

AC Filter 2-Stage, excellent Attenuation



### Description

- Line filter in standard and medical version
- 2 stage
- Compact design
- Very light due to partial potting

### Unique Selling Proposition

- Excellent differential and common-mode attenuation
- Broad band attenuation
- Completely closed steel housing
- Wide temperature range

See below:

### Approvals and Compliances

### Characteristics

- Designed for current applications of 1 - 36 A
- Protection against interference voltage from the mains  
Possible interferences generated in the equipment are strongly attenuated
- Especially designed for industrial applications such as: Frequency Converters, Stepper Motor Drives, UPS-Systems, Inverters
- Suitable for use in equipment according to IEC/UL 62368-1  
Suitable for use in medical equipment according to IEC/UL 60601-1 (1 MOOP, 1 MOPP)

### References

Alternative: High attenuation version [FMBB NEO](#)

### Weblinks

[pdf data sheet](#), [html datasheet](#), [General Product Information](#), [Approvals](#), [Distributor-Stock-Check](#), [Detailed request for product](#), [Microsite](#)

### Technical Data

|                                 |                                                                                                                                                                    |
|---------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Ratings IEC                     | 1 - 36 A @ Ta 40 °C / 250 VAC; 50 Hz                                                                                                                               |
| Ratings UL/CSA                  | 1 - 36 A @ Ta 40 °C / 125/250 VAC; 60 Hz                                                                                                                           |
| Leakage Current                 | standard < 6.9 mA (250 V / 50 Hz)<br>low leakage current < 0.15 mA (250 V / 50 Hz)<br>medical (M5) < 5 µA (250 V / 50 Hz)<br>medical (M80) < 80 µA (250 V / 50 Hz) |
| Dielectric Strength             | 1.7 kVDC between L-N<br>2.7 kVDC between L/N-PE<br>Test voltage (2 sec)                                                                                            |
| Allowable Operation Temperature | -40 °C to 100 °C                                                                                                                                                   |
| Climatic Category               | 40/100/21 acc. to IEC 60068-1                                                                                                                                      |
| IP-Protection                   | rear-side IP20 IEC 60529                                                                                                                                           |
| Protection Class                | Suitable for appliances with protection class I acc. to IEC 61140                                                                                                  |
| Terminal                        | Quick connect terminal 6.3 x 0.8 mm<br>Bolt and nut M4                                                                                                             |
| Material                        | Nickel plated steel                                                                                                                                                |

|             |                                                                                                           |
|-------------|-----------------------------------------------------------------------------------------------------------|
| Line Filter | Standard and Medical Version, IEC 60939, UL 60939-3, CSA C22.2 no. 8<br><a href="#">Technical Details</a> |
| MTBF        | > 200'000h acc. to MIL-HB-217 F                                                                           |

### Approvals and Compliances

Detailed information on product approvals, code requirements, usage instructions and detailed test conditions can be looked up in [Details about Approvals](#)

SCHURTER products are designed for use in industrial environments. They have approvals from independent testing bodies according to national and international standards. Products with specific characteristics and requirements such as required in the automotive sector according to IATF 16949, medical technology according to ISO 13485 or in the aerospace industry can be offered exclusively with customer-specific, individual agreements by SCHURTER.

## Approvals

The approval mark is used by the testing authorities to certify compliance with the safety requirements placed on electronic products.

Approval Reference Type: FMBB EP

| Approval Logo                                                                    | Certificates                  | Certification Body | Description                  |
|----------------------------------------------------------------------------------|-------------------------------|--------------------|------------------------------|
|  | <a href="#">VDE Approvals</a> | VDE                | Certificate Number: 40051449 |
|  | <a href="#">UL Approvals</a>  | UL                 | UR File Number: E495089      |

## Product standards

Product standards that are referenced

| Organization                                                                     | Design                | Standard         | Description                                                           |
|----------------------------------------------------------------------------------|-----------------------|------------------|-----------------------------------------------------------------------|
|  | Designed according to | IEC 60939        | Passive filters for suppressing electromagnetic interference          |
|  | Designed according to | IEC 60127-6      | Miniature fuses. Part 6. Fuse-holders for miniature fuse-links        |
|  | Designed according to | UL 60939-3       | Passive filters for suppressing electromagnetic interference          |
|  | Designed according to | CSA C22.2 no. 42 | General Use Receptacles, Attachment Plugs, and Similar Wiring Devices |
|  | Designed according to | CSA C22.2 no. 8  | Electromagnetic interference (EMI) filters                            |

## Application standards

Application standards where the product can be used

| Organization                                                                       | Design                         | Standard       | Description                                                                                            |
|------------------------------------------------------------------------------------|--------------------------------|----------------|--------------------------------------------------------------------------------------------------------|
|   | Suitable for applications acc. | IEC/UL 62368-1 | Audio/video, information and communication technology equipment - Part 1: Safety requirements          |
|  | Suitable for applications acc. | IEC 60601-1    | Medical electrical equipment - Part 1: General requirements for basic safety and essential performance |

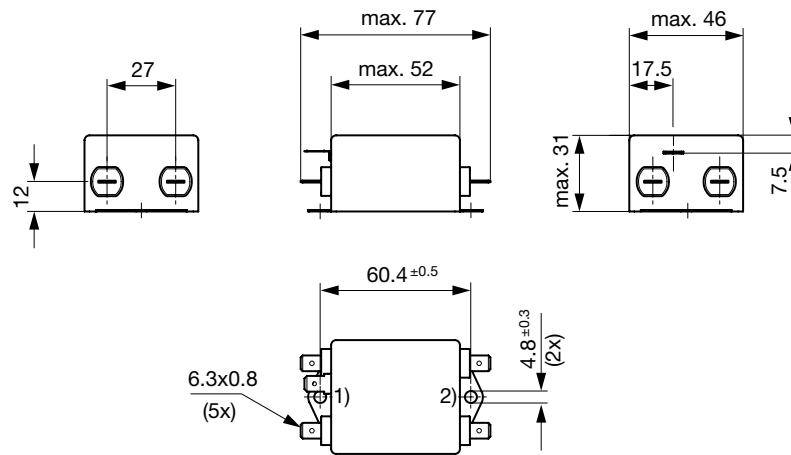
## Compliances

The product complies with following Guide Lines

| Identification                                                                     | Details                                        | Initiator   | Description                                                                                                                                                                                           |
|------------------------------------------------------------------------------------|------------------------------------------------|-------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <a href="#">CE declaration of conformity</a>   | SCHURTER AG | The CE marking declares that the product complies with the applicable requirements laid down in the harmonisation of Community legislation on its affixing in accordance with EU Regulation 765/2008. |
|  | <a href="#">UKCA declaration of conformity</a> | SCHURTER AG | The UKCA marking declares that the product complies with the applicable requirements laid down in the British Amendment of Regulation (EC) 765/2008.                                                  |
|  | <a href="#">RoHS</a>                           | SCHURTER AG | Directive RoHS 2011/65/EU, Amendment (EU) 2015/863                                                                                                                                                    |
|  | <a href="#">China RoHS</a>                     | SCHURTER AG | The law SJ / T 11363-2006 (China RoHS) has been in force since 1 March 2007. It is similar to the EU directive RoHS.                                                                                  |
|  | <a href="#">REACH</a>                          | SCHURTER AG | On 1 June 2007, Regulation (EC) No 1907/2006 on the Registration, Evaluation, Authorization and Restriction of Chemicals 1 (abbreviated as "REACH") entered into force.                               |
|  | <a href="#">Medical Equipment</a>              | SCHURTER AG | Suitable for use in medical equipment according to IEC/UL 60601-1 (1 MOOP, 1 MOPP)                                                                                                                    |

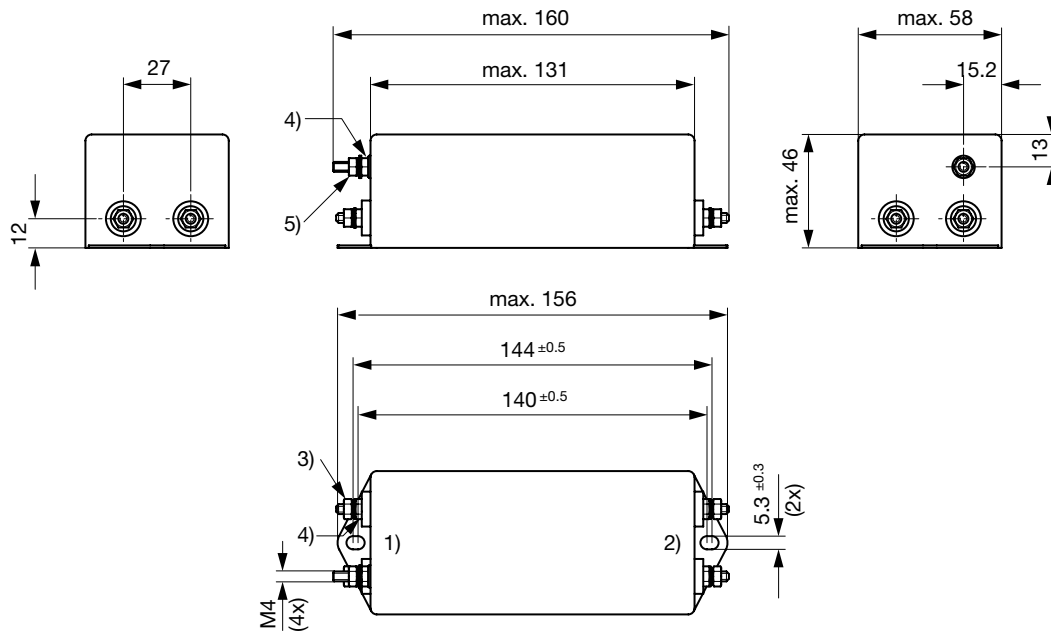
### Dimension [mm]

Case 09 with quick connect terminals



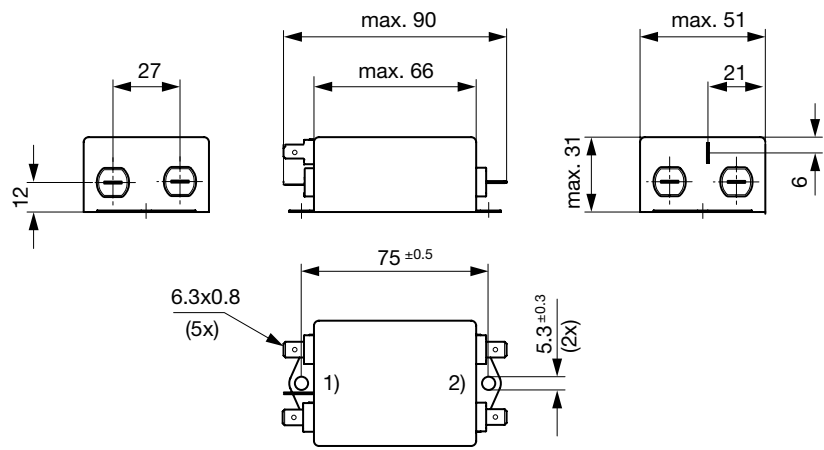
- 1) Line
- 2) Load

Case MB with bolt and nut M4



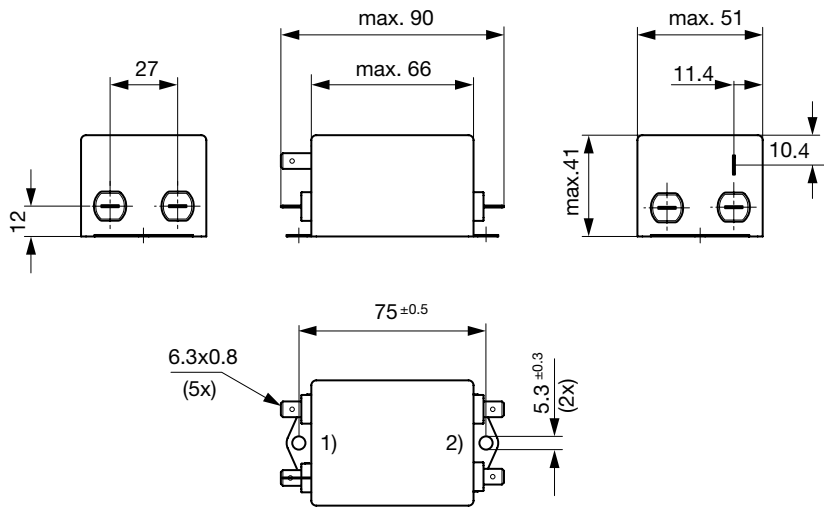
- 1) Line
- 2) Load
- 3) Nut torque 0.8...1 Nm, keep lock-nut fastened
- 4) Lock-nut do not unscrew
- 5) PE: M4x16, 1.2...1.5 Nm, keep lock-nut fastened

Case MC with quick connect terminals



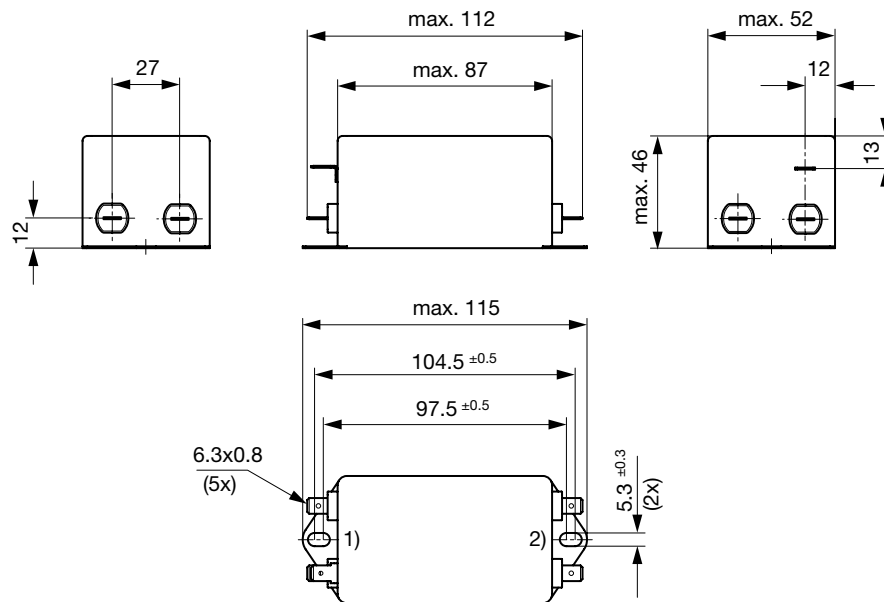
- 1) Line
- 2) Load

Case UB with quick connect terminals



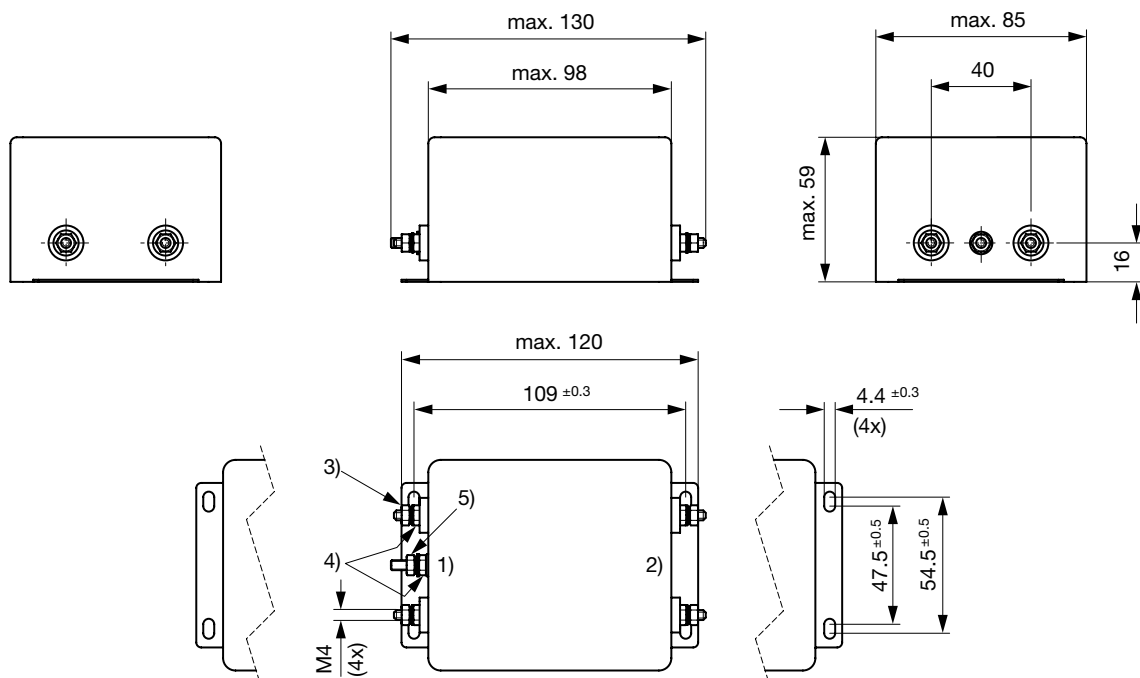
- 1) Line
- 2) Load

Case ME with quick connect terminals



- 1) Line  
 2) Load

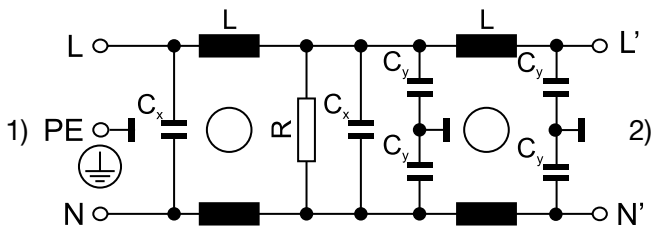
Case MF with bolt and nut M4



- 1) Line  
 2) Load  
 3) Nut torque 0.8...1 Nm, keep lock-nut fastened  
 4) Lock-nut do not unscrew  
 5) PE: M4x16, 1.2...1.5 Nm, keep lock-nut fastened

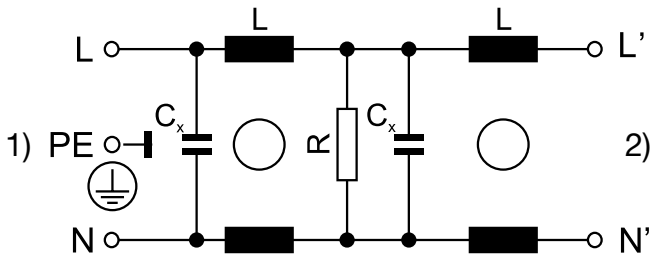
Diagrams

Standard version



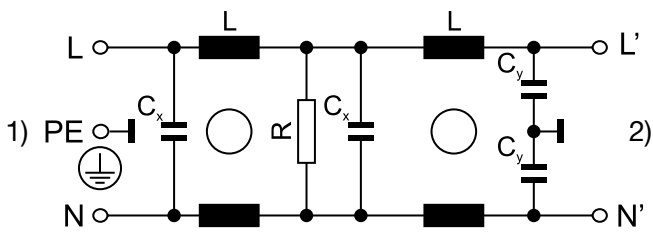
1) Line, 2) Load

Medical M5



1) Line, 2) Load

Medical M80

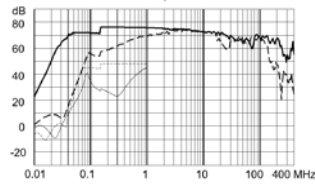


1) Line, 2) Load

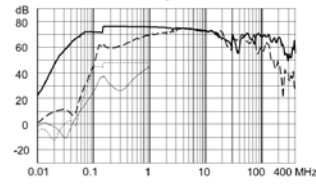
**Attenuation Loss** . . . . 0.1/100Ω differential mode      ..... 100/0.1Ω differential mode      - - - - 50Ω differential mode      \_\_\_\_ 50Ω common mode

Standard version

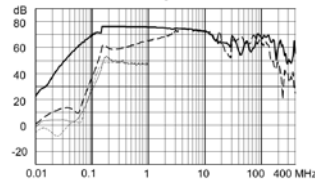
1A



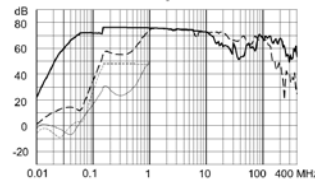
3A



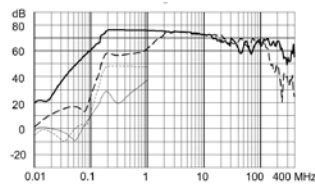
6A



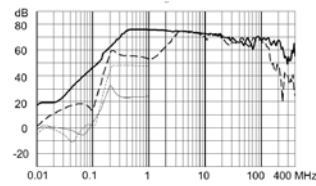
10A



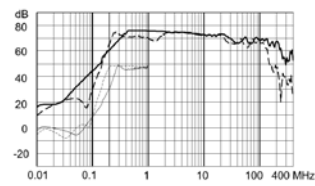
12A



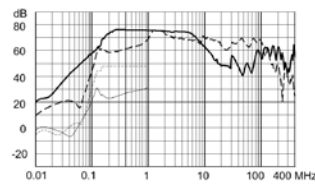
16A



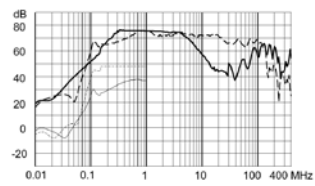
20A



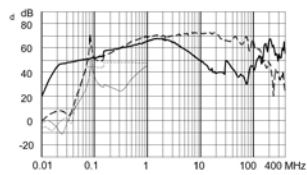
30A



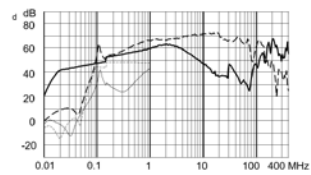
36A



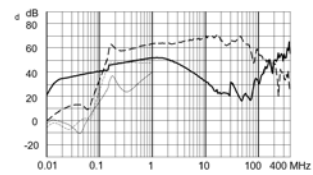
1 A



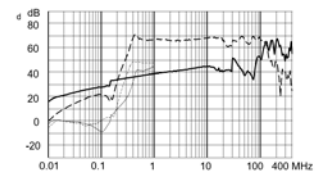
## 3 A



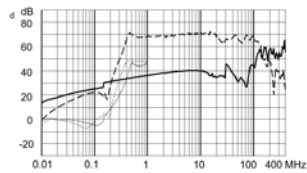
## 6 A



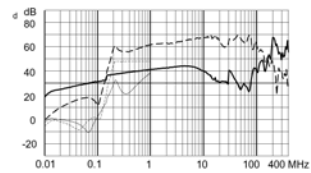
10 A



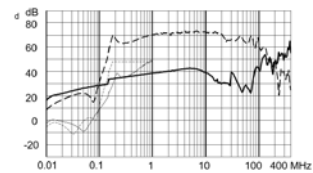
## 12 A



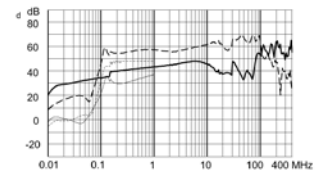
## 16 A



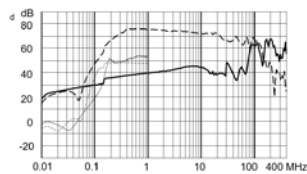
20 A



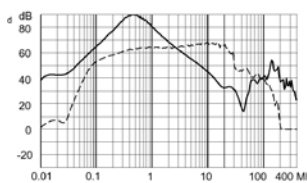
## 30 A



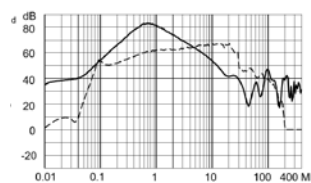
## 36 A



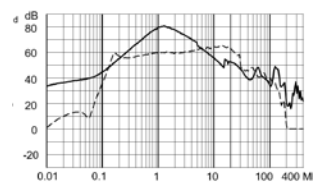
1 A



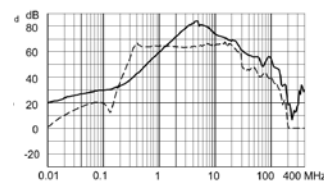
## 3 A



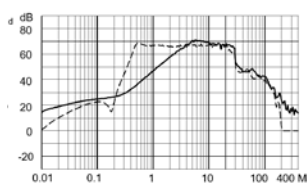
## 6 A



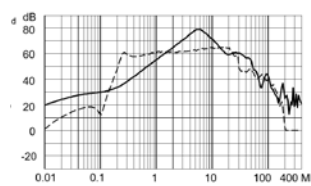
10 A



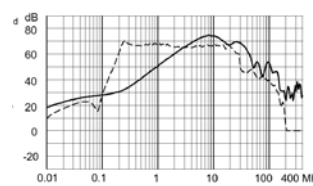
12A



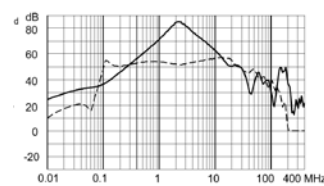
## 16 A



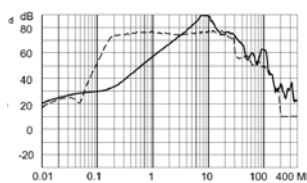
20 A



30 A

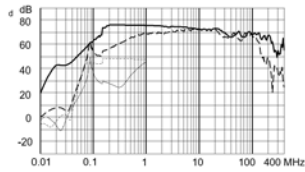


## 36 A

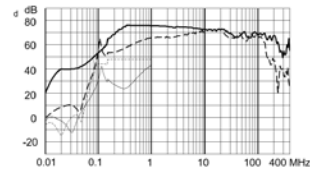


Low leakage current version

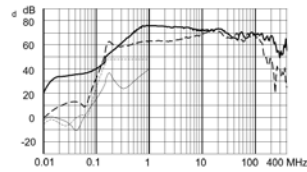
1 A



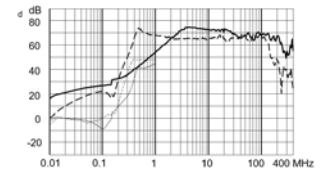
3 A



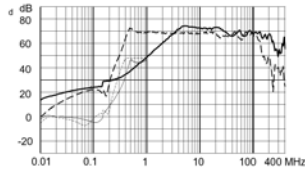
6 A



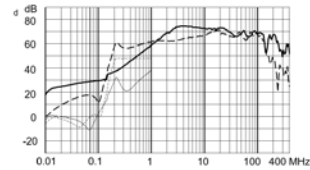
10 A



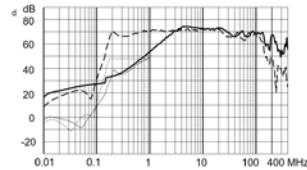
12 A



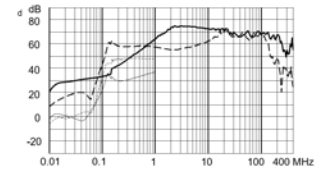
16 A



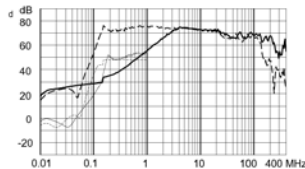
20 A



30 A



36 A



## Variants

| Rated current | Filter-Type          | Terminal                            | Lea-<br>kage | Ri    | Power<br>Loss | Weight | Housing | Packa-<br>ging | Order Number |
|---------------|----------------------|-------------------------------------|--------------|-------|---------------|--------|---------|----------------|--------------|
| [A]           |                      |                                     | [mA]         | [mΩ]  | [W]           | [g]    |         | [ST]           |              |
| 1             | Standard version     | Quick connect terminal 6.3 x 0.8 mm | 1.47         | 601.3 | 1.2           | 125 g  | 09      | 15             | 3-123-509    |
| 3             | Standard version     | Quick connect terminal 6.3 x 0.8 mm | 1.47         | 169.3 | 3             | 128 g  | 09      | 15             | 3-123-510    |
| 6             | Standard version     | Quick connect terminal 6.3 x 0.8 mm | 1.47         | 33.3  | 2.88          | 133 g  | 09      | 15             | 3-123-511    |
| 10            | Standard version     | Quick connect terminal 6.3 x 0.8 mm | 6.91         | 9.9   | 4.4           | 198 g  | MC      | 10             | 3-123-522    |
| 12            | Standard version     | Quick connect terminal 6.3 x 0.8 mm | 3.14         | 7.6   | 4.15          | 201 g  | MC      | 10             | 3-123-523    |
| 16            | Standard version     | Quick connect terminal 6.3 x 0.8 mm | 3.14         | 7.9   | 4.1           | 265 g  | UB      | 10             | 3-123-524    |
| 20            | Standard version     | Quick connect terminal 6.3 x 0.8 mm | 3.14         | 6.1   | 4.8           | 390 g  | ME      | 5              | 3-123-525    |
| 30            | Standard version     | Bolt and nut M4                     | 3.14         | 6.1   | 10.8          | 855 g  | MF      | 3              | 3-123-526    |
| 36            | Standard version     | Bolt and nut M4                     | 3.14         | 5.5   | 10.4          | 890 g  | MB      | 4              | 3-123-527    |
| 1             | Low leakage current  | Quick connect terminal 6.3 x 0.8 mm | 0.15         | 601.3 | 1.2           | 125 g  | 09      | 15             | 3-123-537    |
| 3             | Low leakage current  | Quick connect terminal 6.3 x 0.8 mm | 0.15         | 169.3 | 3             | 128 g  | 09      | 15             | 3-123-538    |
| 6             | Low leakage current  | Quick connect terminal 6.3 x 0.8 mm | 0.15         | 33.3  | 2.88          | 133 g  | 09      | 15             | 3-123-539    |
| 10            | Low leakage current  | Quick connect terminal 6.3 x 0.8 mm | 0.15         | 9.9   | 4.4           | 198 g  | MC      | 10             | 3-123-540    |
| 12            | Low leakage current  | Quick connect terminal 6.3 x 0.8 mm | 0.15         | 7.6   | 4.15          | 201 g  | MC      | 10             | 3-123-541    |
| 16            | Low leakage current  | Quick connect terminal 6.3 x 0.8 mm | 0.15         | 7.9   | 4.1           | 265 g  | UB      | 10             | 3-123-542    |
| 20            | Low leakage current  | Quick connect terminal 6.3 x 0.8 mm | 0.15         | 6.1   | 4.8           | 390 g  | ME      | 5              | 3-123-543    |
| 30            | Low leakage current  | Bolt and nut M4                     | 0.15         | 6.1   | 10.8          | 855 g  | MF      | 3              | 3-123-544    |
| 36            | Low leakage current  | Bolt and nut M4                     | 0.15         | 5.5   | 10.4          | 890 g  | MB      | 4              | 3-123-545    |
| 1             | Medical Version (M5) | Quick connect terminal 6.3 x 0.8 mm | 0.005        | 601.3 | 1.2           | 125 g  | 09      | 15             | 3-123-528    |
| 3             | Medical Version (M5) | Quick connect terminal 6.3 x 0.8 mm | 0.005        | 169.3 | 3             | 128 g  | 09      | 15             | 3-123-529    |
| 6             | Medical Version (M5) | Quick connect terminal 6.3 x 0.8 mm | 0.005        | 33.3  | 2.88          | 133 g  | 09      | 15             | 3-123-530    |
| 10            | Medical Version (M5) | Quick connect terminal 6.3 x 0.8 mm | 0.005        | 9.9   | 4.4           | 198 g  | MC      | 10             | 3-123-531    |
| 12            | Medical Version (M5) | Quick connect terminal 6.3 x 0.8 mm | 0.005        | 7.6   | 4.15          | 201 g  | MC      | 10             | 3-123-532    |
| 16            | Medical Version (M5) | Quick connect terminal 6.3 x 0.8 mm | 0.005        | 7.9   | 4.1           | 265 g  | UB      | 10             | 3-123-533    |
| 20            | Medical Version (M5) | Quick connect terminal 6.3 x 0.8 mm | 0.005        | 6.1   | 4.8           | 390 g  | ME      | 5              | 3-123-534    |

| Rated<br>current<br>[A] | Filter-Type           | Terminal                            | Lea-<br>kage<br>[mA] | Ri<br>[mΩ] | Power<br>Loss<br>[W] | Weight<br>[g] | Housing | Packa-<br>ging<br>[ST] | Order Number |
|-------------------------|-----------------------|-------------------------------------|----------------------|------------|----------------------|---------------|---------|------------------------|--------------|
| 30                      | Medical Version (M5)  | Bolt and nut M4                     | 0.005                | 6.1        | 10.8                 | 855 g         | MF      | 3                      | 3-123-535    |
| 36                      | Medical Version (M5)  | Bolt and nut M4                     | 0.005                | 5.5        | 10.4                 | 890 g         | MB      | 4                      | 3-123-536    |
| 1                       | Medical Version (M80) | Quick connect terminal 6.3 x 0.8 mm | 0.073                | 601.3      | 1.2                  | 125 g         | 09      | 15                     | 3-142-126    |
| 3                       | Medical Version (M80) | Quick connect terminal 6.3 x 0.8 mm | 0.073                | 169.3      | 3                    | 128 g         | 09      | 15                     | 3-142-127    |
| 6                       | Medical Version (M80) | Quick connect terminal 6.3 x 0.8 mm | 0.073                | 33.3       | 2.88                 | 133 g         | 09      | 15                     | 3-142-128    |
| 10                      | Medical Version (M80) | Quick connect terminal 6.3 x 0.8 mm | 0.073                | 9.9        | 4.4                  | 198 g         | MC      | 10                     | 3-142-129    |
| 12                      | Medical Version (M80) | Quick connect terminal 6.3 x 0.8 mm | 0.073                | 7.6        | 4.15                 | 201 g         | MC      | 10                     | 3-142-130    |
| 16                      | Medical Version (M80) | Quick connect terminal 6.3 x 0.8 mm | 0.073                | 7.9        | 4.1                  | 265 g         | UB      | 10                     | 3-142-131    |
| 20                      | Medical Version (M80) | Quick connect terminal 6.3 x 0.8 mm | 0.073                | 6.1        | 4.8                  | 390 g         | ME      | 5                      | 3-142-132    |
| 30                      | Medical Version (M80) | Bolt and nut M4                     | 0.073                | 6.1        | 10.8                 | 855 g         | MF      | 3                      | 3-142-133    |
| 36                      | Medical Version (M80) | Bolt and nut M4                     | 0.073                | 5.5        | 10.4                 | 890 g         | MB      | 4                      | 3-142-134    |

Availability for all products can be searched real-time: <https://www.schurter.com/en/info-center/support-tools/stock-check-distributors>

Leakage current according IEC 60939-1

20A, 30A and 36A medical filter M5 and M80, are only suitable for medical equipment intended for permanently connection to the mains.

## Accessories

### Description



#### [DIN\\_Rail\\_Kit](#)

Mounting accessory for compact 1- and 3-phase filters