

Multi-stage Performance AC/DC EMI Filter



- Rated currents from 1 to 36 A
- High differential and common-mode attenuation
- High frequency attenuation
- Optional medical versions (B type)
- Optional safety versions (A type)



Approvals & Compliances



Features and Benefits

- FN2070 two-stage filters are designed for easy and fast chassis mounting
- FN2070 B versions without capacitors to earth comply to 1MOP for ME (medical equipment) acc. IEC 60601-1
- FN2070 A version with low capacitance to earth for safety critical applications with necessity for low leakage currents
- All filters provide a high conducted attenuation performance, based on chokes with high saturation resistance and excellent thermal behavior
- FN2070 two-stage filters are designed for high frequency attenuation
- FN2070 filters are also available as single-stage filters (FN2030 series)
- FN2070 filters are also available with differential mode choke (FN2080 series)
- Various terminal options allow you to select the desired connection style

Technical Specifications

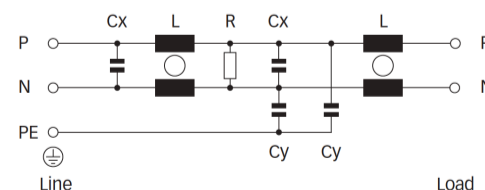
| | |
|--|---|
| Rated voltage* | 250 VAC, 50/60 Hz; 250 VDC |
| Operating frequency | DC to 400 Hz |
| Rated currents | 1 to 36 A @ 40°C max |
| High potential test voltage | P → PE 2000 VAC for 2 sec P → PE 2500 VAC for 2 sec (B types) P → N 1100 VDC for 2 sec |
| Temperature range (operation and storage) | -25°C to +100°C (25/100/21)** |
| Certified to | UL 1283, CSA 22.2 No. 8 1986, IEC/EN 60939 (applies to AC and DC applications) |
| Flammability corresponding to | Laces for -07 version: UL 94 VW-1 Terminal plastic for -06/-08 version: UL 94 V-0 Grommet for -07 version: UL 94V-0 |
| Design corresponding to | UL 1283, CSA 22.2 No. 8 1986, IEC/EN 60939 |
| Overvoltage category | II acc. IEC 60664-1 |
| Pollution degree | 2 acc. IEC 60664-1 |
| Altitude | 2000m (above derating applies)** |
| MTBF @ 40°C/230 V (Mil-HB-217F) | 1,550,000 hours 1,600,000 hours (B types) |

* maximum RMS operating voltage at rated frequency or the maximum DC operating voltage
 ** for dedicated requests exceeding this specification (e.g. -40 °C or higher altitude) please contact your local Schaffner Sales office

Typical Applications




































- Electrical and electronic equipment
- Consumer goods
- Household equipment
- Building automation
- Industrial applications
- Machinery
- Medical equipment
- Electronic data processing equipment
- Office automation and datacom equipment
- Various noisy applications requiring good filter performance
- Single Phase Motor Drives

Typical electrical schematic



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Filter Selection Table

| Filter* | Buy | Rated current @ 40°C (25°C) [A] | Leakage current** @ 250 VAC/50 Hz (@ 120 VAC/60 Hz) [mA] | Power Loss @25°C/DC [W] | Inductance*** L [mH] | Capacitance*** | | Resistance*** R [kΩ] | Input/Output connections | | | Weight [g] |
|-----------------------------|---|---------------------------------------|---|-------------------------------|----------------------------|----------------|------------|----------------------------|---|---|---|---------------|
| | | | | | | Cx [μF] | Cy [nF] | |  |  |  | |
| FN2070-1-.. |  | 1 (1.2) | 0.66 (0.38) | 2.4 | 22 | 0.33 | 4.7 | 1000 | -06 | -07 | | 190 |
| FN2070-3-.. |  | 3 (3.5) | 0.66 (0.38) | 2.2 | 9.8 | 0.47 | 4.7 | 470 | -06 | -07 | | 250 |
| FN2070-6-.. |  | 6 (6.9) | 0.66 (0.38) | 3.2 | 7.8 | 1 | 4.7 | 220 | -06 | -07 | | 450 |
| FN2070-10-.. |  | 10 (11.5) | 0.66 (0.38) | 9.1 | 4.5 | 1 | 4.7 | 220 | -06 | -07 | -08 | 670 |
| FN2070-12-.. |  | 12 (13.8) | 0.66 (0.38) | 13.1 | 3.25 | 1 | 4.7 | 220 | -06 | -07 | -08 | 670 |
| FN2070-16-.. |  | 16 (18.4) | 0.66 (0.38) | 9.6 | 2.8 | 1 | 4.7 | 220 | -06 | -07 | -08 | 1000 |
| FN2070-25-08 |  | 25 (28.8) | 0.66 (0.38) | 11.6 | 2 | 2.2 | 4.7 | 220 | | | -08 | 760 |
| FN2070-36-08 |  | 36 (41.4) | 0.66 (0.38) | 13.1 | 1.23 | 2.2 | 4.7 | 220 | | | -08 | 790 |
| Enhanced performance | | | | | | | | | | | | |
| FN2070A-1-.. |  | 1 (1.2) | 0.07 (0.04) | 2.4 | 22 | 0.33 | 0.47 | 1000 | -06 | -07 | | 190 |
| FN2070A-3-.. |  | 3 (3.5) | 0.07 (0.04) | 2.2 | 9.8 | 0.47 | 0.47 | 470 | -06 | -07 | | 250 |
| FN2070A-6-.. |  | 6 (6.9) | 0.07 (0.04) | 3.2 | 7.8 | 1 | 0.47 | 220 | -06 | -07 | | 450 |
| FN2070A-10-.. |  | 10 (11.5) | 0.07 (0.04) | 9.1 | 4.5 | 1 | 0.47 | 220 | -06 | -07 | -08 | 670 |
| FN2070A-12-.. |  | 12 (13.8) | 0.07 (0.04) | 13.1 | 3.25 | 1 | 0.47 | 220 | -06 | -07 | -08 | 670 |
| FN2070A-16-.. |  | 16 (18.4) | 0.07 (0.04) | 9.6 | 2.8 | 1 | 0.47 | 220 | -06 | -07 | -08 | 1000 |
| FN2070A-25-08 |  | 25 (28.8) | 0.07 (0.04) | 11.6 | 2 | 2.2 | 0.47 | 220 | | | -08 | 760 |
| FN2070A-36-08 |  | 36 (41.4) | 0.07 (0.04) | 13.1 | 1.23 | 2.2 | 0.47 | 220 | | | -08 | 790 |
| Enhanced performance | | | | | | | | | | | | |
| FN2070B-1-.. |  | 1 (1.2) | 0.00 | 2.4 | 22 | 0.33 | | 1000 | -06 | -07 | | 190 |
| FN2070B-3-.. |  | 3 (3.5) | 0.00 | 2.2 | 9.8 | 0.47 | | 470 | -06 | -07 | | 250 |
| FN2070B-6-.. |  | 6 (6.9) | 0.00 | 3.2 | 7.8 | 1 | | 220 | -06 | -07 | | 450 |
| FN2070B-10-.. |  | 10 (11.5) | 0.00 | 9.1 | 4.5 | 1 | | 220 | -06 | -07 | -08 | 670 |
| FN2070B-12-.. |  | 12 (13.8) | 0.00 | 13.1 | 3.25 | 1 | | 220 | -06 | -07 | -08 | 670 |
| FN2070B-16-.. |  | 16 (18.4) | 0.00 | 9.6 | 2.8 | 1 | | 220 | -06 | -07 | -08 | 1000 |
| FN2070B-25-08 |  | 25 (28.8) | 0.00 | 11.6 | 2 | 2.2 | | 220 | | | -08 | 760 |
| FN2070B-36-08 |  | 36 (41.4) | 0.00 | 13.1 | 1.23 | 2.2 | | 220 | | | -08 | 790 |
| Enhanced performance | | | | | | | | | | | | |
| FN2070M-1-06 |  | 1 (1.2) | 3.69 (2.13) | 2.4 | 22 | 0.33 | 47 | 1000 | -06 | | | 170 |
| FN2070M-3-06 |  | 3 (3.5) | 3.69 (2.13) | 2.2 | 9.8 | 0.47 | 47 | 470 | -06 | | | 250 |
| FN2070M-6-06 |  | 6 (6.9) | 3.69 (2.13) | 3.2 | 7.8 | 1 | 47 | 220 | -06 | | | 450 |
| FN2070M-10-.. |  | 10 (11.5) | 3.69 (2.13) | 9.1 | 4.5 | 1 | 47 | 220 | -06 | | -08 | 670 |
| FN2070M-12-.. |  | 12 (13.8) | 3.69 (2.13) | 13.1 | 3.25 | 1 | 47 | 220 | -06 | | -08 | 670 |
| FN2070M-16-.. |  | 16 (18.4) | 3.69 (2.13) | 9.6 | 2.8 | 1 | 47 | 220 | -06 | | -08 | 1000 |
| FN2070M-25-08 |  | 25 (28.8) | 3.69 (2.13) | 11.6 | 2 | 2.2 | 47 | 220 | | | -08 | 750 |
| FN2070L-36-08 |  | 36 (41.4) | 2.59 (1.49) | 13.1 | 1.23 | 2.2 | 33 | 220 | | | -08 | 790 |

* To compile a complete part number, please replace the .. with the required I/O connection style (e.g. FN 2070-25-08, FN 2070B-10-06).

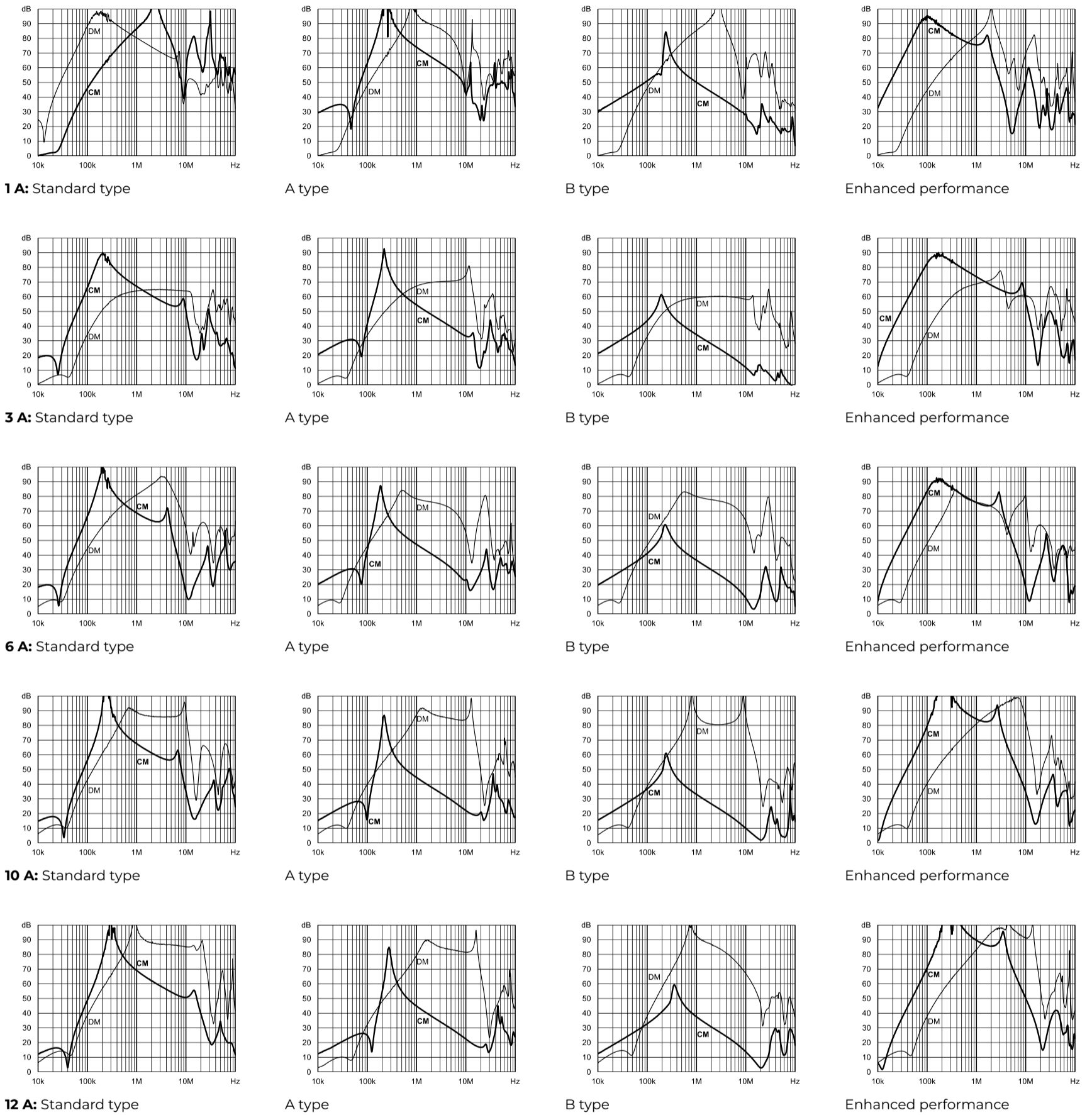
** Maximum leakage under usual AC operating conditions (acc. IEC60939-3). Note: if the neutral line is interrupted, worst case leakage could reach twice this level.

*** Tolerances apply: Inductance: -30/+50%, Capacitance: ±20%, Resistance: ±10%

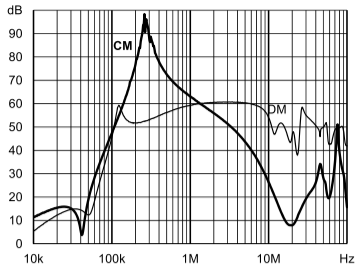
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Typical Filter Attenuation

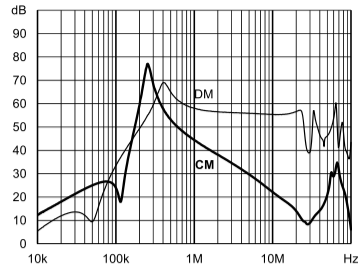
Per CISPR 17; CM=50 Ω/50 Ω sym; DM=50 Ω/50 Ω asym;



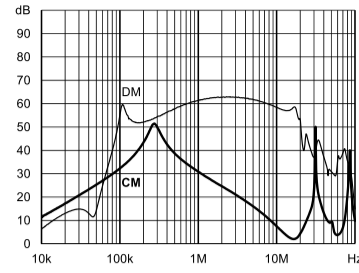
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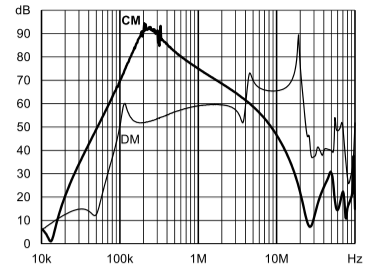
16 A: Standard type



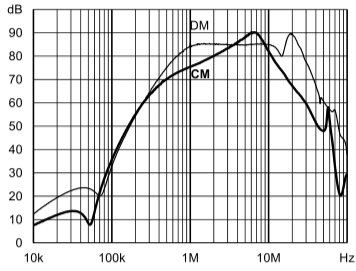
A type



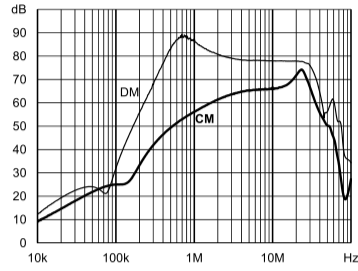
B type



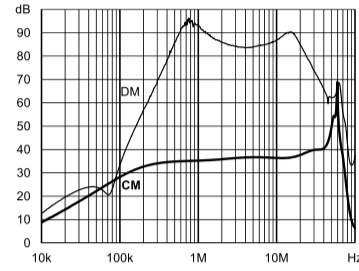
Enhanced performance



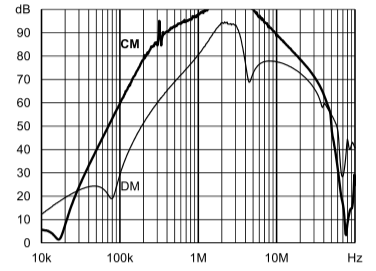
25 A: Standard type



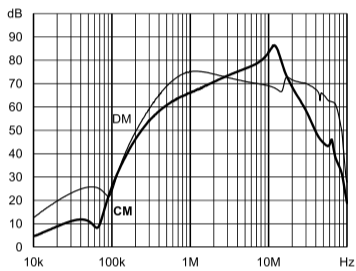
A type



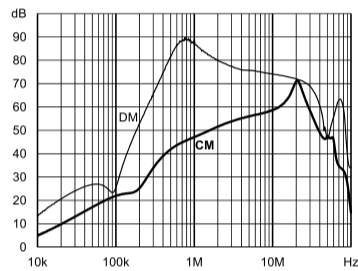
B type



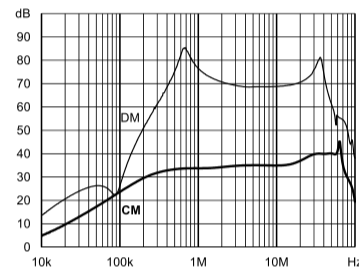
Enhanced performance



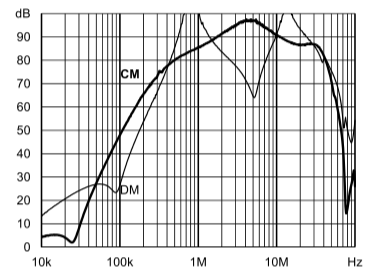
36 A: Standard type



A type



B type

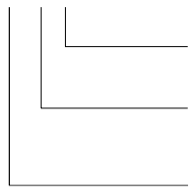


Enhanced performance

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Product selector

FN 2070 x -xx-yy

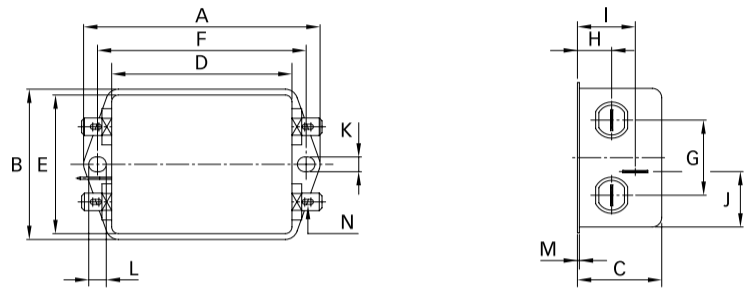


- 06 Faston 6.3 × 0.8 mm (spade/soldering)
- 07 Wire leads
- 08 Studs (M4 screws)
- 1 to 36 Rated current
- Blank Standard version
- A Safety version
- B Medical version
- L/M High performance version

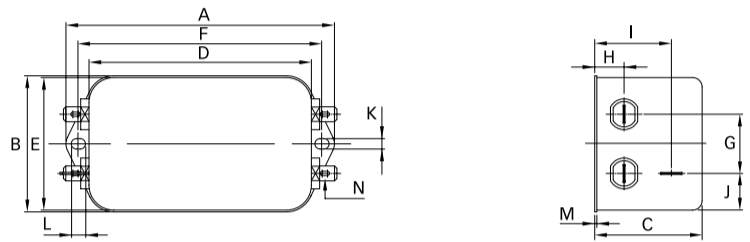
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Mechanical Data

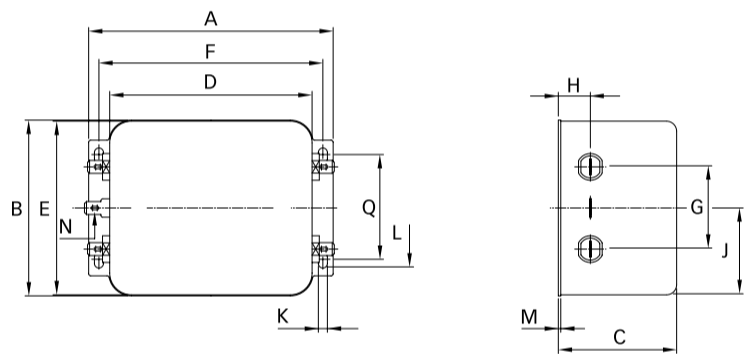
Connection style -06, 1 and 3 A types



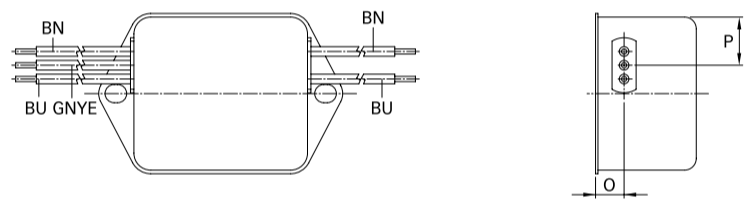
Connection style -06, 6 to 12 A types



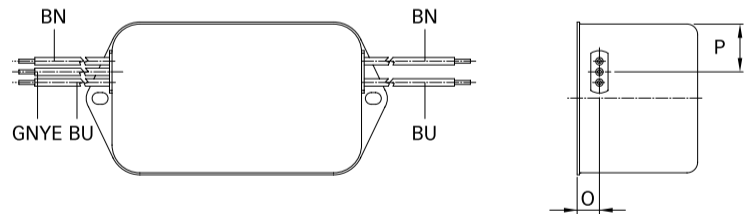
Connection style -06, 16 A types



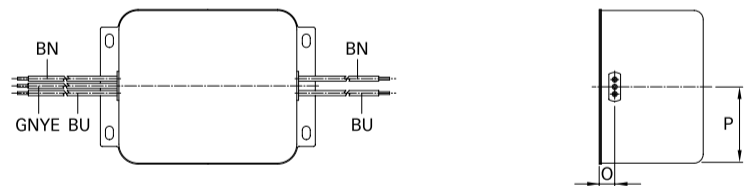
Connection style -07, 1 to 16 A types (same dimensions as style -06)



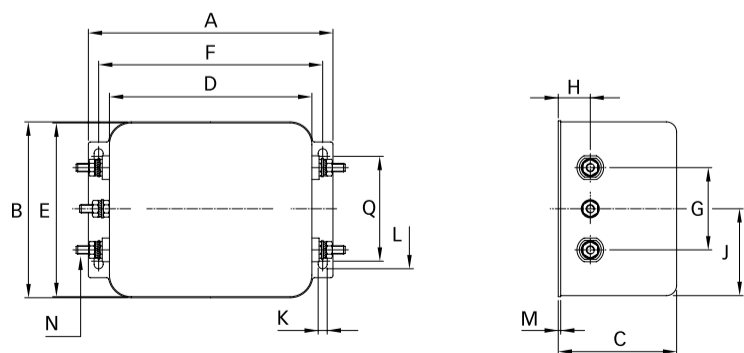
Connection style -07, 6 to 12 A types (same dimensions as style -06)



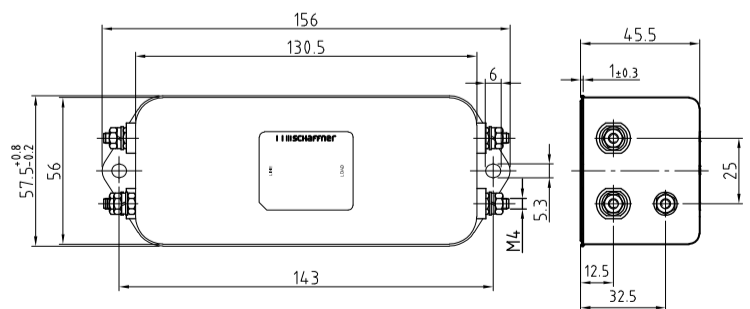
Connection style -07, 16 A types (same dimensions as style -06)



Connection style -08, 16 A type



Connection style -08, 10 A, 12 A, 25 A and 36 A types



Dimensions

| | 1 A | 3 A | 6 A | 10 A | 12 A | 16 A | 25 A | 36 A | Tolerances |
|--------------------------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|------------|
| A | 85 ±0.5 | 85 ±0.5 | 113.5 | 156 | 156 | 119 | 156 | 156 | ±1 |
| B | 54 ±0.5 | 54 ±0.5 | 57.5 | 57.5 | 57.5 | 85.5 | 57.5 | 57.5 | ±1 |
| C | 30.3 ±0.5 | 40.3 ±0.5 | 45.4 | 45.4 | 45.4 | 57.6 | 45.4 | 45.4 | ±1 |
| D | 64.8 ±0.5 | 64.8 ±0.5 | 94 | 130.5 | 130.5 | 98.5 | 130.5 | 130.5 | ±1 |
| E | 49.8 | 49.8 | 56 | 56 | 56 | 84.5 | 56 | 56 | ±0.5 |
| F | 75 | 75 | 103 | 143 | 143 | 109 | 143 | 143 | ±0.3 |
| G | 27 | 27 | 25 | 25 | 25 | 40 | 25 | 25 | ±0.2 |
| H | 12.3 | 12.3 | 12.4 | 12.4 | 12.4 | 15.6 | 12.4 | 12.4 | ±0.5 |
| I | 20.8 | 29.8 | 32.4 | 32.5 | 32.5 | | 32.5 | 32.5 | ±0.5 |
| J | 19.9 | 11.4 | 15.5 | 15.5 | 15.5 | 42.25 | 15.5 | 15.5 | ±0.5 |
| K | 5.3 | 5.3 | 4.4 | 5.3 | 5.3 | 4.4 | 5.3 | 5.3 | |
| L | 6.3 | 6.3 | 6 | 6 | 6 | 7.4 | 6 | 6 | |
| M | 0.7 | 0.7 | 1 | 1 | 1 | 1.2 | 1 | 1 | ±0.3 |
| Connection style -06 | | | | | | | | | |
| N | 6.3 x 0.8 | 6.3 x 0.8 | 6.3 x 0.8 | 6.3 x 0.8 | 6.3 x 0.8 | 6.3 x 0.8 | | | |
| Connection style -07 | | | | | | | | | |
| O | 8.3 | 8.3 | 8.4 | 8.4 | 8.4 | 8.6 | | | ±0.5 |
| P | 14.9 | 14.9 | 18 | 18 | 18 | 42.25 | | | ±0.5 |
| AWG type wire | AWG 20 | AWG 20 | AWG 18 | AWG 18 | AWG 16 | AWG 16 | | | |
| Wire length | 140 | 140 | 140 | 140 | 140 | 140 | | | +5 |
| Connection style -08 | | | | | | | | | |
| N | | | | M4 | M4 | M4 | M4 | M4 | |
| Q | | | | | | 51 | | | ±0.2 |
| Recommended torque (Nm) | | | | 1.2 - 1.3 | 1.2 - 1.3 | 1.2 - 1.3 | 1.2 - 1.3 | 1.2 - 1.3 | |
| Earth terminal | | | | 1.5 - 1.7 | 1.5 - 1.7 | 1.5 - 1.7 | 1.5 - 1.7 | 1.5 - 1.7 | |

All dimensions in mm; 1 inch = 25.4 mm

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

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