

# Ultra Compact and Versatile Filtered Power Entry Module



- Single stage filter
- Ultra compact design
- Rated currents up to 10 A
- dual-fuse holder
- Fuses Ø5x20mm
- 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

Attenuation performance



Rated current [A]



### 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 fuse holder
- 2-pole rocker switch
- Faston or spring cage terminals for more flexible assembly
- Medical version (B Type) according to IEC/EN 60601-1
- Spare fuse holder

### Typical applications

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

## Technical specifications

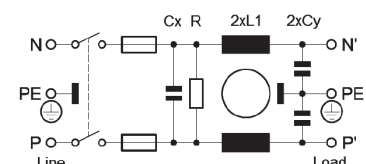
<b>Mechanical life</b>	50,000 cycles
<b>High potential test voltage</b>	P → PE 2000 VAC for 2 sec (standard types) P → PE 2500 VAC for 2 sec (B types) P → N 760 VAC for 2 sec
<b>MTBF @ 40°C/230 V (Mil-HB-217F)</b>	>1,000,000 hours
<b>Temperature range (operation and storage)</b>	- 25°C to +85°C (25/85/21)
<b>Design corresponding to</b>	UL 1283, CSA 22.2 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
<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 electrical schematic

FN 9280 Standard types (B types without Cy)



## Filter selection table

Filter*	Rated current @ 40°C	Leakage current** @ 250 V ~/50 Hz	Inductance		Capacitance		Resistance	Output connections		Weight
			L1	L2	Cx	R		[kOhm]		
	[A]	[uA]		[mH]		[nF]			[g]	
FN 9280-1-..	1	311	10.9	0	220	2.2	1000	-06	-100	101
FN 9280-2-..	2	311	4.4	0	220	2.2	1000	-06	-100	102
FN 9280-4-..	4	311	1.7	0	220	2.2	1000	-06	-100	105
FN 9280-6-..	6	311	0.78	0	220	2.2	1000	-06	-100	104
FN 9280-10-..	10	311	0.32	0	220	2.2	1000	-06	-100	106
FN 9280 B-1-..	1	2	10.9	0	220	0	1000	-06	-100	101
FN 9280 B-2-..	2	2	4.4	0	220	0	1000	-06	-100	102
FN 9280 B-4-..	4	2	1.7	0	220	0	1000	-06	-100	105
FN 9280 B-6-..	6	2	0.78	0	220	0	1000	-06	-100	104
FN 9280 B-10-..	10	2	0.32	0	220	0	1000	-06	-100	106
FN 9289-1-..	1	311	10.9	0	220	2.2	1000	-06	-100	101
FN 9289-2-..	2	311	4.4	0	220	2.2	1000	-06	-100	102
FN 9289-4-..	4	311	1.7	0	220	2.2	1000	-06	-100	105
FN 9289-6-..	6	311	0.78	0	220	2.2	1000	-06	-100	104
FN 9289-10-..	10	311	0.32	0	220	2.2	1000	-06	-100	106
FN 9289 B-1-..	1	2	10.9	0	220	0	1000	-06	-100	101
FN 9289 B-2-..	2	2	4.4	0	220	0	1000	-06	-100	102
FN 9289 B-4-..	4	2	1.7	0	220	0	1000	-06	-100	105
FN 9289 B-6-..	6	2	0.78	0	220	0	1000	-06	-100	104
FN 9289 B-10-..	10	2	0.32	0	220	0	1000	-06	-100	106
FN 9280 E-1-..	1	311	10.9	0.4	220	2.2	1000	-06	-100	135
FN 9280 E-2-..	2	311	4.4	0.4	220	2.2	1000	-06	-100	136
FN 9280 E-4-..	4	311	1.66	0.4	220	2.2	1000	-06	-100	137
FN 9280 E-6-..	6	311	0.78	0.4	220	2.2	1000	-06	-100	138
FN 9280 E-10-..	10	311	0.32	0.4	220	2.2	1000	-06	-100	139
FN 9280 EB-1-..	1	2	10.9	0.4	220	0	1000	-06	-100	135
FN 9280 EB-2-..	2	2	4.4	0.4	220	0	1000	-06	-100	136
FN 9280 EB-4-..	4	2	1.66	0.4	220	0	1000	-06	-100	137
FN 9280 EB-6-..	6	2	0.78	0.4	220	0	1000	-06	-100	138
FN 9280 EB-10-..	10	2	0.32	0.4	220	0	1000	-06	-100	139
FN 9289 E-1-..	1	311	10.9	0.4	220	2.2	1000	-06	-100	135
FN 9289 E-2-..	2	311	4.4	0.4	220	2.2	1000	-06	-100	136
FN 9289 E-4-..	4	311	1.66	0.4	220	2.2	1000	-06	-100	137
FN 9289 E-6-..	6	311	0.78	0.4	220	2.2	1000	-06	-100	138
FN 9289 E-10-..	10	311	0.32	0.4	220	2.2	1000	-06	-100	139
FN 9289 EB-1-..	1	2	10.9	0.4	220	0	1000	-06	-100	135
FN 9289 EB-2-..	2	2	4.4	0.4	220	0	1000	-06	-100	136
FN 9289 EB-4-..	4	2	1.66	0.4	220	0	1000	-06	-100	137
FN 9289 EB-6-..	6	2	0.78	0.4	220	0	1000	-06	-100	138
FN 9289 EB-10-..	10	2	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 IEC 60939-1 Ed. 3 at 250 V AC.

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:

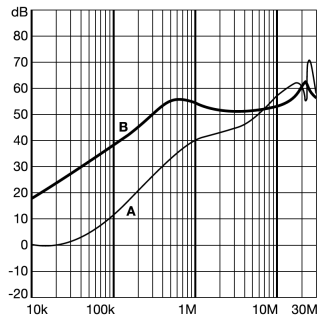
FN 9280 B-6-100: Medical version of single stage, dual fuse EMC/EMI filter, flange set for vertical/horizontal/front/rear mounting, 6 A, spring cage terminals, from stock available.

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

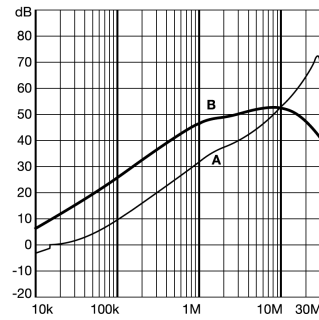
### Typical filter attenuation

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

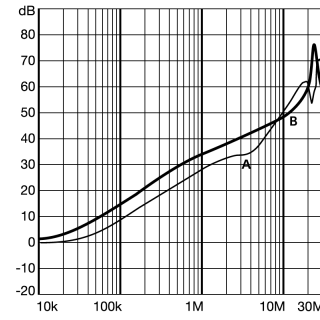
1 A types



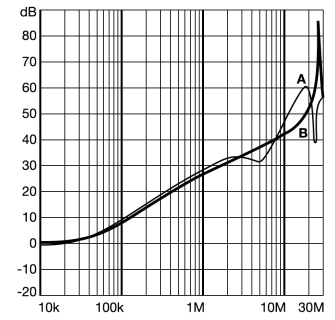
2 A types



4 – 6 A types

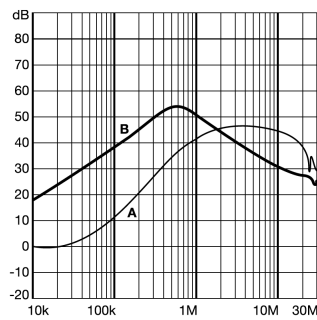


10 A types

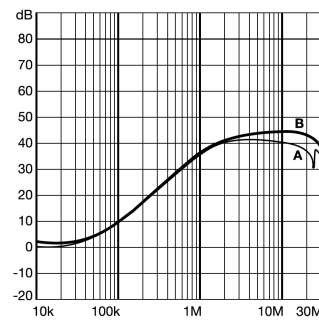


**FN 9280 B Series** | Per CISPR 17; A=50 Ω/50 Ω sym; B=50 Ω/50 Ω asym

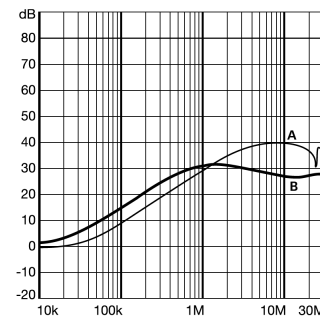
1 A types



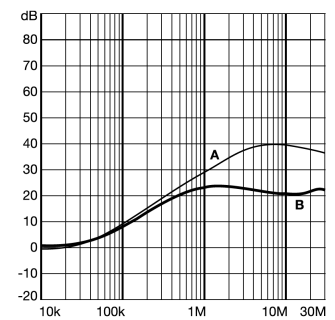
2 A types



4 – 6 A types

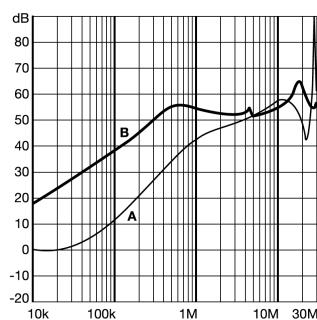


10 A types

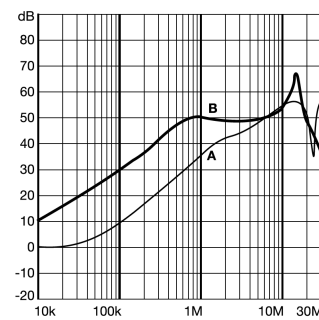


**FN 9280 E Series** | Per CISPR 17; A=50 Ω/50 Ω sym; B=50 Ω/50 Ω asym

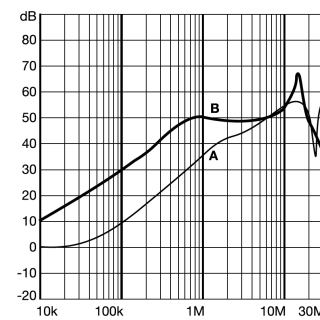
1 A types



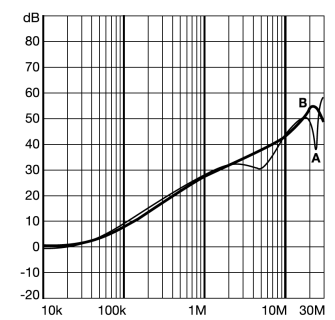
2 A types



4 – 6 A types

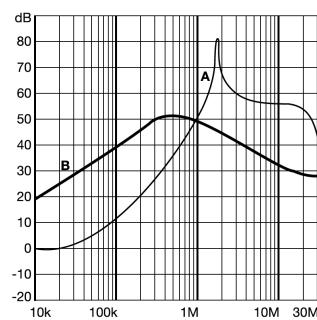


10 A types

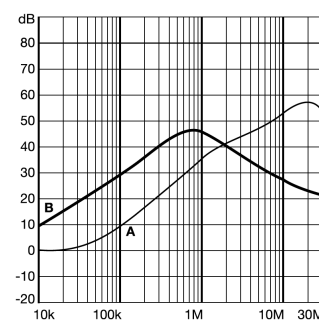


**FN 9280 BE Series** | Per CISPR 17; A=50 Ω/50 Ω sym; B=50 Ω/50 Ω asym

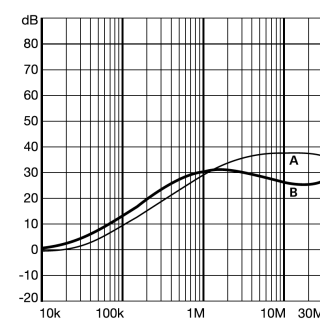
1 A types



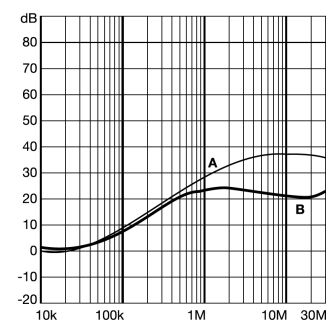
2 A types



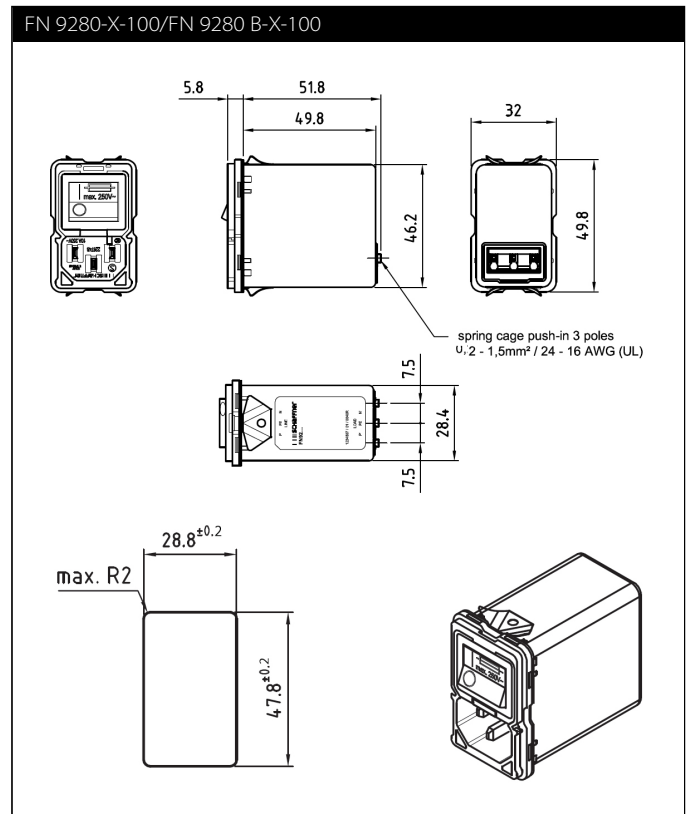
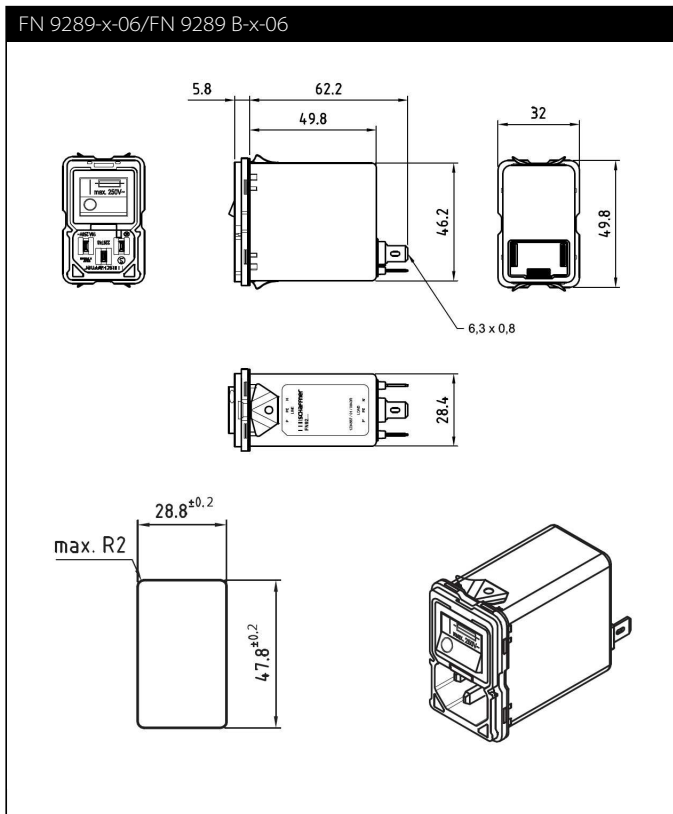
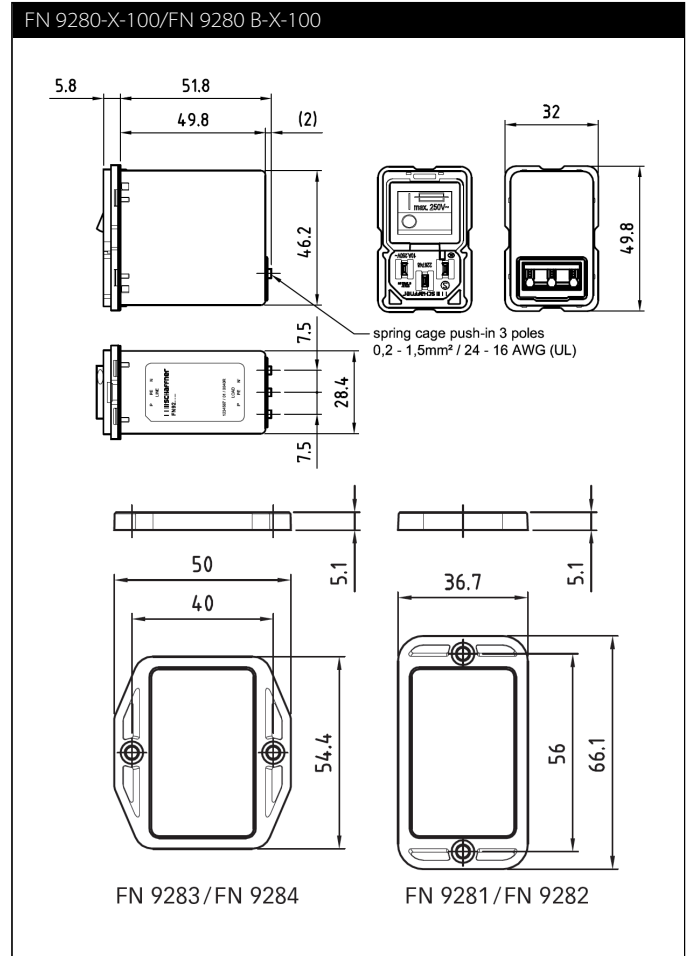
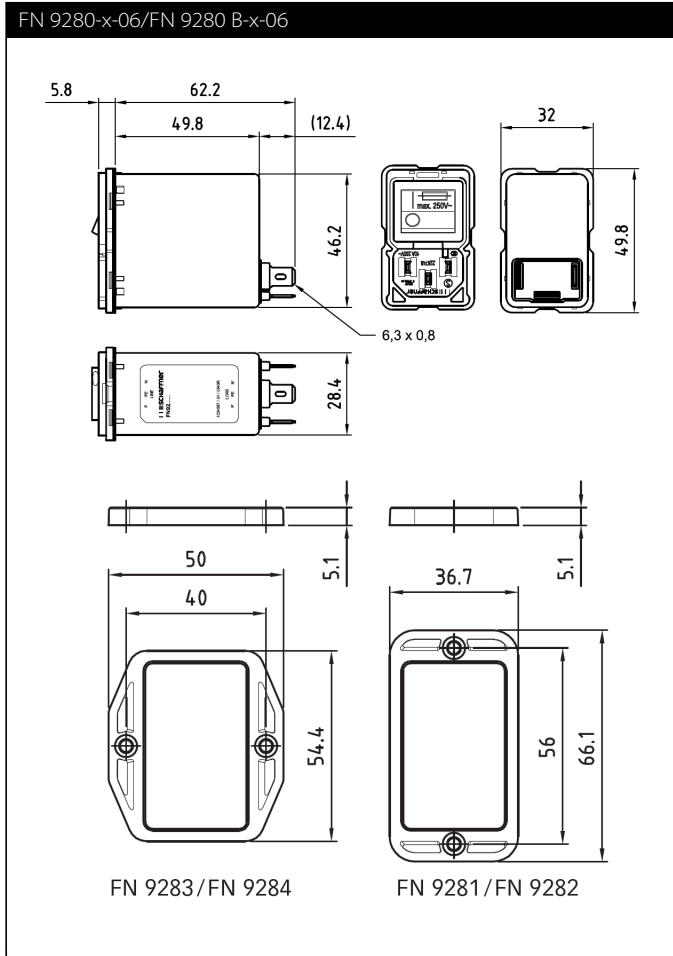
4 – 6 A types



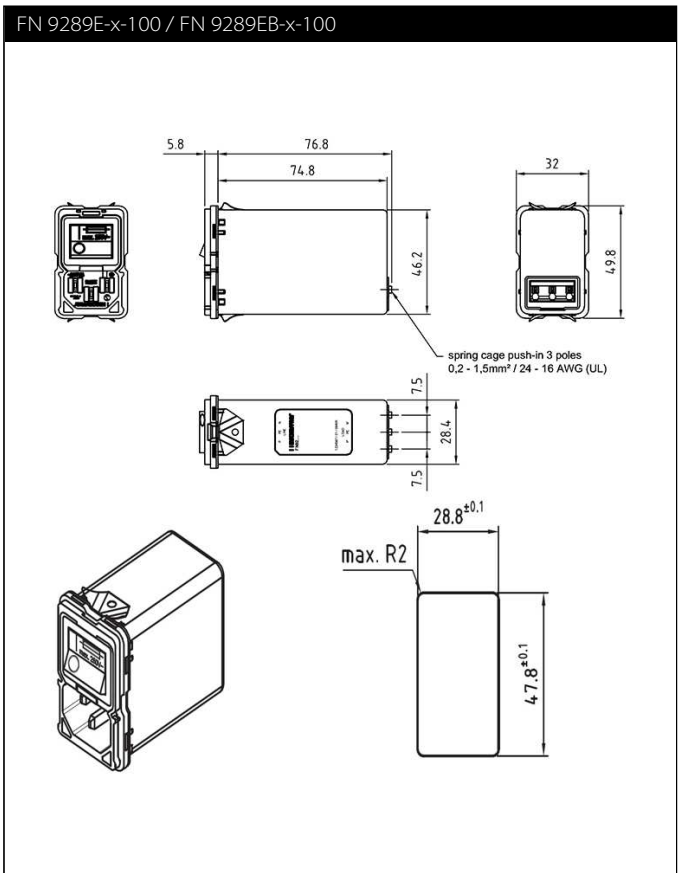
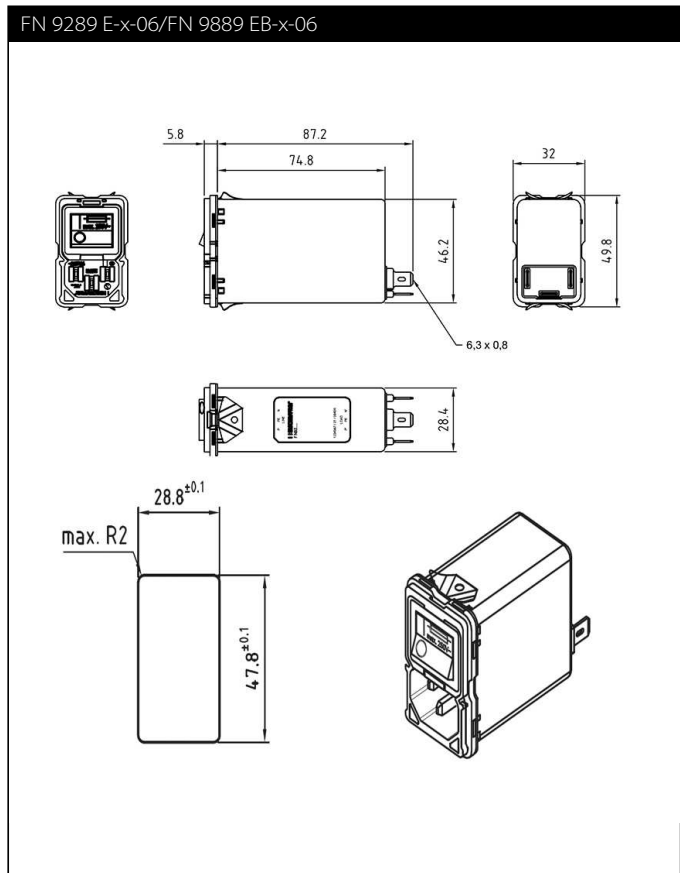
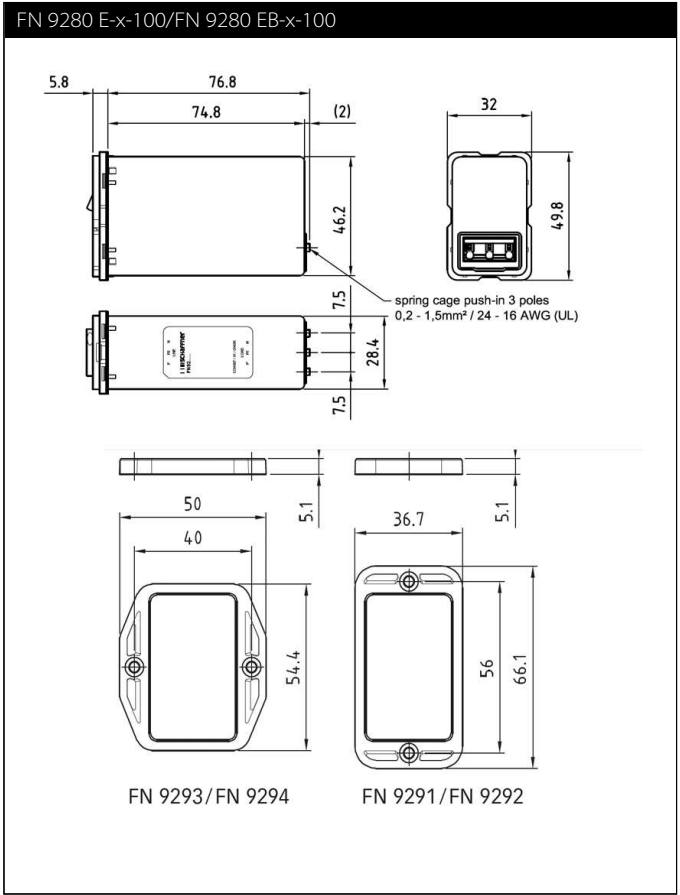
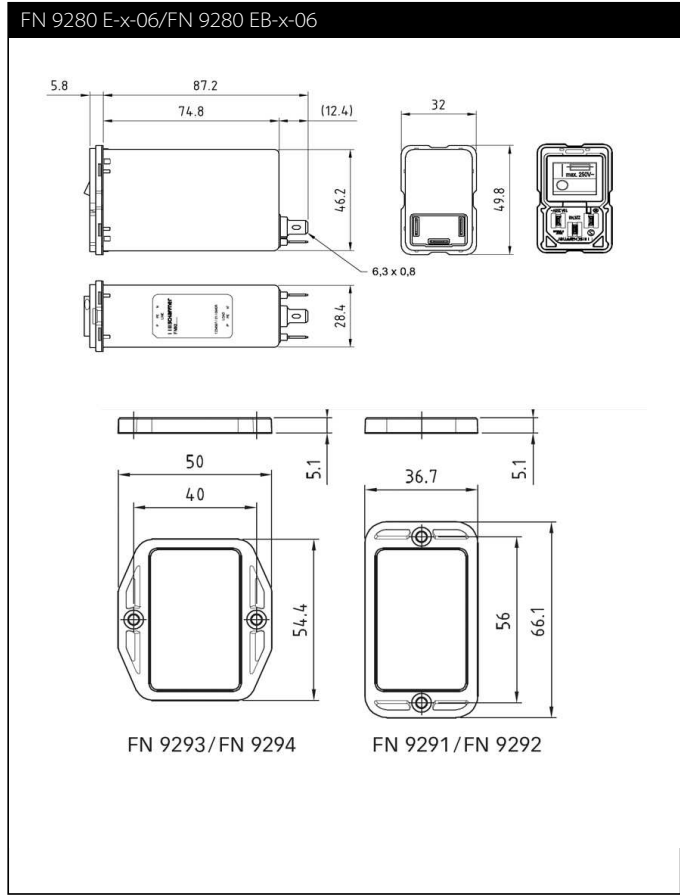
10 A types



**Mechanical Data**



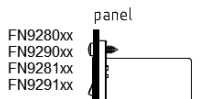
**Mechanical Data**



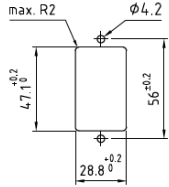
Assembly Instructions

**REAR MOUNTING**

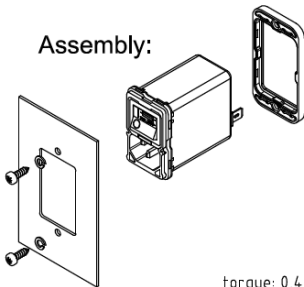
vertical:



Cutout:

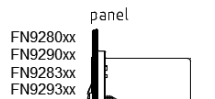


Assembly:

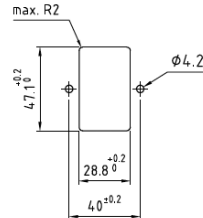


torque: 0,4Nm

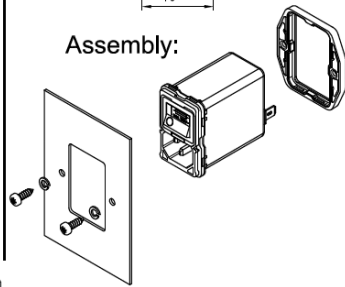
horizontal:



Cutout:

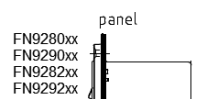


Assembly:

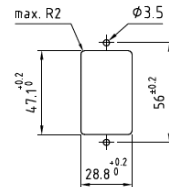


**FRONT MOUNTING**

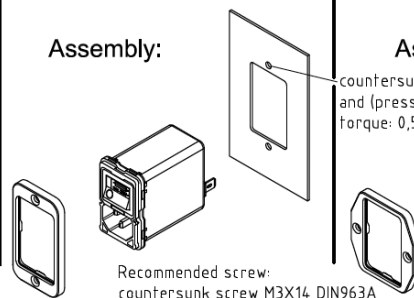
vertical:



Cutout:

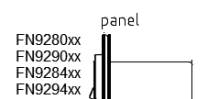


Assembly:

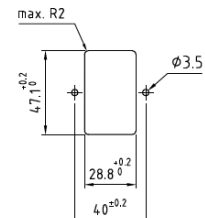


Recommended screw:  
countersunk screw M3X14 DIN963A

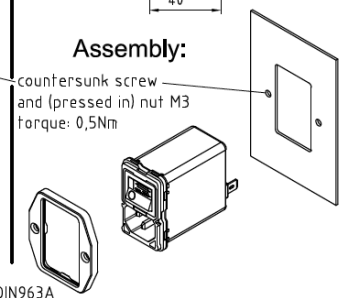
horizontal:



Cutout:



Assembly:



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

**Terminal -100**

clamping range, solid wire / flex wire

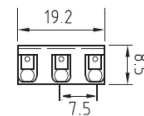
0,20 mm<sup>2</sup> – 1,5 mm<sup>2</sup>, AWG24 – AWG16

operating force of slider

max. 40 N

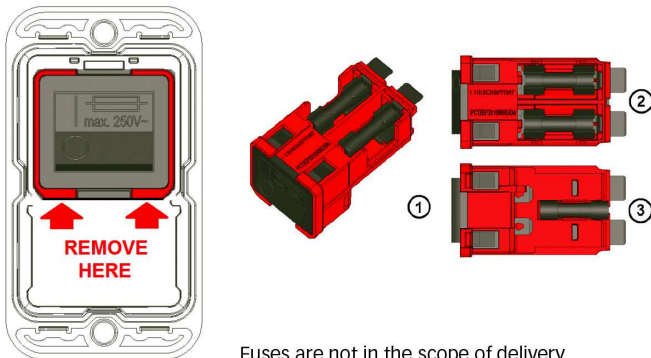
recommended stripped length

8 mm



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.



## Headquarters, global innovation and development

### Switzerland

#### Schaffner Group

Nordstrasse 11  
4542 Luterbach  
T +41 32 681 66 26  
F +41 32 681 66 30  
[info@schaffner.com](mailto:info@schaffner.com)  
<http://www.schaffner.com>



## Sales and application centers

### China

#### Schaffner EMC Ltd. Shanghai

T20-3 C, No 565 Chuangye Road,  
Pudong district  
201201 Shanghai  
T +86 21 3813 9500  
[cschina@schaffner.com](mailto:cschina@schaffner.com)  
<http://www.schaffner.com.cn>

### Finland

#### Schaffner Oy

Sauvonrinne 19 H  
08500 Lohja  
T +358 50 468 7284  
[finlandsales@schaffner.com](mailto:finlandsales@schaffner.com)

### France

#### Schaffner EMC S.A.S.

112 Quai de Bezons  
95100 Argenteuil  
T +33 1 34 34 30 60  
F +33 1 39 47 02 28  
[francesales@schaffner.com](mailto:francesales@schaffner.com)

### Germany

#### Schaffner Deutschland GmbH

Schoemperlenstrasse 12B  
76185 Karlsruhe  
T +49 721 56910  
F +49 721 569110  
[germanysales@schaffner.com](mailto:germanysales@schaffner.com)

### India

#### Schaffner India Pvt. Ltd

Unit 59, Level, Mfar Greenheart 7  
Manyata Tech Park, Hebbal Outer Ring Road  
560045 Bangalore  
T +91 80 6781 9805  
F +91 80 6781 9998  
[indiasales@schaffner.com](mailto:indiasales@schaffner.com)

### Italy

#### Schaffner EMC S.r.l.

Via Galileo Galilei 47  
20092 Cinisello Balsamo (MI)  
T +39 02 66 04 30 45 /47  
F +39 02 61 23 943  
[italysales@schaffner.com](mailto:italysales@schaffner.com)

### Japan

#### Schaffner EMC K.K.

1-32-12, Kamiyama, Setagaya-ku  
7F Mitsui-seimei Sangenjaya Bldg.  
154-0011 Tokyo  
T +81 3 5712 3650  
F +81 3 5712 3651  
[japansales@schaffner.com](mailto:japansales@schaffner.com)  
<http://www.schaffner.jp>

### Singapore

#### Schaffner EMC Pte Ltd.

#05-09, Kg Ubi Ind. Estate  
408705 Singapore  
T +65 6377 3283  
F +65 6377 3281  
[singaporesales@schaffner.com](mailto:singaporesales@schaffner.com)

### Spain

#### Schaffner EMC España

Calle Caléndula 93, Miniparc III, Edificio E  
El Soto de Moraleja, Alcobendas  
28109 Madrid  
T +34 917 912 900  
F +34 917 912 901  
[spainsales@schaffner.com](mailto:spainsales@schaffner.com)

### Sweden

#### Schaffner EMC AB

Tegeluddsvägen 76, 2tr  
115 28 Stockholm  
T +46 8 5050 2425  
[swedensales@schaffner.com](mailto:swedensales@schaffner.com)  
<http://www.schaffner.com>

### Switzerland

#### Schaffner EMV AG

Nordstrasse 11  
4542 Luterbach  
T +41 32 681 66 26  
[switzerlandsales@schaffner.com](mailto:switzerlandsales@schaffner.com)

### Taiwan R.O.C.

#### Schaffner EMV Ltd.

20 Floor-2, No 97, Section 1, XinTai 5th Road  
22175 XiZhi District New Taipei City 22175  
T +886 2 2697 5500  
F +886 2 2697 5533  
[taiwansales@schaffner.com](mailto:taiwansales@schaffner.com)  
<http://www.schaffner.tw>

### Thailand

#### Schaffner EMC Co. Ltd.

Northern Region Industrial Estate  
67 Moo 4 Tambon Ban Klang  
Amphur Muangng P.O. Box 14  
51000 Lamphun  
T +66 53 58 11 04  
F +66 53 58 10 19  
[thailandsales@schaffner.com](mailto:thailandsales@schaffner.com)

### United Kingdom

#### Schaffner Ltd.

5 Ashville Way, Molly Millars Lane  
Wokingham  
RG41 2PL Berkshire  
T +44 118 9770070  
F +44 118 9792969  
[uksales@schaffner.com](mailto:uksales@schaffner.com)

### USA

#### Schaffner EMC Inc.

52 Mayfield Avenue  
08837 Edison, New Jersey  
T +1 800 367 5566  
T +1 732 225 9533  
F +1 732 225 4789  
[usasales@schaffner.com](mailto:usasales@schaffner.com)  
<http://www.schaffnerusa.com>

#### Schaffner North America

6722 Thirlane Road  
24019 Roanoke, Virginia  
T +1 276 228 7943  
F +1 276 228 7953

#### Schaffner North America

823 Fairview Road  
24382 Wytheville, Virginia  
T +1 276 228 7943  
F +1 276 228 7258

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