

## General performance IEC inlet filter

# SCHAFFNER

energy efficiency and reliability



- Rated currents up to 20A
- Excellent performance/size ratio
- Optional medical versions (B type)
- Snap-in versions (S and S1 type)
- Hot inlet versions (HI type)
- Optional overvoltage protection (Z type)

### Approvals

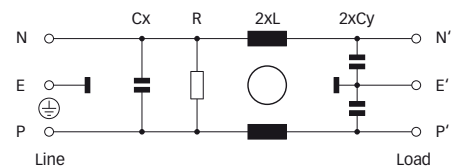


### Technical specifications

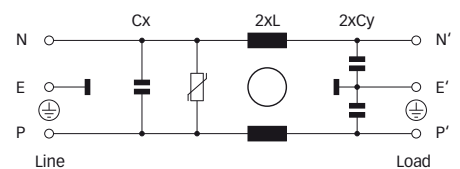
|  |   |
|--|---|
| Maximum continuous operating voltage:      | 250VAC, 50/60Hz   |
| Operating frequency:                       | dc to 400Hz   |
| Rated currents:                            | 1 to 20A @ 50°C   |
| Approvals by rated current:                | 1 to 10A (ENEC, CQC)<br>16A (ENEC, CQC) for 16 and 20A types<br>1 to 20A (UL, CSA)  |
| High potential test voltage:               | P → E 2000VAC for 2 sec (standard types)<br>P → E 2500VAC for 2 sec (B types)<br>P → N 1000VAC for 2 sec (1 to 10A types)<br>P → N 1100VDC for 2 sec (16 and 20A types) |
| Protection category:                       | IP40 according to IEC 60529   |
| Temperature range (operation and storage): | -25°C to +85°C (25/85/21)   |
| Design corresponding to:                   | UL 1283, CSA 22.2 No. 8 1986, IEC/EN 60939  |
| Flammability corresponding to:             | UL 94V-2 or better  |
| Surge pulse protection (optional):         | 2kV, IEC 61000-4-5  |
| MTBF @ 40°C/230V (Mil-HB-217F):            | ≤15A: 3,040,000 hours<br>≥16A: 2,256,000 hours  |

### Typical electrical schematic

Standard, R and B types



Z types



The FN 9222 IEC inlet filter combines an IEC inlet and mains filter with excellent filter attenuation in a small form factor. Choosing the FN 9222 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, output connections, mounting possibilities and filters for medical applications are designed to offer you the desired solution.



### Features and benefits

- Exceptional conducted attenuation performance, based on chokes with high saturation resistance and excellent thermal behavior.
- Rear/front or snap-in mounting.
- Wide mounting flanges available.
- Optional medical versions (B type) according to IEC/EN 60601-1.
- 12 and 15A types with hot inlet available.
- Optional surge pulse protection.
- Different output connections offering maximum flexibility for assembly.
- Custom-specific versions are available on request.

### Typical applications

- Portable electrical and electronic equipment
- Small to medium-sized machines and household equipment
- Single-phase power supplies, switch-mode power supplies
- Test and measurement equipment
- Medical equipment
- Rack mounting equipment

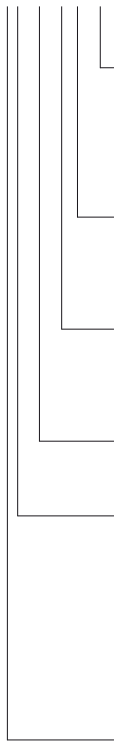
Filter selection table

| Filter            | Rated current<br>@ 50°C (25°C) | Leakage current*<br>@ 250VAC/50Hz | Inductance<br>L | Capacitance<br>Cx Cy |      | Resistance<br>R | Output connections  |   | Weight |
|-------------------|--------------------------------|-----------------------------------|-----------------|----------------------|------|-----------------|---|---|--------|
|                   | [A]                            | [μA]                              | [mH]            | [μF]                 | [nF] | [kΩ]            |  |  | [g]    |
| FN 9222x-1-..     | 1 (1.2)                        | 373                               | 12              | 0.1                  | 2.2  |                 | -06   | -07   | 40     |
| FN 9222x-3-..     | 3 (3.5)                        | 373                               | 2.5             | 0.1                  | 2.2  |                 | -06   | -07   | 40     |
| FN 9222x-6-..     | 6 (7.2)                        | 373                               | 0.78            | 0.1                  | 2.2  |                 | -06   | -07   | 40     |
| FN 9222x-8-..     | 8 (10.6)                       | 373                               | 0.4             | 0.1                  | 2.2  |                 | -06   | -07   | 40     |
| FN 9222x-10-..    | 10 (11.6)                      | 373                               | 0.225           | 0.1                  | 2.2  |                 | -06   | -07   | 40     |
| FN 9222x-12-..    | 12 (12)                        | 373                               | 0.11            | 0.1                  | 2.2  |                 | -06   | -07   | 40     |
| FN 9222x-15-..    | 15 (15)                        | 373                               | 0.075           | 0.1                  | 2.2  |                 | -06   | -07   | 40     |
| FN 9222x-12-..HI  | 12 (12)                        | 373                               | 0.11            | 0.1                  | 2.2  |                 | -06   | -07   | 40     |
| FN 9222x-15-..HI  | 15 (15)                        | 373                               | 0.075           | 0.1                  | 2.2  |                 | -06   | -07   | 40     |
| FN 9222xR-1-..    | 1 (1.2)                        | 373                               | 12              | 0.1                  | 2.2  | 1000            | -06   | -07   | 40     |
| FN 9222xR-3-..    | 3 (3.5)                        | 373                               | 2.5             | 0.1                  | 2.2  | 1000            | -06   | -07   | 40     |
| FN 9222xR-6-..    | 6 (7.2)                        | 373                               | 0.78            | 0.1                  | 2.2  | 1000            | -06   | -07   | 40     |
| FN 9222xR-8-..    | 8 (10.6)                       | 373                               | 0.4             | 0.1                  | 2.2  | 1000            | -06   | -07   | 40     |
| FN 9222xR-10-..   | 10 (11.6)                      | 373                               | 0.225           | 0.1                  | 2.2  | 1000            | -06   | -07   | 40     |
| FN 9222xR-12-..   | 12 (12)                        | 373                               | 0.11            | 0.1                  | 2.2  | 1000            | -06   | -07   | 40     |
| FN 9222xR-15-..   | 15 (15)                        | 373                               | 0.075           | 0.1                  | 2.2  | 1000            | -06   | -07   | 40     |
| FN 9222xR-16-06   | 16 (18.5)                      | 373                               | 0.54            | 0.33                 | 2.2  | 1000            | -06   |   | 100    |
| FN 9222xR-20-06   | 20 (23)                        | 373                               | 0.4             | 0.33                 | 2.2  | 1000            | -06   |   | 100    |
| FN 9222xR-12-..HI | 12 (12)                        | 373                               | 0.11            | 0.1                  | 2.2  | 1000            | -06   | -07   | 40     |
| FN 9222xR-15-..HI | 15 (15)                        | 373                               | 0.075           | 0.1                  | 2.2  | 1000            | -06   | -07   | 40     |
| FN 9222xB-1-..    | 1 (1.2)                        | 2                                 | 12              | 0.1                  |      | 1000            | -06   | -07   | 40     |
| FN 9222xB-3-..    | 3 (3.5)                        | 2                                 | 2.5             | 0.1                  |      | 1000            | -06   | -07   | 40     |
| FN 9222xB-6-..    | 6 (7.2)                        | 2                                 | 0.78            | 0.1                  |      | 1000            | -06   | -07   | 40     |
| FN 9222xB-8-..    | 8 (10.6)                       | 2                                 | 0.4             | 0.1                  |      | 1000            | -06   | -07   | 40     |
| FN 9222xB-10-..   | 10 (11.6)                      | 2                                 | 0.225           | 0.1                  |      | 1000            | -06   | -07   | 40     |
| FN 9222xB-12-..   | 12 (12)                        | 2                                 | 0.11            | 0.1                  |      | 1000            | -06   | -07   | 40     |
| FN 9222xB-15-..   | 15 (15)                        | 2                                 | 0.075           | 0.1                  |      | 1000            | -06   | -07   | 40     |
| FN 9222xB-16-06   | 16 (18.5)                      | 2                                 | 0.54            | 0.33                 |      | 1000            | -06   |   | 100    |
| FN 9222xB-20-06   | 20 (23)                        | 2                                 | 0.4             | 0.33                 |      | 1000            | -06   |   | 100    |
| FN 9222xB-12-..HI | 12 (12)                        | 2                                 | 0.11            | 0.1                  |      | 1000            | -06   | -07   | 40     |
| FN 9222xB-15-..HI | 15 (15)                        | 2                                 | 0.075           | 0.1                  |      | 1000            | -06   | -07   | 40     |
| FN 9222UZ-1-06    | 1 (1.2)                        | 373                               | 12              | 0.1                  | 2.2  |                 | -06   |   | 43     |
| FN 9222UZ-3-06    | 3 (3.5)                        | 373                               | 2.5             | 0.1                  | 2.2  |                 | -06   |   | 43     |
| FN 9222UZ-6-06    | 6 (7.2)                        | 373                               | 0.78            | 0.1                  | 2.2  |                 | -06   |   | 43     |
| FN 9222UZ-8-06    | 8 (10.6)                       | 373                               | 0.4             | 0.1                  | 2.2  |                 | -06   |   | 43     |
| FN 9222UZ-10-06   | 10 (11.6)                      | 373                               | 0.225           | 0.1                  | 2.2  |                 | -06   |   | 43     |
| FN 9222UZ-12-06   | 12 (12)                        | 373                               | 0.11            | 0.1                  | 2.2  |                 | -06   |   | 43     |
| FN 9222UZ-15-06   | 15 (15)                        | 373                               | 0.075           | 0.1                  | 2.2  |                 | -06   |   | 43     |

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

**Product selector**

FN 9222xx-yy-..HI-zz



Snap-in range for S version only

Blank: Snap-in range 0.7 to 1.5mm

20: Snap-in range 1.5 to 2.2mm

Blank: Standard IEC inlet type C14 (1 to 15A types), C20 (16 and 20A types)

HI: Hot IEC inlet type C16 (12 and 15A types only)

06: Faston 6.3 x 0.8mm (spade/soldering)

07: Wire leads

1 to 20: Rated current

Blank: Standard version

R: Bleed resistor

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

Z: Optional surge pulse protection with additional varistor (MOV)  
(Z types have longer housings, only available for FN 9222UZ-yy-06)

Blank: Standard housing with mounting flanges

U: Housing with wider mounting flanges

S: Snap-in version, snapper on vertical side (1 to 15A types only)

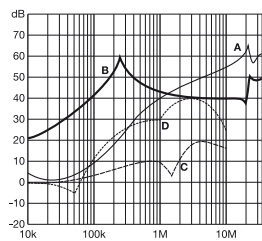
S1: Snap-in version, snapper on horizontal side (1 to 15A types only)

For example: FN 9222-15-07, FN 9222S1B-10-06-20, FN 9222R-12-06HI, FN 9222UZ-15-06

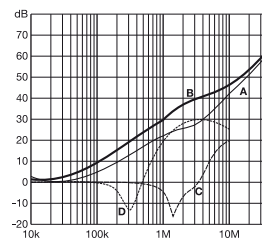
**Typical filter attenuation**

Per CISPR 17; A = 50Ω/50Ω sym; B = 50Ω/50Ω asym; C = 0.1Ω/100Ω sym; D = 100Ω/0.1Ω sym

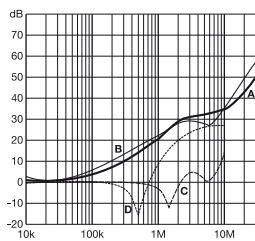
1 and 3A types



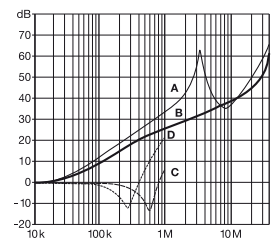
6 to 10A types



12 and 15A types

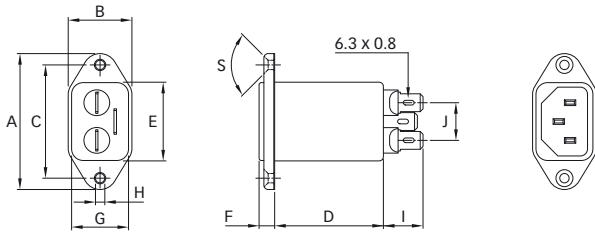


16 and 20A types

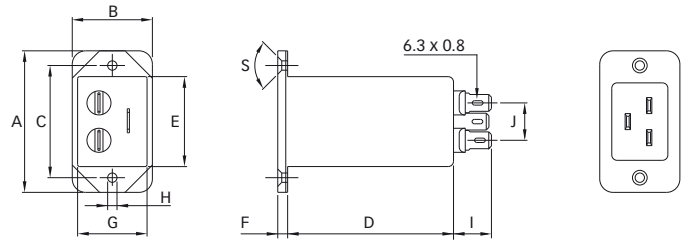


**Mechanical data**

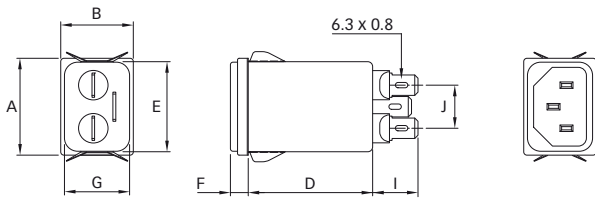
FN 9222, 1 to 15A types



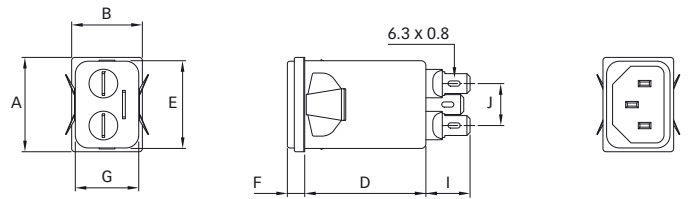
FN 9222, 16 and 20A types



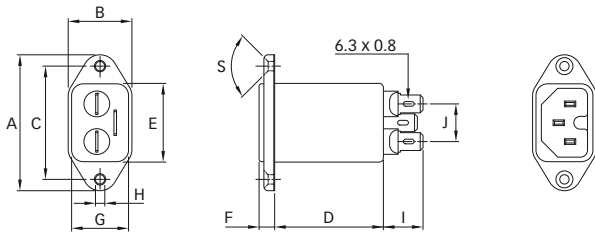
FN 9222S



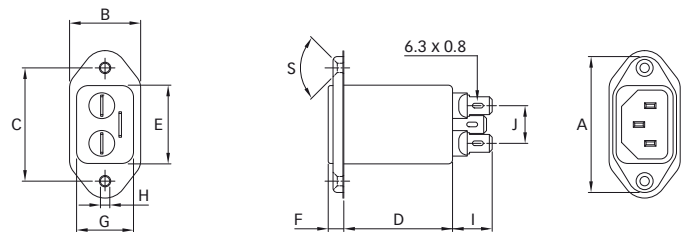
FN 9222S1



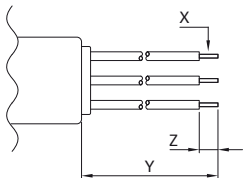
FN 9222-HI



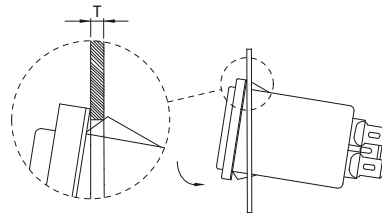
FN 9222U



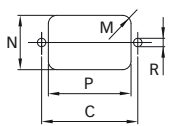
-07 connection style



Installation



Panel cut out



Dimensions

|           | FN 9222<br>1 to 8A | 10 to 15A | 16 and 20A | FN 9222U | FN 9222UZ | FN 9222S<br>1 to 8A | 10 to 15A | FN 9222S1<br>1 to 8A | 10 to 15A | FN 9222-HI<br>12 and 15A |
|-----------|--------------------|-----------|------------|----------|-----------|---------------------|-----------|----------------------|-----------|--------------------------|
| <b>A</b>  | 48                 | 48        | 53         | 51.85    | 51.85     | 29.9                | 29.9      | 29.9                 | 29.9      | 48                       |
| <b>B</b>  | 22.5               | 22.5      | 30         | 25       | 25        | 22.4                | 22.4      | 22.4                 | 22.4      | 22.5                     |
| <b>C</b>  | 40 ±0.2            | 40 ±0.2   | 42 ±0.2    | 40 ±0.2  | 40 ±0.2   |                     |           | 40 ±0.2              |           |                          |
| <b>D</b>  | 38.4               | 38.4      | 66         | 38.25    | 46.8      | 38.4                | 38.4      | 38.4                 | 38.4      | 38.4                     |
| <b>E</b>  | 27.8               | 27.8      | 34         | 27.8     | 27.8      | 27.8                | 27.8      | 27.8                 | 27.8      | 27.8                     |
| <b>F</b>  | 5.5                | 5.5       | 4          | 5.5      | 5.5       | 5.5                 | 5.5       | 5.5                  | 5.5       | 5.5                      |
| <b>G</b>  | 20.1               | 20.1      | 26.5       | 20.1     | 20.1      | 20.1                | 20.1      | 20.1                 | 20.1      | 20.1                     |
| <b>H</b>  | Ø3.3               | Ø3.3      | Ø3.5       | Ø3.3     | Ø3.3      |                     |           |                      |           | Ø3.3                     |
| <b>I</b>  | 14                 | 14        | 14         | 14.1     | 14        | 14                  | 14        | 14                   | 14        | 14                       |
| <b>J</b>  | 13.3               | 13.3      | 13.3       | 13.3     | 13.3      | 13.3                | 13.3      | 13.3                 | 13.3      | 13.3                     |
| <b>M</b>  | R ≤ 3              | R ≤ 3     | R ≤ 3      | R ≤ 3    | R ≤ 3     | R ≤ 1.5             | R ≤ 1.5   | R ≤ 1.5              | R ≤ 1.5   | R ≤ 3                    |
| <b>N</b>  | 21.5               | 21.5      | 27         | 21.5     | 21.5      | 20.8                | 20.8      | 21.9                 | 21.9      | 21.5                     |
| <b>P</b>  | 28.5               | 28.5      | 34.7       | 28.5     | 28.5      | 29.4                | 29.4      | 28.5                 | 28.5      | 28.5                     |
| <b>R</b>  | M3                 | M3        | M3         | M3       | M3        |                     |           |                      |           | M3                       |
| <b>S</b>  | 90°                | 90°       | 90°        | 90°      | 90°       |                     |           |                      |           | 90°                      |
| <b>T*</b> |                    |           |            |          |           | 0.7 - 1.5           | 0.7 - 1.5 | 0.7 - 1.5            | 0.7 - 1.5 |                          |
| <b>T*</b> |                    |           |            |          |           | 1.5 - 2.2           | 1.5 - 2.2 | 1.5 - 2.2            | 1.5 - 2.2 |                          |
| <b>X</b>  | AWG 18             | AWG 16    |            |          |           | AWG 18              | AWG 16    | AWG 18               | AWG 16    | AWG 16                   |
| <b>Y</b>  | 160                | 160       |            |          |           | 160                 | 160       | 160                  | 160       | 160                      |
| <b>Z</b>  | 6                  | 6         |            |          |           | 6                   | 6         | 6                    | 6         | 6                        |

\* For selecting the panel thickness, please refer to the filter selection table.

All dimensions in mm; 1 inch = 25.4mm

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