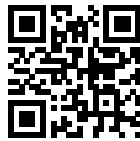


## Compact filtered power entry module



- Complies with IEC/EN 60601-1
- Rated currents up to 10 A
- Single or dual-fuse holder
- Fuses Ø 5 x 20 mm
- 2-pole rocker switch
- General purpose application
- Optional earth line choke (E type)
- Optional medical versions (B type)



### Performance indicators

Attenuation performance



Rated current [A]



### Technical specifications

|                                                  |                                                                                                                        |
|--------------------------------------------------|------------------------------------------------------------------------------------------------------------------------|
| <b>Maximum continuous operating voltage</b>      | 250 V, 50/60 Hz                                                                                                        |
| <b>Operating frequency</b>                       | 50 to 400 Hz                                                                                                           |
| <b>Rated currents</b>                            | 1 to 10 A @ 40 °C max.                                                                                                 |
| <b>High potential test voltage</b>               | P → PE 2000 VAC for 2 sec (standard types)<br>P → N 760 VAC for 2 sec<br>P → PE 2500 VAC for 2 sec (B types)           |
| <b>Protection category</b>                       | IP40 according to IEC 60529                                                                                            |
| <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, IEC/EN 60939                                                                             |
| <b>Flammability corresponding to</b>             | UL 94 V-2 or better                                                                                                    |
| <b>MTBF @ 40°C/230V (Mil-HB-217F)</b>            | 1,500,000 hours                                                                                                        |
| <b>Fuse holder</b>                               | 1 or 2 fuses (Ø5 x 20mm)                                                                                               |
| <b>Marking</b>                                   | max. 250 V ~ (text is print. below fuse symbol)                                                                        |
| <b>Rocker switch description</b>                 |                                                                                                                        |
| <b>Function</b>                                  | 2-pole, dark not illuminated<br>Marking I - 0                                                                          |
| <b>Electrical specifications</b>                 | Inrush current 82 A<br>6,000 on-off operations according to UL 1054, TV5<br>10,000 on-off operations according to ENEC |
| <b>Mechanical life:</b>                          | 50,000 cycles                                                                                                          |
| <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>Operating frequency</b>                       | 50 to 400 Hz                                                                                                           |

\* Value in () relates to the inductive current charge:  $\cos\phi = 0.65$

### Approvals



### RoHS

(CQC except HI-types)

The FN 280 power entry module combines an IEC inlet, a mains filter with single or dual-fuse holder and a 2-pole rocker switch in a small form factor. Choosing FN 280 product line brings you the rapid availability of a standard filter associated with the necessary safety acceptances. Standard IEC connector filters are a practical solution helping you to pass EMI system approval in a short time. A wide selection on amperage ratings, fuse options, mounting possibilities and filters for medical applications are designed to offer you the desired solution.

### Features and benefits

- High conducted attenuation performance, based on chokes with high saturation resistance and excellent thermal behavior
- Rear/front or snap-in mounting
- Single or dual-fuse holder
- 2-pole rocker switch
- Custom-specific versions are available on request

### 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 equipment

## Filter selection table

| Filter        | Rated current<br>@ 40 °C (25 °C)<br>[A] | Leakage current**<br>@ 230 VAC/50 Hz<br>[µA] | Inductance |            | Capacitance |            | Resistance<br>R<br>[kΩ] | Output<br>connections | Fuses**<br>[Qty] | Weight<br>[g] |
|---------------|-----------------------------------------|----------------------------------------------|------------|------------|-------------|------------|-------------------------|-----------------------|------------------|---------------|
|               |                                         |                                              | L1<br>[mH] | L2<br>[mH] | Cx<br>[nF]  | Cy<br>[nF] |                         |                       |                  |               |
| FN 281-1-06   | 1 (1.2)                                 | 373                                          | 7.5        |            | 220         | 2.2        | 1000                    | -06                   | 1                | 140           |
| FN 281-2-06   | 2 (2.4)                                 | 373                                          | 2          |            | 220         | 2.2        | 1000                    | -06                   | 1                | 140           |
| FN 281-4-06   | 4 (4.8)                                 | 373                                          | 1          |            | 220         | 2.2        | 1000                    | -06                   | 1                | 140           |
| FN 281-6-06   | 6 (7.2)                                 | 373                                          | 0.45       |            | 220         | 2.2        | 1000                    | -06                   | 1                | 140           |
| FN 281-10-06  | 10 (11.6)                               | 373                                          | 0.34       |            | 220         | 2.2        | 1000                    | -06                   | 1                | 140           |
| FN 282-1-06   | 1 (1.2)                                 | 373                                          | 7.5        |            | 220         | 2.2        | 1000                    | -06                   | 2                | 90            |
| FN 282-2-06   | 2 (2.4)                                 | 373                                          | 2          |            | 220         | 2.2        | 1000                    | -06                   | 2                | 90            |
| FN 282-4-06   | 4 (4.8)                                 | 373                                          | 1          |            | 220         | 2.2        | 1000                    | -06                   | 2                | 90            |
| FN 282-6-06   | 6 (7.2)                                 | 373                                          | 0.45       |            | 220         | 2.2        | 1000                    | -06                   | 2                | 90            |
| FN 282-10-06  | 10 (11.6)                               | 373                                          | 0.34       |            | 220         | 2.2        | 1000                    | -06                   | 2                | 140           |
| FN 283-1-06   | 1 (1.2)                                 | 373                                          | 7.5        |            | 220         | 2.2        | 1000                    | -06                   | 1                | 140           |
| FN 283-2-06   | 2 (2.4)                                 | 373                                          | 2          |            | 220         | 2.2        | 1000                    | -06                   | 1                | 140           |
| FN 283-4-06   | 4 (4.8)                                 | 373                                          | 1          |            | 220         | 2.2        | 1000                    | -06                   | 1                | 140           |
| FN 283-6-06   | 6 (7.2)                                 | 373                                          | 0.45       |            | 220         | 2.2        | 1000                    | -06                   | 1                | 140           |
| FN 283-10-06  | 10 (11.6)                               | 373                                          | 0.34       |            | 220         | 2.2        | 1000                    | -06                   | 1                | 140           |
| FN 284-1-06   | 1 (1.2)                                 | 373                                          | 7.5        |            | 220         | 2.2        | 1000                    | -06                   | 2                | 90            |
| FN 284-2-06   | 2 (2.4)                                 | 373                                          | 2          |            | 220         | 2.2        | 1000                    | -06                   | 2                | 90            |
| FN 284-4-06   | 4 (4.8)                                 | 373                                          | 1          |            | 220         | 2.2        | 1000                    | -06                   | 2                | 90            |
| FN 284-6-06   | 6 (7.2)                                 | 373                                          | 0.45       |            | 220         | 2.2        | 1000                    | -06                   | 2                | 90            |
| FN 284-10-06  | 10 (11.6)                               | 373                                          | 0.34       |            | 220         | 2.2        | 1000                    | -06                   | 2                | 140           |
| FN 285-1-06   | 1 (1.2)                                 | 373                                          | 7.5        |            | 220         | 2.2        | 1000                    | -06                   | 1                | 140           |
| FN 285-2-06   | 2 (2.4)                                 | 373                                          | 2          |            | 220         | 2.2        | 1000                    | -06                   | 1                | 140           |
| FN 285-4-06   | 4 (4.8)                                 | 373                                          | 1          |            | 220         | 2.2        | 1000                    | -06                   | 1                | 140           |
| FN 285-6-06   | 6 (7.2)                                 | 373                                          | 0.45       |            | 220         | 2.2        | 1000                    | -06                   | 1                | 140           |
| FN 285-10-06  | 10 (11.6)                               | 373                                          | 0.34       |            | 220         | 2.2        | 1000                    | -06                   | 1                | 140           |
| FN 286-1-06   | 1 (1.2)                                 | 373                                          | 7.5        |            | 220         | 2.2        | 1000                    | -06                   | 2                | 90            |
| FN 286-2-06   | 2 (2.4)                                 | 373                                          | 2          |            | 220         | 2.2        | 1000                    | -06                   | 2                | 90            |
| FN 286-4-06   | 4 (4.8)                                 | 373                                          | 1          |            | 220         | 2.2        | 1000                    | -06                   | 2                | 90            |
| FN 286-6-06   | 6 (7.2)                                 | 373                                          | 0.45       |            | 220         | 2.2        | 1000                    | -06                   | 2                | 90            |
| FN 286-10-06  | 10 (11.6)                               | 373                                          | 0.34       |            | 220         | 2.2        | 1000                    | -06                   | 2                | 140           |
| FN 283E-1-06  | 1 (1.2)                                 | 373                                          | 7.5        | 0.4        | 220         | 2.2        | 1000                    | -06                   | 1                | 140           |
| FN 283E-2-06  | 2 (2.4)                                 | 373                                          | 2          | 0.4        | 220         | 2.2        | 1000                    | -06                   | 1                | 140           |
| FN 283E-4-06  | 4 (4.8)                                 | 373                                          | 1          | 0.4        | 220         | 2.2        | 1000                    | -06                   | 1                | 140           |
| FN 283E-6-06  | 6 (7.2)                                 | 373                                          | 0.45       | 0.4        | 220         | 2.2        | 1000                    | -06                   | 1                | 140           |
| FN 284E-1-06  | 1 (1.2)                                 | 373                                          | 7.5        | 0.4        | 220         | 2.2        | 1000                    | -06                   | 2                | 90            |
| FN 284E-2-06  | 2 (2.4)                                 | 373                                          | 2          | 0.4        | 220         | 2.2        | 1000                    | -06                   | 2                | 90            |
| FN 284E-4-06  | 4 (4.8)                                 | 373                                          | 1          | 0.4        | 220         | 2.2        | 1000                    | -06                   | 2                | 90            |
| FN 284E-6-06  | 6 (7.2)                                 | 373                                          | 0.45       | 0.4        | 220         | 2.2        | 1000                    | -06                   | 2                | 90            |
| FN 282B-1-06  | 1 (1.2)                                 | 2                                            | 7.5        |            | 220         |            | 1000                    | -06                   | 2                | 90            |
| FN 282B-2-06  | 2 (2.4)                                 | 2                                            | 2          |            | 220         |            | 1000                    | -06                   | 2                | 90            |
| FN 282B-4-06  | 4 (4.8)                                 | 2                                            | 1          |            | 220         |            | 1000                    | -06                   | 2                | 90            |
| FN 282B-6-06  | 6 (7.2)                                 | 2                                            | 0.45       |            | 220         |            | 1000                    | -06                   | 2                | 90            |
| FN 282B-10-06 | 10 (11.6)                               | 2                                            | 0.34       |            | 220         |            | 1000                    | -06                   | 2                | 140           |

\* Maximum leakage under normal operating conditions. Note: if the neutral line is interrupted, worst case leakage could reach twice this level.

\*\* Filters are delivered without fuse.

| Filter        | Rated current<br>@ 40°C (25°C)<br>[A] | Leakage current**<br>@ 230VAC/50Hz<br>[μA] | Inductance |            | Capacitance |            | Resistance<br>R<br>[kΩ] | Output<br>connections | Fuses**<br>[Qty] | Weight<br>[g] |
|---------------|---------------------------------------|--------------------------------------------|------------|------------|-------------|------------|-------------------------|-----------------------|------------------|---------------|
|               |                                       |                                            | L1<br>[mH] | L2<br>[mH] | Cx<br>[nF]  | Cy<br>[nF] |                         |                       |                  |               |
| FN 284B-1-06  | 1 (1.2)                               | 2                                          | 7.5        |            | 220         |            | 1000                    | -06                   | 2                | 90            |
| FN 284B-2-06  | 2 (2.4)                               | 2                                          | 2          |            | 220         |            | 1000                    | -06                   | 2                | 90            |
| FN 284B-4-06  | 4 (4.8)                               | 2                                          | 1          |            | 220         |            | 1000                    | -06                   | 2                | 90            |
| FN 284B-6-06  | 6 (7.2)                               | 2                                          | 0.45       |            | 220         |            | 1000                    | -06                   | 2                | 90            |
| FN 284B-10-06 | 10 (11.6)                             | 2                                          | 0.34       |            | 220         |            | 1000                    | -06                   | 2                | 140           |
| FN 286B-1-06  | 1 (1.2)                               | 2                                          | 7.5        |            | 220         |            | 1000                    | -06                   | 2                | 90            |
| FN 286B-2-06  | 2 (2.4)                               | 2                                          | 2          |            | 220         |            | 1000                    | -06                   | 2                | 90            |
| FN 286B-4-06  | 4 (4.8)                               | 2                                          | 1          |            | 220         |            | 1000                    | -06                   | 2                | 90            |
| FN 286B-6-06  | 6 (7.2)                               | 2                                          | 0.45       |            | 220         |            | 1000                    | -06                   | 2                | 90            |
| FN 286B-10-06 | 10 (11.6)                             | 2                                          | 0.34       |            | 220         |            | 1000                    | -06                   | 2                | 140           |

\* Maximum leakage under normal operating conditions. Note: if the neutral line is interrupted, worst case leakage could reach twice this level.  
\*\* Filters are delivered without fuse.

Product selector

FN 28xx-yy-zz

06:

Faston 6.3 x 0.8mm (spade/soldering)

1 to 10:

Rated current

Blank:

Standard version

E:

Optional earth line choke

B:

Medical version (with bleed resistor and without Y2-capacitor)

1:

Flange mounting version top/bottom, single-fuse

2:

Flange mounting version top/bottom, dual-fuse

3:

Flange mounting version left/right, single-fuse

4:

Flange mounting version left/right, dual-fuse

5:

Snap-in version, single-fuse

6:

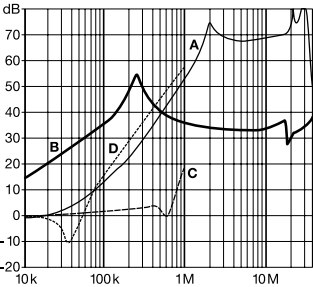
Snap-in version, dual-fuse

For example: FN 281-6-06, FN 283B-04-06, FN 283E-1-06

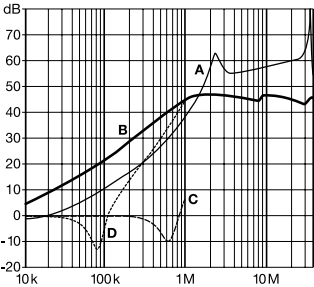
Typical filter attenuation

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

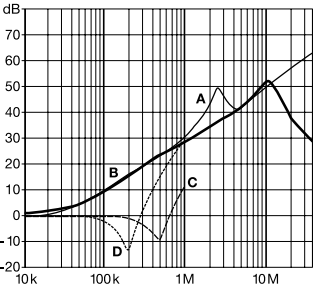
1 A types



2 to 6 A types

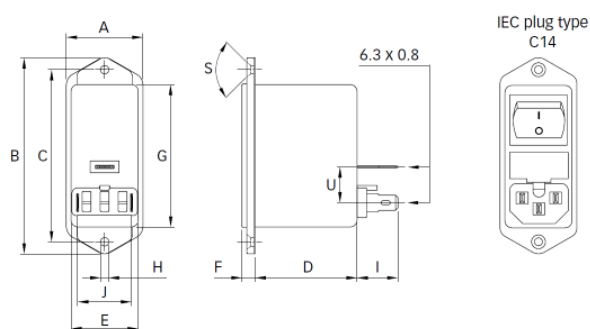


10 A types

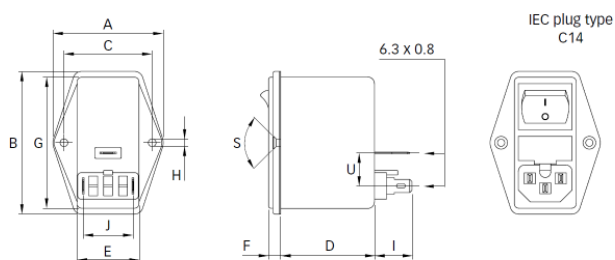


## Mechanical data

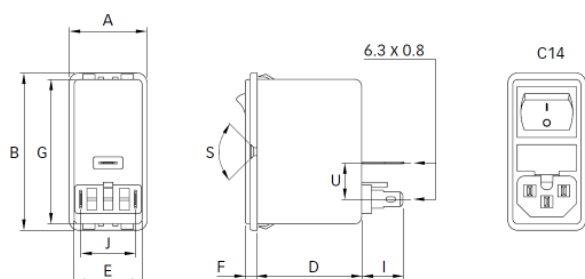
FN 281 / FN 282



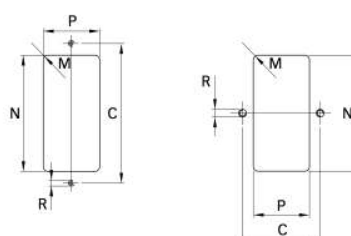
FN 283 / FN 284



FN 285 / FN 286



Panel cut out



## Dimensions

|          | FN 281     | FN 282     | FN 283     | FN 284     | FN 285       | FN 286       | Tolerances |
|----------|------------|------------|------------|------------|--------------|--------------|------------|
| <b>A</b> | 32         | 32         | 50         | 50         | 32           | 32           | ±0.3       |
| <b>B</b> | 82         | 82         | 65         | 65         | 65           | 65           | ±0.3       |
| <b>C</b> | 72         | 72         | 40         | 40         |              |              | ±0.1       |
| <b>D</b> | 43.1       | 43.1       | 43.1       | 43.1       | 43.6         | 43.6         | ±0.3       |
| <b>E</b> | 28.5       | 28.5       | 28.5       | 28.5       | 28.5         | 28.5         | ±0.25      |
| <b>F</b> | 5.5        | 5.5        | 5.5        | 5.5        | 5            | 5            | ±0.3       |
| <b>G</b> | 59.95 max. | 59.95 max. | 59.95 max. | 59.95 max. | 59.95 max.   | 59.95 max.   |            |
| <b>H</b> | Ø 3.5      | Ø 3.5      | Ø 3.3      | Ø 3.3      |              |              |            |
| <b>I</b> | 13.4       | 16.2       | 13.4       | 16.2       | 13.9         | 16.7         | ±0.3       |
| <b>J</b> | 22.5       | 22.5       | 22.5       | 22.5       | 22.5         | 22.5         |            |
| <b>M</b> | R ≤ 2.5    | R ≤ 2.5    | R ≤ 2.5    | R ≤ 2.5    | R ≤ 2.5      | R ≤ 2.5      |            |
| <b>N</b> | 60         | 60         | 60         | 60         | 61.5+0.2/-0* | 61.5+0.2/-0* | +0.5/-0    |
| <b>P</b> | 29         | 29         | 29         | 29         | 29           | 29           | +0.5/-0    |
| <b>R</b> | M3         | M3         | M3         | M3         |              |              |            |
| <b>S</b> | 90°        | 90°        | 90°        | 90°        |              |              |            |

\* For a panel thickness between 0.8 and 3 mm

All dimensions in mm; 1 inch = 25.4mm

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

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



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