear Flange mounting (left / right)
- 4: Front Flange mounting (left / right)
- 8: Snap-in version, snapper on vertical side (left / right)
- 8: Single stage filter

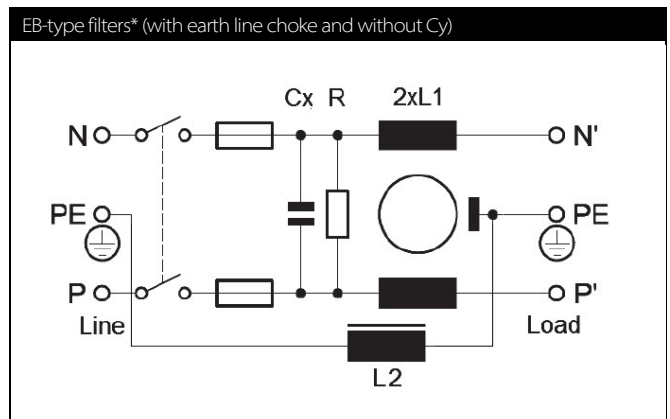
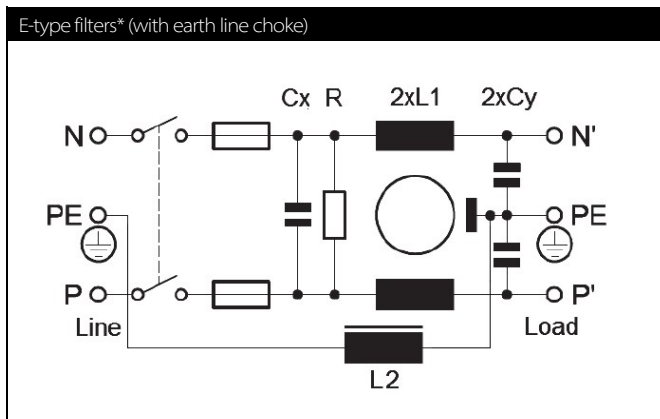
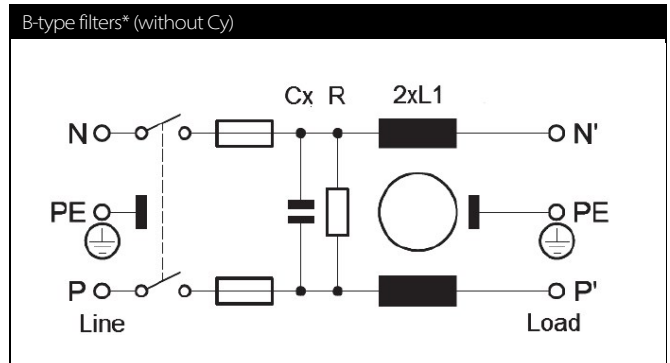
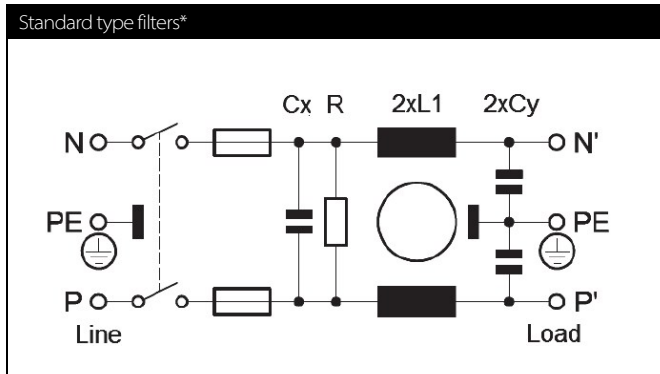
All FN 9280/FN 9290 are equipped with a dual fuse holder with a spare fuse holder.

**Note: All FN 9280/FN 9280 B/FN 9289/FN 9289 B/FN 9290/FN 9290 B/FN 9299/FN 9299 B are stock types from our distribution partners.**

Order Examples:

FN 9280 B-6-100: Medical version of single stage, dual fuse EMC/EMI filter, flange set for vertical/horizontal/front/rear mounting, 6 A, spring cage terminals, from stock available.

FN 9298-6-06-30: Dual stage, dual fuse EMC/EMI filter, snap-in version, snappers for snap-in panel thickness range >2.5 to 3.5 mm, snapper on vertical side, 6 A, fast-on terminals, non-stock order type

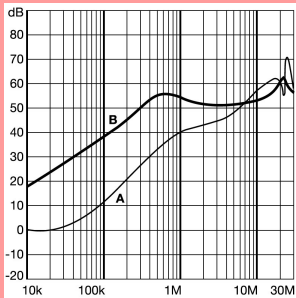


\* Fuses are not included

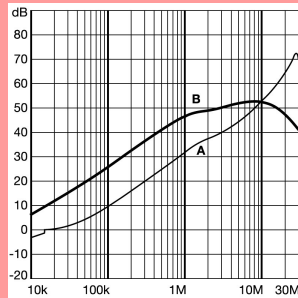
### Typical filter attenuation

**FN 9280 Series** | Per CISPR 17; A=50 Ω/50 Ω sym; B=50 Ω/50 Ω asym

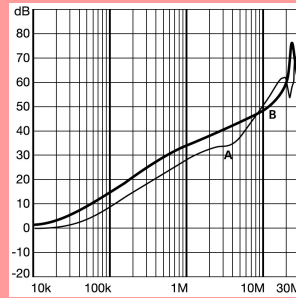
1 A types



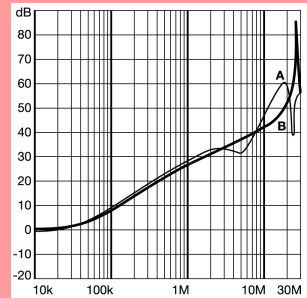
2 A types



4 – 6 A types

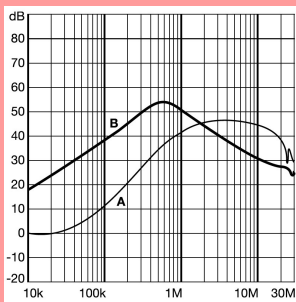


10 A types

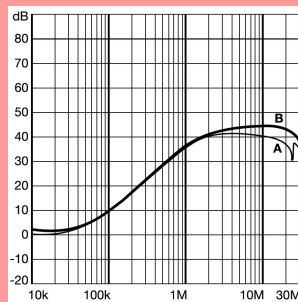


**FN 9280 B Series** | Per CISPR 17; A=50 Ω/50 Ω sym; B=50 Ω/50 Ω asym

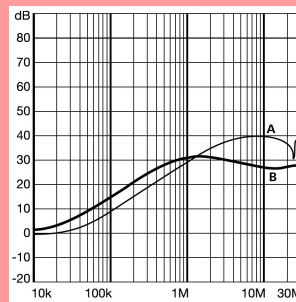
1 A types



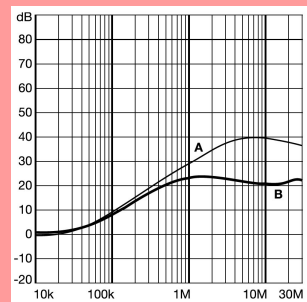
2 A types



4 – 6 A types

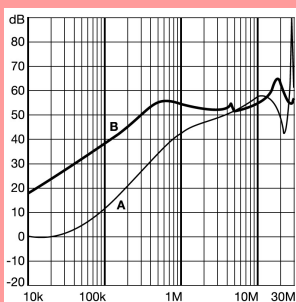


10 A types

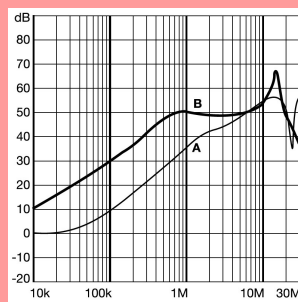


**FN 9280 E Series** | Per CISPR 17; A=50 Ω/50 Ω sym; B=50 Ω/50 Ω asym

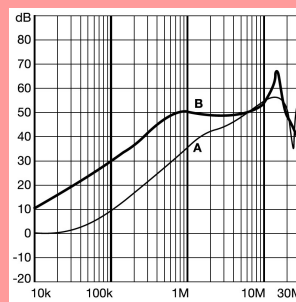
1 A types



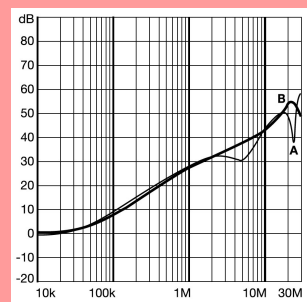
2 A types



4 – 6 A types

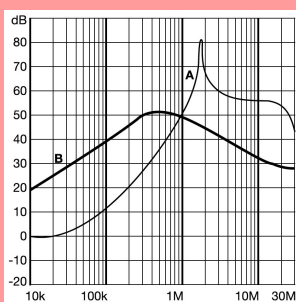


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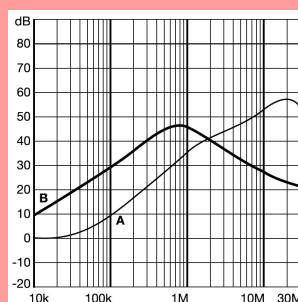


**FN 9280 EB Series** | Per CISPR 17; A=50 Ω/50 Ω sym; B=50 Ω/50 Ω asym

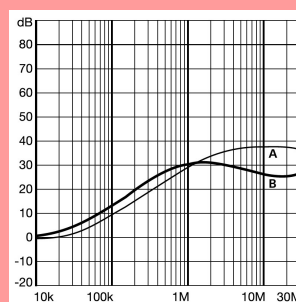
1 A types



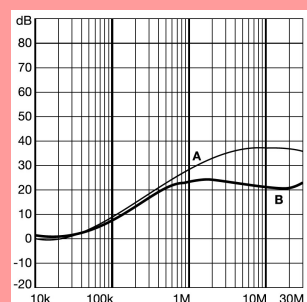
2 A types



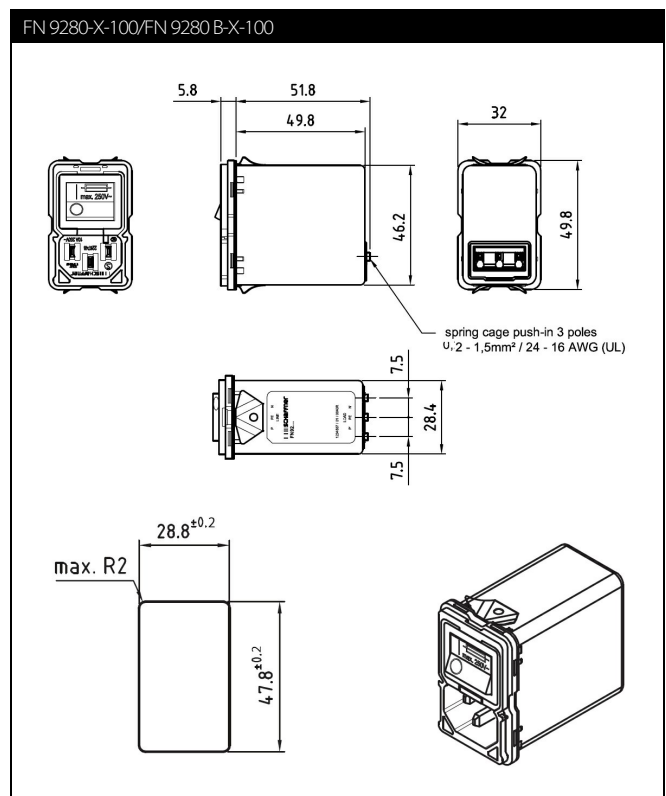
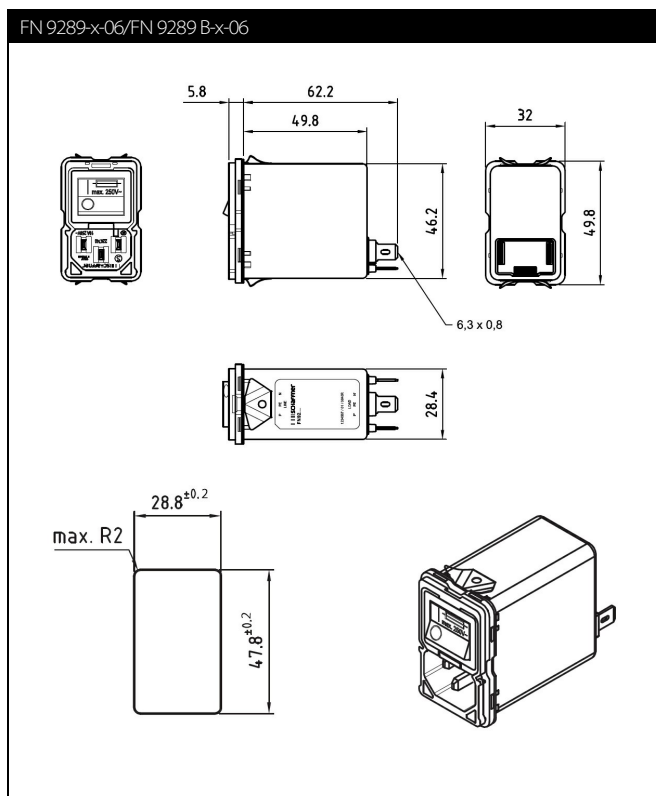
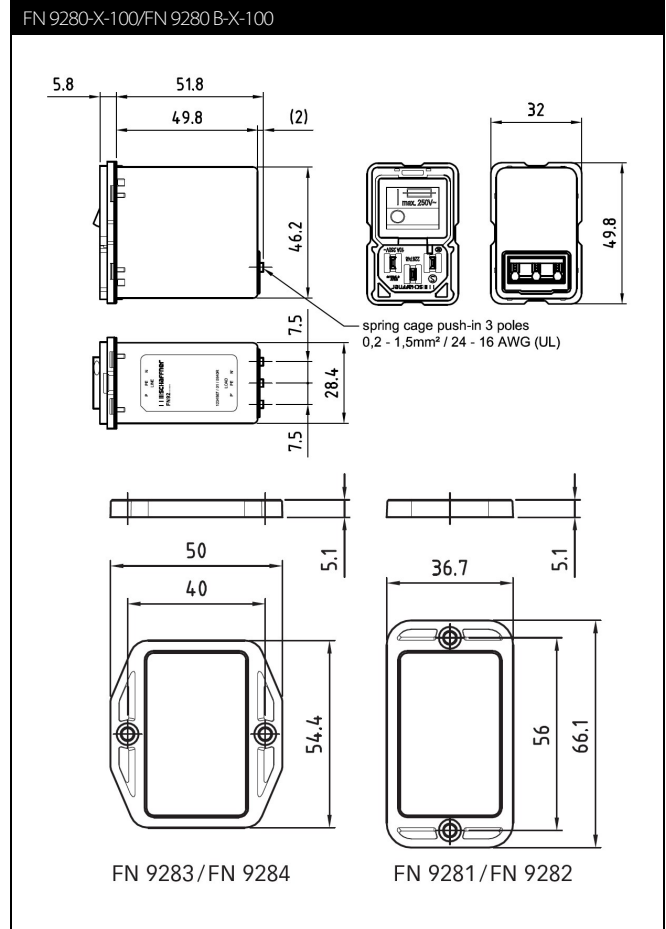
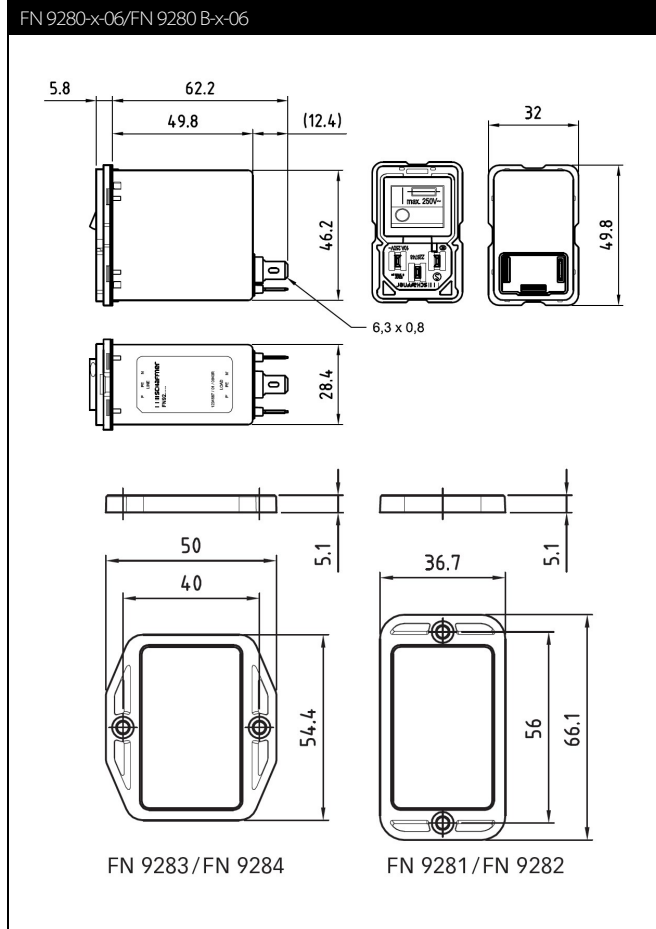
4 – 6 A types



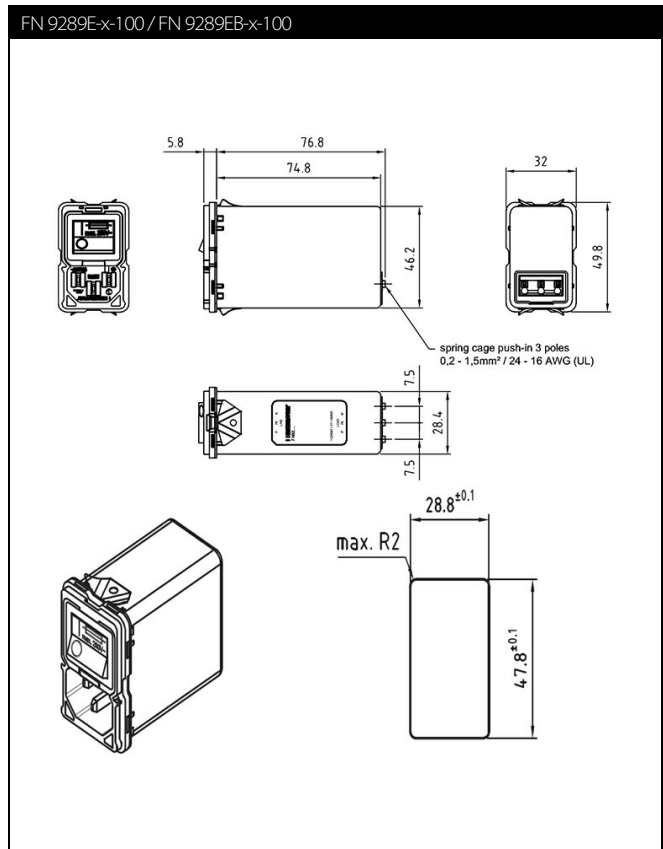
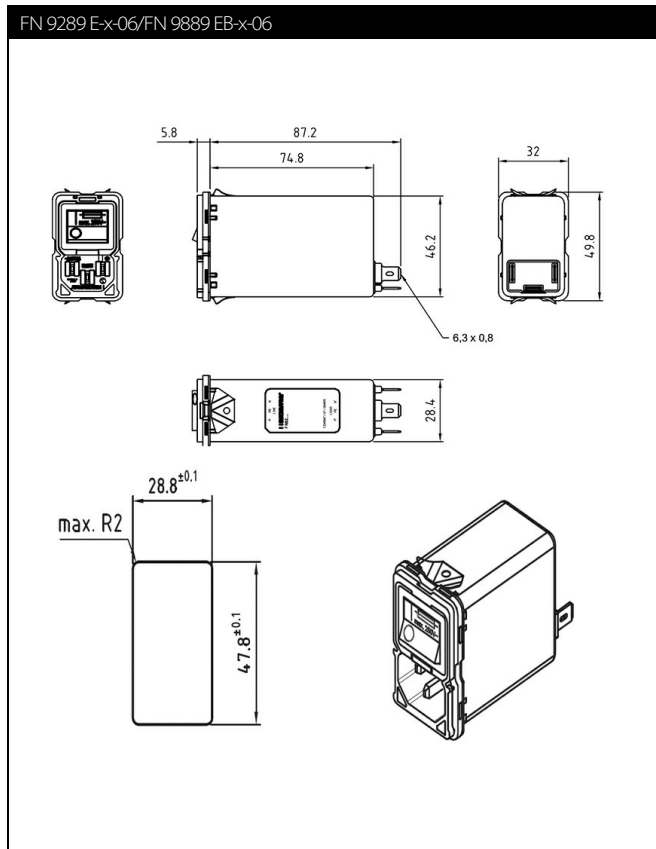
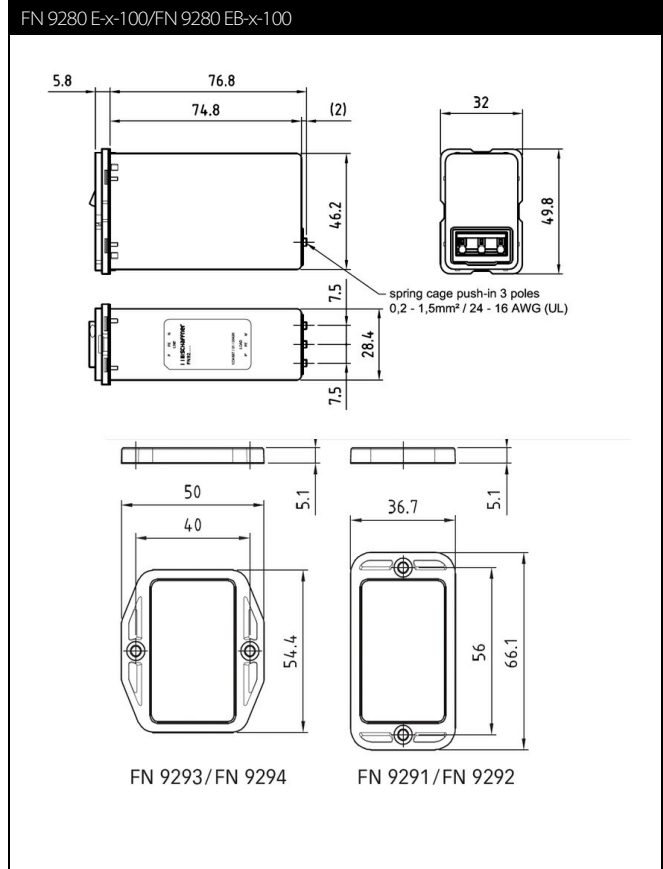
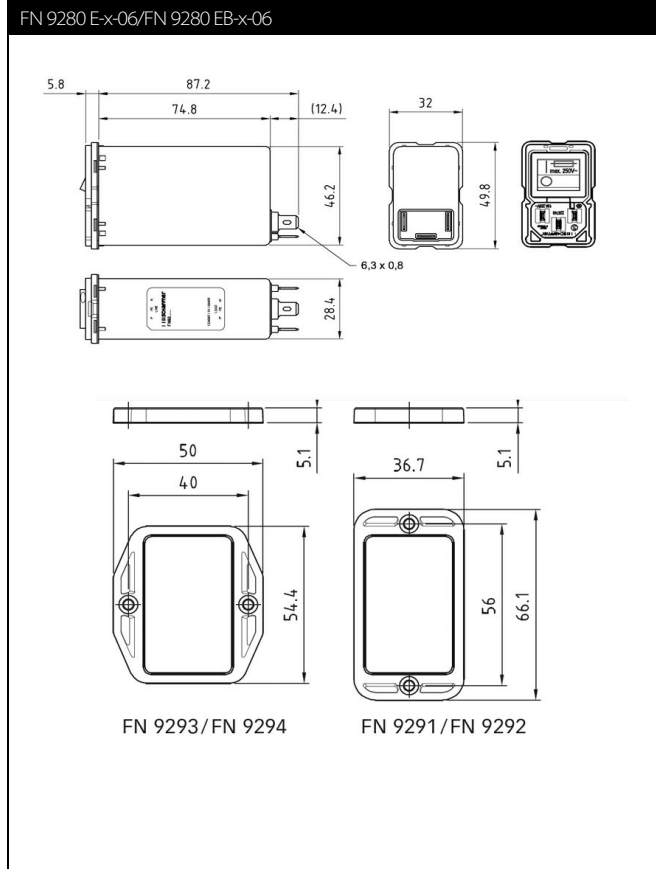
10 A types



**Mechanical Data**



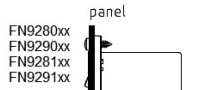
### Mechanical Data



Assembly Instructions

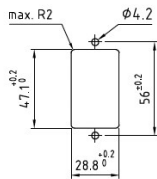
**REAR MOUNTING**

vertical:

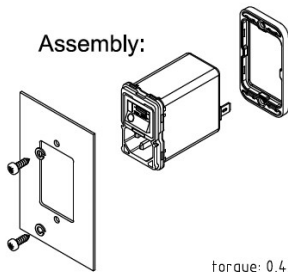


FN9280xx  
FN9290xx  
FN9281xx  
FN9291xx

Cutout:

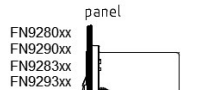


Assembly:



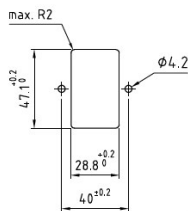
torque: 0,4Nm

horizontal:

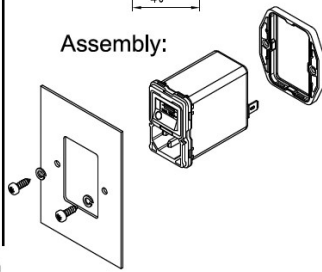


FN9280xx  
FN9290xx  
FN9283xx  
FN9293xx

Cutout:

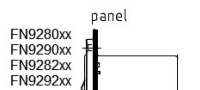


Assembly:



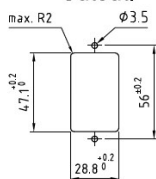
**FRONT MOUNTING**

vertical:

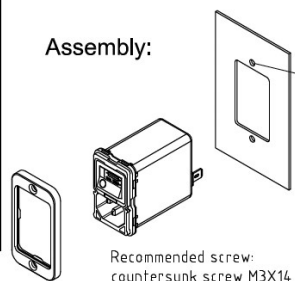


FN9280xx  
FN9290xx  
FN9282xx  
FN9292xx

Cutout:

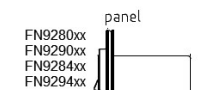


Assembly:



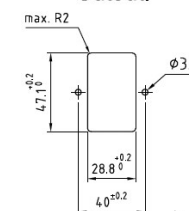
Recommended screw:  
countersunk screw M3X14 DIN963A

horizontal:

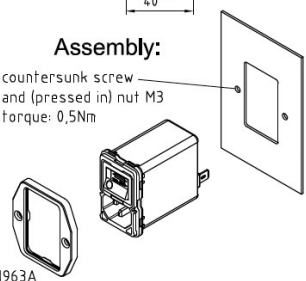


FN9280xx  
FN9290xx  
FN9284xx  
FN9294xx

Cutout:



Assembly:



countersunk screw  
and (pressed in) nut M3  
torque: 0,5Nm

**Terminal -100**

clamping range, solid wire / flex wire

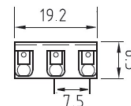
0,20mm<sup>2</sup> –1,5mm<sup>2</sup>, AWG24 –AWG16

operating force of slider

max.40N

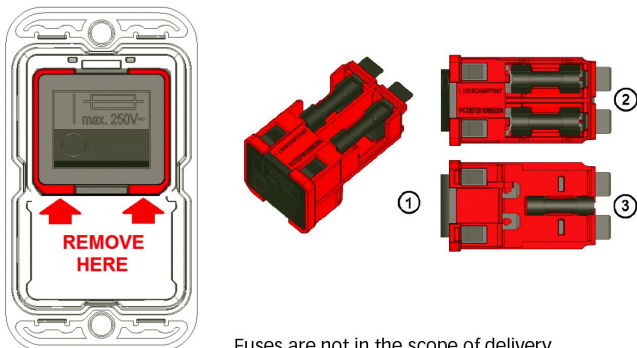
recommended stripped length

8mm



Push the knob above the terminal to insert the wire.

**Removal of the combined switch / fuse holder unit**



Fuses are not in the scope of delivery.

An additional fuse mark on the switch indicates the fuses holders behind the switch. The red frame shows the outline of the removable unit.

With a simple tool like a Swiss Army knife or a screwdriver No 1 or smaller the unit (1) can be removed from the filter. On the topside (2) behind the switch there are two fuse holders for each live connection. On the bottom side (3) is a clip to carry an additional spare fuse.

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

## Accessories for IEC Inlet Filters and Power Entry Modules

The accessories displayed are a selection of available accessories for IEC Inlet filters and IEC Power entry modules. As they are displayed in a general way there might be variants of the filters where the accessories are not available.

For further information please ask your local Schaffner Sales Partner and visit our homepage <https://www.schaffner.com/>.

### Power Cord with Locking System for Inlet Filters IL 13, IL 13 P, IL 19



Link to Datasheet: [Datasheet IEC C13/C19 locking cable](#)

The locking system has a tensile force of typical 200N.

It is recommended to use it with flange mount filters.

Lock Power Cords with IEC Inlets and Filters"

Schaffner power cords with IEC lock guard against accidental disconnection of all electrical appliances with an IEC inlet. No exchange or modification of the IEC inlet or IEC inlet filter system is needed. Easy retrofit for all electronic equipments and devices.

### IEC C13 Rewireable Connector for individual Power Cord with Locking System



Link to Datasheet: [Datasheet IEC C13 rewireable](#)

The locking system has a tensile force of typical 300N. It is recommended to use it with flange mount filters. For details refer to our Application Note "Using IEC Lock Power Cords with IEC Inlets and Filters" Schaffner power connector with IEC lock guard against accidental disconnection of all electrical appliances with an IEC inlet. No exchange or modification of the IEC inlet or IEC inlet filter system is needed. Easy retrofit for all electronic equipments and devices.



## Headquarters, global innovation and development

### Switzerland

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