

# Excellent Performance EMC/EMI Filter with Earth Line Choke



- Rated currents up to 15 A
- Superior attenuation performance
- Integrated earth line choke
- Complies with IEC/EN 60601-1
- Snap-in versions (S and S1 type)
- Hot inlet versions (HI type)



### Performance indicators



### Approvals



The FN 9244 E IEC inlet filter combines an IEC inlet and mains filter with superior filter attenuation in a small form factor. The FN 9244 E high performance power entry module offers additional EMI suppression on the earth line. Choosing the FN 9244 E 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. For types without additional earth line choke please consult the FN 9244 data sheet.

## Technical specifications

|  |   |
|--|---|
| <b>Maximum continuous operating voltage</b>      | 250 VAC, 50/60 Hz   |
| <b>Operating frequency</b>                       | DC to 400 Hz  |
| <b>Rated currents</b>                            | 1 to 15 A @ 50°C  |
| <b>Approvals by rated current</b>                | 1 to 10 A (ENEC, CQC)<br>1 to 15 A (UL, CSA)  |
| <b>High potential test voltage</b>               | 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 |
| <b>Protection category</b>                       | IP 40 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/230 V (Mil-HB-217F)</b>           | 2,230,000 hours   |

## Features and benefits

- Superior conducted attenuation performance, based on chokes with high saturation resistance and excellent thermal behavior
- Rear/front or snap-in mounting
- Without earth line choke see FN 9244 data sheet
- Optional medical versions (B type) comply with the requirements of IEC/EN 60601-1 for creepage and clearance, leakage current and high potential testing
- Wide mounting flanges available
- Custom-specific versions are available on request

## Typical applications

- 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 devices (MDD)
- In-vitro diagnostic medical devices (IVDD)
- Rack mounting equipment

### Typical electrical schematic



## Filter selection table

| Filter              | Rated current<br>@ 50°C (25°C)<br><br>[A] | Leakage current*<br>@ 250 VAC/50 Hz<br>(@ 120 VAC/60 Hz)<br><br>[mA] | Inductance     |                | Capacitance    |                | Resistance<br>R<br><br>[kΩ] | Output connections | Weight<br><br>[g] |
|---------------------|---|--|----------------|----------------|----------------|----------------|-----------------------------|--------------------|-------------------|
|                     |   |  | L1<br><br>[mH] | L2<br><br>[mH] | Cx<br><br>[μF] | Cy<br><br>[nF] |                             |                    |                   |
| FN 9244 Ex-1-06     | 1 (1.2)                                   | 0.31 (0.18)  | 59.53          | 0.4            | 0.1            | 2.2            |                             | -06                | 46                |
| FN 9244 Ex-3-06     | 3 (3.5)                                   | 0.31 (0.18)  | 13.45          | 0.4            | 0.1            | 2.2            |                             | -06                | 46                |
| FN 9244 Ex-6-06     | 6 (7.2)                                   | 0.31 (0.18)  | 4.1            | 0.4            | 0.1            | 2.2            |                             | -06                | 46                |
| FN 9244 Ex-8-06     | 8 (10.6)                                  | 0.31 (0.18)  | 2.3            | 0.4            | 0.1            | 2.2            |                             | -06                | 46                |
| FN 9244 Ex-10-06    | 10 (11.6)                                 | 0.31 (0.18)  | 1.02           | 0.4            | 0.1            | 2.2            |                             | -06                | 46                |
| FN 9244 Ex-12-06    | 12 (12)                                   | 0.31 (0.18)  | 0.58           | 0.1            | 0.1            | 2.2            |                             | -06                | 46                |
| FN 9244 Ex-15-06    | 15 (15)                                   | 0.31 (0.18)  | 0.4            | 0.1            | 0.1            | 2.2            |                             | -06                | 46                |
| FN 9244 Ex-12-06HI  | 12 (12)                                   | 0.31 (0.18)  | 0.58           | 0.1            | 0.1            | 2.2            |                             | -06                | 46                |
| FN 9244 Ex-15-06HI  | 15 (15)                                   | 0.31 (0.18)  | 0.4            | 0.1            | 0.1            | 2.2            |                             | -06                | 46                |
| FN 9244 ExR-1-06    | 1 (1.2)                                   | 0.31 (0.18)  | 59.53          | 0.4            | 0.1            | 2.2            | 1000                        | -06                | 46                |
| FN 9244 ExR-3-06    | 3 (3.5)                                   | 0.31 (0.18)  | 13.45          | 0.4            | 0.1            | 2.2            | 1000                        | -06                | 46                |
| FN 9244 ExR-6-06    | 6 (7.2)                                   | 0.31 (0.18)  | 4.1            | 0.4            | 0.1            | 2.2            | 1000                        | -06                | 46                |
| FN 9244 ExR-8-06    | 8 (10.6)                                  | 0.31 (0.18)  | 2.3            | 0.4            | 0.1            | 2.2            | 1000                        | -06                | 46                |
| FN 9244 ExR-10-06   | 10 (11.6)                                 | 0.31 (0.18)  | 1.02           | 0.4            | 0.1            | 2.2            | 1000                        | -06                | 46                |
| FN 9244 ExR-12-06   | 12 (12)                                   | 0.31 (0.18)  | 0.58           | 0.1            | 0.1            | 2.2            | 1000                        | -06                | 46                |
| FN 9244 ExR-15-06   | 15 (15)                                   | 0.31 (0.18)  | 0.4            | 0.1            | 0.1            | 2.2            | 1000                        | -06                | 46                |
| FN 9244 ExR-12-06HI | 12 (12)                                   | 0.31 (0.18)  | 0.58           | 0.1            | 0.1            | 2.2            | 1000                        | -06                | 46                |
| FN 9244 ExR-15-06HI | 15 (15)                                   | 0.31 (0.18)  | 0.4            | 0.1            | 0.1            | 2.2            | 1000                        | -06                | 46                |
| FN 9244 ExB-1-06    | 1 (1.2)                                   | 0.00   | 59.53          | 0.4            | 0.1            |                | 1000                        | -06                | 46                |
| FN 9244 ExB-3-06    | 3 (3.5)                                   | 0.00   | 13.45          | 0.4            | 0.1            |                | 1000                        | -06                | 46                |
| FN 9244 ExB-6-06    | 6 (7.2)                                   | 0.00   | 4.1            | 0.4            | 0.1            |                | 1000                        | -06                | 46                |
| FN 9244 ExB-8-06    | 8 (10.6)                                  | 0.00   | 2.3            | 0.4            | 0.1            |                | 1000                        | -06                | 46                |
| FN 9244 ExB-10-06   | 10 (11.6)                                 | 0.00   | 1.02           | 0.4            | 0.1            |                | 1000                        | -06                | 46                |
| FN 9244 ExB-12-06   | 12 (12)                                   | 0.00   | 0.58           | 0.1            | 0.1            |                | 1000                        | -06                | 46                |
| FN 9244 ExB-15-06   | 15 (15)                                   | 0.00   | 0.4            | 0.1            | 0.1            |                | 1000                        | -06                | 46                |
| FN 9244 ExB-12-06HI | 12 (12)                                   | 0.00   | 0.58           | 0.1            | 0.1            |                | 1000                        | -06                | 46                |
| FN 9244 ExB-15-06HI | 15 (15)                                   | 0.00   | 0.4            | 0.1            | 0.1            |                | 1000                        | -06                | 46                |

\* Maximum leakage under normal operating conditions (acc. to IEC60939-3). Note: if the neutral line is interrupted, worst case leakage could reach twice this level.

## Product selector

FN 9244Exx-yy...HI-zz



For example: FN 9244 E-15-06, FN 9244 ES1B-10-06-20, FN 9244 ER-12-06HI, FN 9244 EUB-8-06

## Typical filter attenuation

Per CISPR 17; A=50  $\Omega$ /50  $\Omega$  sym; B=50  $\Omega$ /50  $\Omega$  asym; C=0.1  $\Omega$ /100  $\Omega$  sym; D=100  $\Omega$ /0.1  $\Omega$  sym

1 and 3 A types



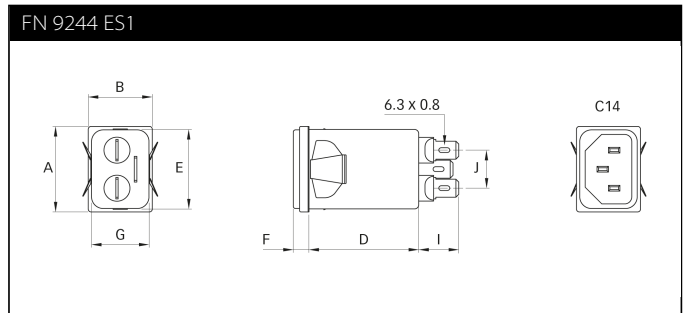
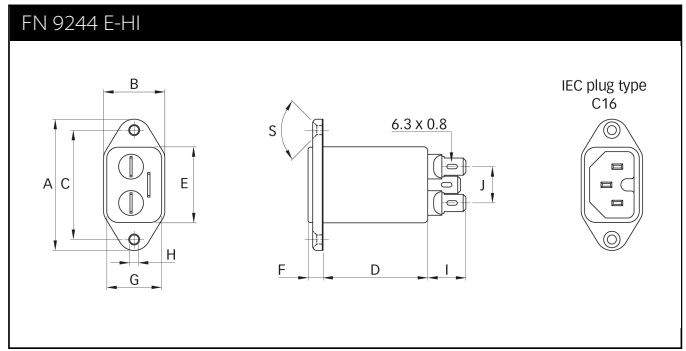
6 to 10 A types



12 and 15 A types



**Mechanical data**



## Dimensions

|            | <b>FN 9244 E</b> | <b>FN 9244 EU</b> | <b>FN 9244 ES</b> | <b>FN 9244 ES1</b> | <b>FN 9244 E-HI</b> | <b>Tol.</b> |
|------------|------------------|-------------------|-------------------|--------------------|---------------------|-------------|
| <b>A</b>   | 48               | 48                | 29.9              | 29.9               | 48                  |             |
| <b>B</b>   | 22.4             | 25                | 22.4              | 22.4               | 22.4                |             |
| <b>C</b>   | 40               | 40                |                   |                    | 40                  | ±0.2        |
| <b>D</b>   | 46.8             | 46.7              | 46.8              | 46.8               | 46.8                |             |
| <b>E</b>   | 27.8             | 27.7              | 27.8              | 27.8               | 27.8                | +0.6/-0     |
| <b>F</b>   | 5.7              | 5.7               | 5.7               | 5.7                | 5.7                 |             |
| <b>G</b>   | 20.1             | 20.1              | 20.1              | 20.1               | 20.1                | +0.6/-0     |
| <b>H</b>   | Ø3.3             | Ø3.3              |                   |                    | Ø3.3                |             |
| <b>I</b>   | 14               | 14                | 14                | 14                 | 14                  |             |
| <b>J</b>   | 13.3             | 13.3              | 13.3              | 13.3               | 13.3                |             |
| <b>M</b>   | R ≤3             | R ≤3              | R ≤1.5            | R ≤1.5             | R ≤3                |             |
| <b>N</b>   | 21.5             | 21.5              | 20.8              | 21.9               | 21.5                |             |
| <b>P</b>   | 28.5             | 28.5              | 29.4              | 28.5               | 28.5                |             |
| <b>R*</b>  | M3               | M3                |                   |                    | M3                  |             |
| <b>S</b>   | 90°              | 90°               |                   |                    | 90°                 |             |
| <b>T**</b> |                  |                   | 0.7 - 1.5         | 0.7 - 1.5          |                     |             |
| <b>T**</b> |                  |                   | 1.5 - 2.2         | 1.5 - 2.2          |                     |             |

\* 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](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.

### IB - Insulating Boots



There is a full range of insulating boots available from Schaffner that provide a physical cover for the exposed terminals on the back of IEC Inlet Filters.

These boots fit the simplest non-fused and unswitched style up to the fully fused and switched IEC filtered inlet. The boots are made from a durable black PVC material that conforms to UL94-V0 flammability requirements. The boots slip easily over the back of the filter and reduce the risk of electrical shock to maintenance personnel whilst protecting the filter from environmental hazard such as the ingress of dust and moisture.



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Наши преимущества:

- Оперативные поставки широкого спектра электронных компонентов отечественного и импортного производства напрямую от производителей и с крупнейших мировых складов;
- Поставка более 17-ти миллионов наименований электронных компонентов;
- Поставка сложных, дефицитных, либо снятых с производства позиций;
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- Экспресс доставка в любую точку России;
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- Система менеджмента качества сертифицирована по Международному стандарту ISO 9001;
- Лицензия ФСБ на осуществление работ с использованием сведений, составляющих государственную тайну;
- Поставка специализированных компонентов (Xilinx, Altera, Analog Devices, Intersil, Interpoint, Microsemi, Aeroflex, Peregrine, Syfer, Eurofarad, Texas Instrument, Miteq, Cobham, E2V, MA-COM, Hittite, Mini-Circuits, General Dynamics и др.);

Помимо этого, одним из направлений компании «ЭлектроПласт» является направление «Источники питания». Мы предлагаем Вам помощь Конструкторского отдела:

- Подбор оптимального решения, техническое обоснование при выборе компонента;
- Подбор аналогов;
- Консультации по применению компонента;
- Поставка образцов и прототипов;
- Техническая поддержка проекта;
- Защита от снятия компонента с производства.



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