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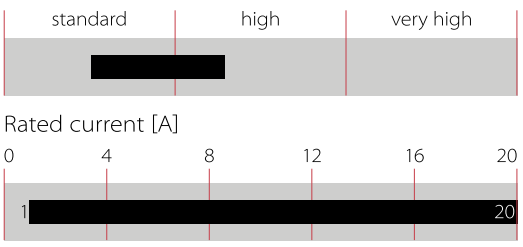
# General Performance IEC Inlet Filter



- Rated currents up to 20 A
- Excellent performance/size ratio
- Optional medical versions (B type) according to IEC/EN 60601-1
- Snap-in versions (S and S1 type)
- Hot inlet versions (HI type)
- Optional overvoltage protection (Z type)

## Performance indicators

Attenuation performance




Rated current [A]




## Approvals & Compliances

(CQC except HI-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
- FN 9222 B versions comply with the requirements of 1MOP acc. to IEC/EN 60601-1 for creepage and clearance, leakage current and high potential testing
- 12 and 15 A types with hot inlet available
- Optional surge pulse protection
- Different output connections offering maximum flexibility for assembly
- Custom-specific versions are available on request

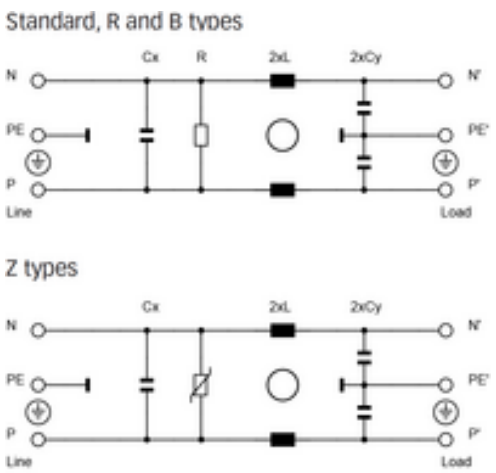
## Typical Applications

- 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

## Technical Specifications

| | |
|---|---|
| **Maximum continuous operating voltage** | 250 VAC, 50/60 Hz |
| **Nominal operating voltage** | 230 VAC |
| **Rated currents** | 1 to 20 A @ 50°C |
| **Operating frequency** | DC to 400 Hz |
| **High potential test voltage** | P –> N 250 VAC for 2 sec (all Z types)<br>P –> PE 2000 VAC for 2 sec (standard types)<br>P –> PE 2500 VAC for 2 sec (B types)<br>P –> N 1000 VAC for 2 sec (1 to 10 A types, not Z types)<br>P –> N 1100 VDC for 2 sec (16 and 20 A types, not Z types)<br>P –> N 1100 VDC for 2 sec (16 and 20 A types, not Z types) |
| **Temperature range (operation and storage)** | -25°C to +85°C (25/85/21) |
| **Protection category** | IP 40 according to IEC 60529 |
| **Flammability corresponding to** | Plastic Material: UL 94 V-0<br>Laces for -07 version: UL 94 VW-1 |
| **Approvals by rated current** | 1 to 10 A (ENEC, CQC)<br>16 A (ENEC, CQC) for 16 and 20 A types<br>1 to 20 A (UL, CSA) |
| **Design corresponding to** | UL 1283, CSA 22.2 No. 8 1986, IEC/EN 60939 (X to XX A, not Z types) |
| **MTBF (Mil-HB-217F)** | ≤15 A:>3,040,000 h @ 50°C/230 V<br>≥16 A:>2,256,000 h @ 50°C/230 V |

## Typical electrical schematic



## Filter Selection Table

| Filter | Rated current @ 50°C (25°C) [A] | Leakage current* @ 250 VAC/50 Hz (@ 120 VAC/60 Hz) [mA] | Inductance L [mH] | Capacitance Cx [µF] | Capacitance Cy [nF] | Resistance R [kΩ] | Output connections | | Weight [g] |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | |
| **FN9222x-1-..** | 1 (1.2) | 0.31 (0.18) | 12 | 0.1 | 2.2 | | -06 | -07 | 40 |
| **FN9222x-3-..** | 3 (3.5) | 0.31 (0.18) | 2.5 | 0.1 | 2.2 | | -06 | -07 | 40 |
| **FN9222x-6-..** | 6 (7.2) | 0.31 (0.18) | 0.78 | 0.1 | 2.2 | | -06 | -07 | 40 |
| **FN9222x-8-..** | 8 (10.6) | 0.31 (0.18) | 0.5 | 0.1 | 2.2 | | -06 | -07 | 40 |
| **FN9222x-10-..** | 10 (11.6) | 0.31 (0.18) | 0.225 | 0.1 | 2.2 | | -06 | -07 | 40 |
| **FN9222x-12-..** | 12 (12) | 0.31 (0.18) | 0.11 | 0.1 | 2.2 | | -06 | -07 | 40 |
| **FN9222x-15-..** | 15 (15) | 0.31 (0.18) | 0.075 | 0.1 | 2.2 | | -06 | -07 | 40 |
| **FN9222x-12-..HI** | 12 (12) | 0.31 (0.18) | 0.11 | 0.1 | 2.2 | | -06 | -07 | 40 |
| **FN9222x-15-..HI** | 15 (15) | 0.31 (0.18) | 0.075 | 0.1 | 2.2 | | -06 | -07 | 40 |
| | | | | | | | | | |
| **FN9222xR-1-..** | 1 (1.2) | 0.31 (0.18) | 12 | 0.1 | 2.2 | 1000 | -06 | -07 | 40 |
| **FN9222xR-3-..** | 3 (3.5) | 0.31 (0.18) | 2.5 | 0.1 | 2.2 | 1000 | -06 | -07 | 40 |
| **FN9222xR-6-..** | 6 (7.2) | 0.31 (0.18) | 0.78 | 0.1 | 2.2 | 1000 | -06 | -07 | 40 |
| **FN9222xR-8-..** | 8 (10.6) | 0.31 (0.18) | 0.5 | 0.1 | 2.2 | 1000 | -06 | -07 | 40 |
| **FN9222xR-10-..** | 10 (11.6) | 0.31 (0.18) | 0.225 | 0.1 | 2.2 | 1000 | -06 | -07 | 40 |
| **FN9222xR-12-..** | 12 (12) | 0.31 (0.18) | 0.11 | 0.1 | 2.2 | 1000 | -06 | -07 | 40 |
| **FN9222xR-15-..** | 15 (15) | 0.31 (0.18) | 0.075 | 0.1 | 2.2 | 1000 | -06 | -07 | 40 |
| **FN9222R-16-06** | 16 (18.5) | 0.31 (0.18) | 0.54 | 0.33 | 2.2 | 1000 | -06 | | 100 |
| **FN9222R-20-06** | 20 (23) | 0.31 (0.18) | 0.4 | 0.33 | 2.2 | 1000 | -06 | | 100 |
| **FN9222xR-12-..HI** | 12 (12) | 0.31 (0.18) | 0.11 | 0.1 | 2.2 | 1000 | -06 | -07 | 40 |
| **FN9222xR-15-..HI** | 15 (15) | 0.31 (0.18) | 0.075 | 0.1 | 2.2 | 1000 | -06 | -07 | 40 |
| | | | | | | | | | |
| **FN9222xB-1-..** | 1 (1.2) | 0.00 | 12 | 0.1 | | 1000 | -06 | -07 | 40 |
| **FN9222xB-3-..** | 3 (3.5) | 0.00 | 2.5 | 0.1 | | 1000 | -06 | -07 | 40 |
| **FN9222xB-6-..** | 6 (7.2) | 0.00 | 0.78 | 0.1 | | 1000 | -06 | -07 | 40 |
| **FN9222xB-8-..** | 8 (10.6) | 0.00 | 0.5 | 0.1 | | 1000 | -06 | -07 | 40 |
| **FN9222xB-10-..** | 10 (11.6) | 0.00 | 0.225 | 0.1 | | 1000 | -06 | -07 | 40 |
| **FN9222xB-12-..** | 12 (12) | 0.00 | 0.11 | 0.1 | | 1000 | -06 | -07 | 40 |
| **FN9222xB-15-..** | 15 (15) | 0.00 | 0.075 | 0.1 | | 1000 | -06 | -07 | 40 |
| **FN9222RB-16-06** | 16 (18.5) | 0.00 | 0.54 | 0.33 | | 1000 | -06 | | 100 |
| **FN9222RB-20-06** | 20 (23) | 0.00 | 0.4 | 0.33 | | 1000 | -06 | | 100 |
| **FN9222xB-12-..HI** | 12 (12) | 0.00 | 0.11 | 0.1 | | 1000 | -06 | -07 | 40 |
| **FN9222xB-15-..HI** | 15 (15) | 0.00 | 0.075 | 0.1 | | 1000 | -06 | -07 | 40 |
| | | | | | | | | | |
| **FN9222UZ-1-06** | 1 (1.2) | 0.31 (0.18) | 12 | 0.1 | 2.2 | | -06 | | 43 |
| **FN9222UZ-3-06** | 3 (3.5) | 0.31 (0.18) | 2.5 | 0.1 | 2.2 | | -06 | | 43 |
| **FN9222UZ-6-06** | 6 (7.2) | 0.31 (0.18) | 0.78 | 0.1 | 2.2 | | -06 | | 43 |
| **FN9222UZ-8-06** | 8 (10.6) | 0.31 (0.18) | 0.5 | 0.1 | 2.2 | | -06 | | 43 |
| **FN9222UZ-10-06** | 10 (11.6) | 0.31 (0.18) | 0.225 | 0.1 | 2.2 | | -06 | | 43 |
| **FN9222UZ-12-06** | 12 (12) | 0.31 (0.18) | 0.11 | 0.1 | 2.2 | | -06 | | 43 |
| **FN9222UZ-15-06** | 15 (15) | 0.31 (0.18) | 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

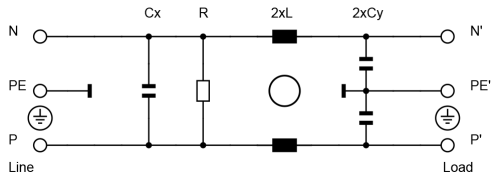
- Blank: Standard version
- R: Bleed resistor
- B: Medical version (with bleed resistor and without Y2-capacitor)
- Z: Optional surge pulse protection with additional varistor (MOV)
  (Z types have longer housings, only available for FN 9222UZ-yy-06)

- 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)

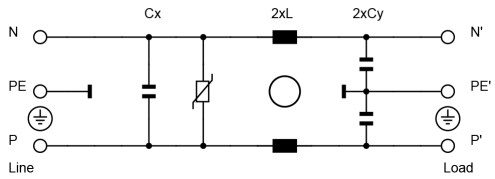
For example: FN 9222 E-15-06, FN 9222 ES1B-10-06-20, FN 9222 ER-12-06HI, FN 9222 EUB-8-06-20

## Typical electrical schematic

Standard, R and B types




Z types




## Distributor Inventory

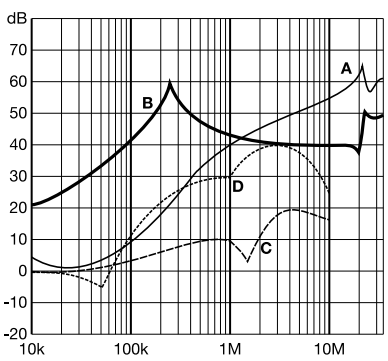
Check stock levels at global distributors at
https://products.schaffner.com/stock
(Also available via the QR code)

| Stock level per types 1 - 15 A | Link |
|---|---|
| **Standard housing types** | |
| **Housing with wider mounting flanges (U)** | |
| **Snap-in housing types (S&S1)** | |
| **Medical versions (B)** | |
| **Bleed resistor types (R)** | |
| **Surge protection types (UZ)** | |

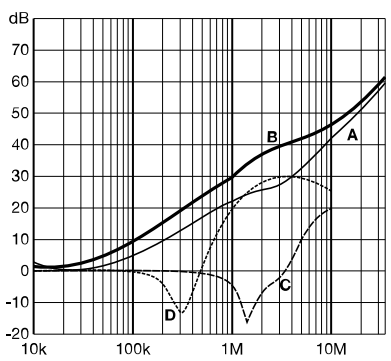
## Typical Filter Attenuation

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

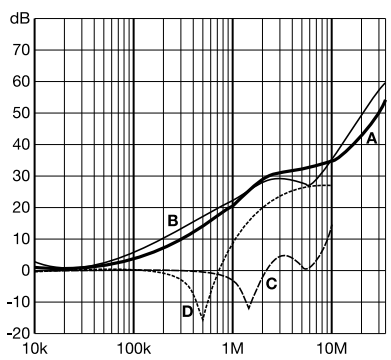
1 and 3 A types



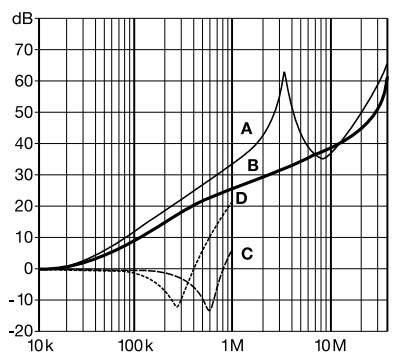

6 to 10 A types




12 and 15 A types

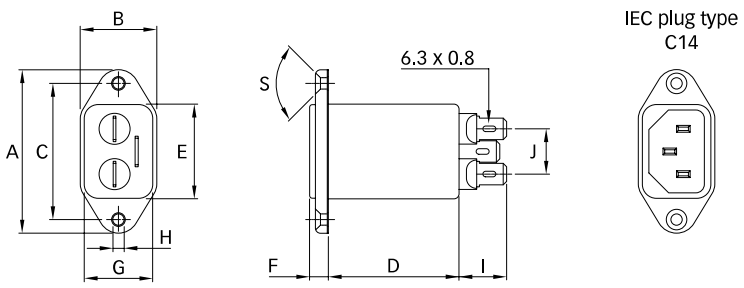



16 and 20 A types

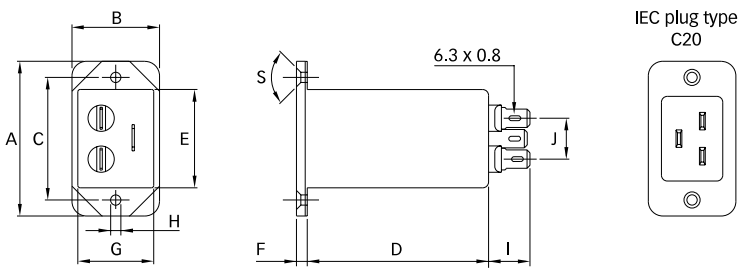


## Mechanical Data

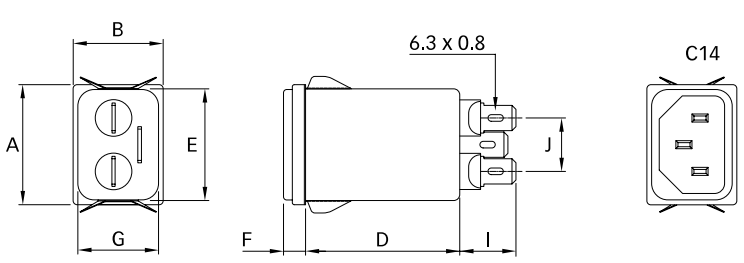
### FN 9222 1 to 15 A types



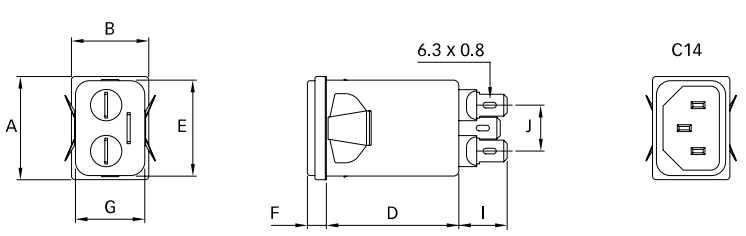

### FN 9222, 16 and 20 A types



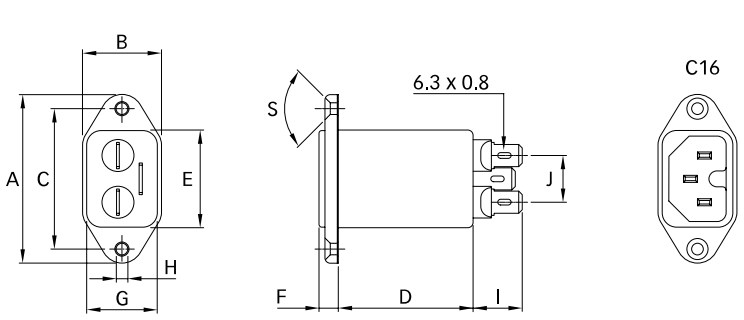

### FN 9222 S



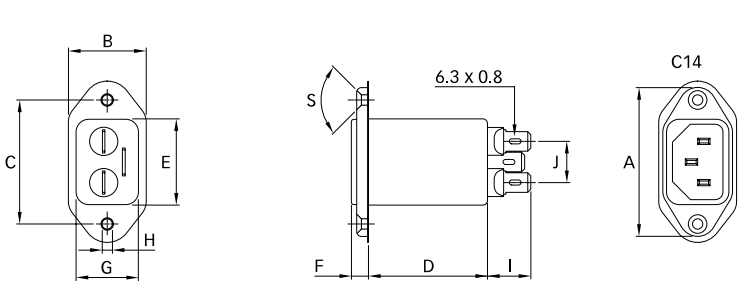

### FN 9222 S1



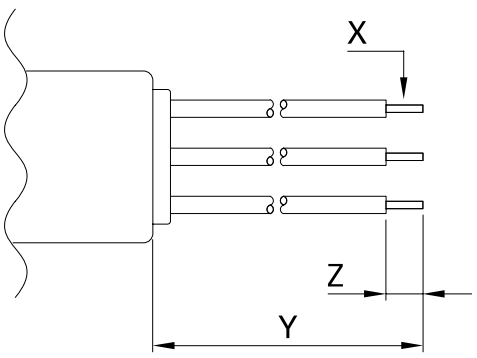

### FN 9222-HI



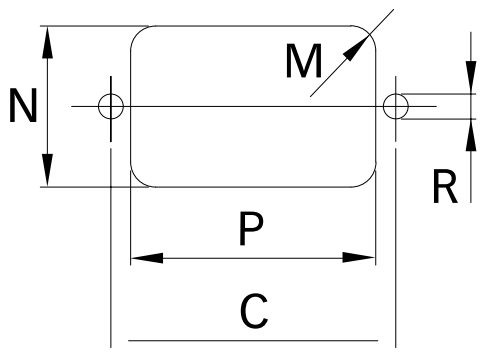

### FN 9222 U



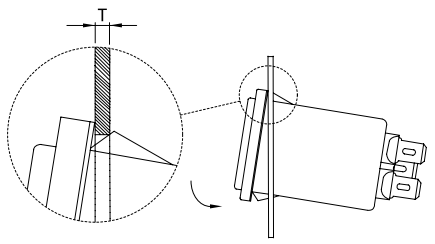

### -07 connection style




### Panel cut out




### Installation



## Dimensions

| | FN 9222 1 to 8 A | 10 to 15 A | 16 and 20 A | FN 9222 U | FN 9222 UZ | FN 9222 S 1 to 8 A | 10 to 15 A | FN 9222 S1 1 to 8 A | 10 to 15 A | FN 9222-HI 12 and 15 A | Tol. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **A** | 48 | 48 | 53 | 51.85 | 51.85 | 29.9 | 29.9 | 29.9 | 29.9 | 48 | |
| **B** | 22.4 | 22.4 | 30 | 25 | 25 | 22.4 | 22.4 | 22.4 | 22.4 | 22.4 | |
| **C** | 40 | 40 | 42 | 40 | 40 | | | | | 40 | ±0.2 |
| **D** | 38.25 | 38.25 | 62 | 38.25 | 47.1 | 38.25 | 38.25 | 38.25 | 38.25 | 38.25 | |
| **E** | 27.8 | 27.8 | 34.5 | 27.7 | 27.7 | 27.8 | 27.8 | 27.8 | 27.8 | 27.8 | +0.6/-0 |
| **F** | 5.7 | 5.7 | 3.8 | 5.7 | 5.7 | 5.7 | 5.7 | 5.7 | 5.7 | 5.7 | |
| **G** | 20.1 | 20.1 | 26.5 | 20.1 | 20.1 | 20.1 | 20.1 | 20.1 | 20.1 | 20.1 | +0.6/-0 |
| **H** | Ø3.3 | Ø3.3 | Ø3.5 | Ø3.3 | Ø3.3 | | | | | Ø3.3 | |
| **I** | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | |
| **J** | 13.3 | 13.3 | 13.3 | 13.3 | 13.3 | 13.3 | 13.3 | 13.3 | 13.3 | 13.3 | |
| **M** | R 3 | R ≤3 | R ≤1.5 | R ≤3 | R ≤3 | R ≤1.5 | R ≤ 1.5 | R ≤1.5 | R ≤1.5 | R ≤3 | |
| **N** | 21.5 | 21.5 | 27 | 21.5 | 21.5 | 20.8 | 20.8 | 21.9 | 21.9 | 21.5 | |
| **P** | 28.5 | 28.5 | 34.7 | 28.5 | 28.5 | 29.4 | 29.4 | 28.5 | 28.5 | 28.5 | |
| **R*** | M3 | M3 | M3 | M3 | M3 | | | | | M3 | |
| **S** | 90° | 90° | 90° | 90° | 90° | | | | | 90° | |
| **T**** | | | | | | 0.7-1.5 | 0.7-1.5 | 0.7-1.5 | 0.7-1.5 | | |
| **T**** | | | | | | 1.5-2.2 | 1.5-2.2 | 1.5-2.2 | 1.5-2.2 | | |
| **X** | AWG 18 | AWG 16 | | | | AWG 18 | AWG 16 | AWG 18 | AWG 16 | AWG 16 | |
| **Y** | 160 | 160 | | | | 160 | 160 | 160 | 160 | 160 | |
| **Z** | 6 | 6 | | | | 6 | 6 | 6 | 6 | 6 | |

* Recommended torque for M3 (90° countersunk flat head) is 0.5 Nm

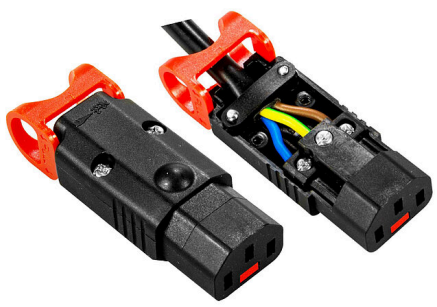
** For selecting the panel thickness, please refer to the filter selector table.

All dimensions in mm; 1 inch = 25.4 mm
Tolerances according: ISO 2768-m/EN 22768-m

Please visit www.schaffner.com to find more details on filter connectors.

## Accessories

### IL 13P IEC C13 Rewireable Connectors with Locking System




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

### IL 13P IEC C13 Rewireable Angled Connectors with Locking System



- Protects appliances that are vulnerable to vibration
- Connector cannot be accidentally pulled or vibrated out of the inlet
- Space availability/constraints
- Different angles for ease of access
- Space saving
- Release locking mechanism
- Prevents accidental disconnection

### Power Cord with angled Locking System C13



- Protects appliances that are vulnerable to vibration
- Connector cannot be accidentally pulled or vibrated out of the inlet
- Space availability/constraints
- Different angles for ease of access
- Space saving
- Release locking mechanism
- Prevents accidental disconnection

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