

# General Purpose EMI Filter with High Attenuation Performance



- | Rated currents from 1 to 30 A
- | High performance filter attenuation
- | High differential-mode attenuation
- | Optional medical versions (B type)
- | Optional safety versions (A type)
- | Optional overvoltage protection (Z type)



### Performance indicators



### Technical specifications

|  |   |
|--|---|
| <b>Operating voltage</b>                         | 110/250 VAC, 50/60 Hz   |
| <b>Operating frequency</b>                       | dc to 400 Hz  |
| <b>Rated currents</b>                            | 1 to 30 A @ 40 °C max.  |
| <b>High potential test voltage</b>               | P → PE 2000 VAC for 2 sec (standard types)<br>P → N 1100 VDC for 2 sec<br>P → PE 2500 VAC for 2 sec (B types) |
| <b>Temperature range (operation and storage)</b> | -25 °C to +100 °C (25/100/21)   |
| <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>Surge pulse protection (optional)</b>         | 2kV, IEC 61000-4-5  |
| <b>MTBF @ 40°C/230V (Mil-HB-217F)</b>            | 2,200,000 hours (1 to 10 A types)<br>1,200,000 hours (12 to 30 A types)                                       |

### Approvals



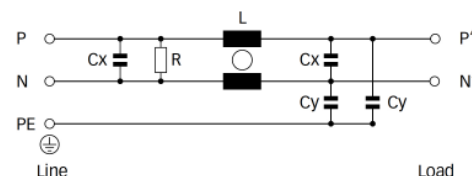
### Features and benefits

- | FN 2030 filters are designed for easy and fast chassis mounting
- | The FN 2030 filters are also available as B versions with no Y-capacitors for medical applications as well as A versions with low capacitance for safety critical applications with a requirement for low leakage currents
- | All filters provide an exceptional conducted attenuation performance, based on chokes with high permeable core material and excellent thermal behavior
- | The higher inductivity versus amperage offers increased attenuation performance with same form factor compared to FN 2010 and FN 2020 filter series
- | All FN 2030 filters can be delivered with optional surge pulse protection. FN 2030 filters are also available as two-stage filters (FN 2090 series) for very noisy environment
- | Various terminal options allow you to select the desired connection style




### Typical application

- | Electrical and electronic equipment
- | Consumer goods
- | Household equipment
- | Medical equipment
- | Electronic data processing equipment
- | Office automation and datacom equipment
- | Various noisy applications requiring high filter performance

### Typical electrical schematic



### Filter selection table

| Filter*        | Rated current   | Leakage current** | Inductance | Capacitance |      | Resistance | Input/Output connections  |   |   | Weight |
|----------------|-----------------|-------------------|------------|-------------|------|------------|---|---|---|--------|
|                | @ 40 °C (25 °C) | @ 230 VAC/50 Hz   | L          | Cx          | Cy   | R          |  |  |  | [g]    |
|                | [A]             | [mA]              | [mH]       | [µF]        | [nF] | [kΩ]       |   |   |   |        |
| FN 2030-1-..   | 1 (1.1)         | 0.34              | 20         | 0.22        | 2.2  | 1000       | -06   | -07   |   | 58     |
| FN 2030-3-..   | 3 (3.4)         | 0.52              | 14         | 0.33        | 3.3  | 1000       | -06   | -07   |   | 87     |
| FN 2030-4-..   | 4 (4.5)         | 0.52              | 14         | 0.33        | 3.3  | 1000       | -06   | -07   |   | 92     |
| FN 2030-6-..   | 6 (6.7)         | 0.73              | 8          | 0.47        | 4.7  | 680        | -06   | -07   |   | 100    |
| FN 2030-8-..   | 8 (8.9)         | 0.73              | 8          | 0.47        | 4.7  | 680        | -06   | -07   |   | 170    |
| FN 2030-10-..  | 10 (11.2)       | 0.73              | 8          | 0.47        | 4.7  | 680        | -06   | -07   |   | 196    |
| FN 2030-12-..  | 12 (13.4)       | 0.87              | 4          | 1.0         | 10   | 330        | -06   | -07   |   | 185    |
| FN 2030-16-..  | 16 (17.9)       | 0.87              | 4          | 1.0         | 10   | 330        | -06   | -07   |   | 225    |
| FN 2030-20-..  | 20 (22.4)       | 0.87              | 4          | 1.0         | 10   | 330        | -06   |   | -08   | 285    |
| FN 2030-30-08  | 30 (33.5)       | 0.87              | 2          | 1.0         | 10   | 330        |   |   | -08   | 326    |
| FN 2030A-1-..  | 1 (1.1)         | 0.074             | 20         | 0.22        | 0.47 | 1000       | -06   | -07   |   | 58     |
| FN 2030A-3-..  | 3 (3.4)         | 0.074             | 14         | 0.33        | 0.47 | 1000       | -06   | -07   |   | 87     |
| FN 2030A-4-..  | 4 (4.5)         | 0.074             | 14         | 0.33        | 0.47 | 1000       | -06   | -07   |   | 92     |
| FN 2030A-6-..  | 6 (6.7)         | 0.074             | 8          | 0.47        | 0.47 | 680        | -06   | -07   |   | 100    |
| FN 2030A-8-..  | 8 (8.9)         | 0.074             | 8          | 0.47        | 0.47 | 680        | -06   | -07   |   | 170    |
| FN 2030A-10-.. | 10 (11.2)       | 0.074             | 8          | 0.47        | 0.47 | 680        | -06   | -07   |   | 196    |
| FN 2030A-12-.. | 12 (13.4)       | 0.074             | 4          | 1.0         | 0.47 | 330        | -06   | -07   |   | 185    |
| FN 2030A-16-.. | 16 (17.9)       | 0.074             | 4          | 1.0         | 0.47 | 330        | -06   | -07   |   | 225    |
| FN 2030A-20-.. | 20 (22.4)       | 0.074             | 4          | 1.0         | 0.47 | 330        | -06   |   | -08   | 285    |
| FN 2030A-30-08 | 30 (33.5)       | 0.074             | 2          | 1.0         | 0.47 | 330        |   |   | -08   | 326    |
| FN 2030B-1-..  | 1 (1.1)         | 0.002             | 20         | 0.22        |      | 1000       | -06   | -07   |   | 58     |
| FN 2030B-3-..  | 3 (3.4)         | 0.002             | 14         | 0.33        |      | 1000       | -06   | -07   |   | 87     |
| FN 2030B-4-..  | 4 (4.5)         | 0.002             | 14         | 0.33        |      | 1000       | -06   | -07   |   | 92     |
| FN 2030B-6-..  | 6 (6.7)         | 0.002             | 8          | 0.47        |      | 680        | -06   | -07   |   | 100    |
| FN 2030B-8-..  | 8 (8.9)         | 0.002             | 8          | 0.47        |      | 680        | -06   | -07   |   | 170    |
| FN 2030B-10-.. | 10 (11.2)       | 0.002             | 8.45       | 0.47        |      | 680        | -06   | -07   |   | 196    |
| FN 2030B-12-.. | 12 (13.4)       | 0.002             | 4          | 1.0         |      | 330        | -06   | -07   |   | 185    |
| FN 2030B-16-.. | 16 (17.9)       | 0.002             | 4          | 1.0         |      | 330        | -06   | -07   |   | 225    |
| FN 2030B-20-.. | 20 (22.4)       | 0.002             | 4          | 1.0         |      | 330        | -06   |   | -08   | 285    |
| FN 2030B-30-08 | 30 (33.5)       | 0.002             | 2          | 1.0         |      | 330        |   |   | -08   | 326    |

\* To compile a complete part number, please replace the .. with the required I/O connection style. For surge pulse protection, please add Z (e.g. FN 2030Z-10-06, FN 2030BZ-20-08).

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

### Typical filter attenuation

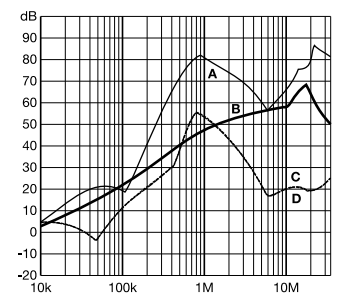
Per CISPR 17; A = 50 Ω/50 Ω sym; B = 50 Ω/50 Ω asym; C = 0.1 Ω/100 Ω sym; D = 100 Ω/0.1 Ω sym

1 to 4 A types

6 to 10 A types

12 to 20 A types

30 A types



**Mechanical data**



## Dimensions

|                             | 1 A       | 3 A       | 4 A       | 6 A       | 8 A       | 10 A      | 12 A      | 16 A      | 20 A      | 30 A      | Tolerances |
|-----------------------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|------------|
| <b>A</b>                    | 64        | 71        | 71        | 71        | 85        | 85        | 85        | 85        | 85        | 85        | ±0.5       |
| <b>B</b>                    | 35        | 46.6      | 46.6      | 46.6      | 54        | 54        | 54        | 54        | 54        | 54        | ±0.5       |
| <b>C</b>                    | 24.3      | 22.3      | 22.3      | 22.3      | 30.3      | 30.3      | 30.3      | 40.3      | 40.3      | 40.3      | ±0.5       |
| <b>D</b>                    | 43.5      | 50.5      | 50.5      | 50.5      | 64.8      | 64.8      | 64.8      | 64.8      | 64.8      | 64.8      | ±0.5       |
| <b>E</b>                    | 32.5      | 44.5      | 44.5      | 44.5      | 49.8      | 49.8      | 49.8      | 49.8      | 49.8      | 49.8      | ±0.5       |
| <b>F</b>                    | 54        | 61        | 61        | 61        | 75        | 75        | 75        | 75        | 75        | 75        | ±0.3       |
| <b>G</b>                    | 21        | 21        | 21        | 21        | 27        | 27        | 27        | 27        | 27        | 27        | ±0.2       |
| <b>H</b>                    | 9.3       | 10.8      | 10.8      | 10.8      | 12.3      | 12.3      | 12.3      | 12.3      | 12.3      | 12.3      | ±0.5       |
| <b>I</b>                    | 15.3      | 16.8      | 16.8      | 16.8      | 20.8      | 20.8      | 20.8      | 29.8      | 29.8      | 29.8      | ±0.5       |
| <b>J</b>                    | 21.8      | 25.25     | 25.25     | 25.25     | 19.9      | 19.9      | 19.9      | 11.4      | 11.4      | 11.4      | ±0.5       |
| <b>K</b>                    | 5.3       | 5.3       | 5.3       | 5.3       | 5.3       | 5.3       | 5.3       | 5.3       | 5.3       | 5.3       |            |
| <b>L</b>                    | 6.3       | 6.3       | 6.3       | 6.3       | 6.3       | 6.3       | 6.3       | 6.3       | 6.3       | 6.3       |            |
| <b>M</b>                    | 0.7       | 0.7       | 0.7       | 0.7       | 0.7       | 0.7       | 0.7       | 0.7       | 0.7       | 0.7       |            |
| <b>Connection style -06</b> |           |           |           |           |           |           |           |           |           |           |            |
| <b>N</b>                    | 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 | 6.3 x 0.8 | 6.3 x 0.8 | 6.3 x 0.8 | 6.3 x 0.8 |            |
| <b>Connection style -07</b> |           |           |           |           |           |           |           |           |           |           |            |
| <b>O</b>                    | 8.3       | 8.3       | 8.3       | 8.3       | 8.3       | 8.3       | 8.3       | 8.3       | 8.3       | 8.3       | ±0.5       |
| <b>P</b>                    | 21.8      | 14        | 14        | 14        | 14.9      | 14.9      | 14.9      | 14.9      | 14.9      | 14.9      | ±0.5       |
| <b>AWG type wire</b>        | AWG 20    | AWG 20    | AWG 20    | AWG 18    | AWG 18    | AWG 18    | AWG 16    | AWG 16    | AWG 16    | AWG 16    |            |
| <b>Wire length</b>          | 140       | 140       | 140       | 140       | 140       | 140       | 140       | 140       | 140       | 140       |            |
| <b>Connection style -08</b> |           |           |           |           |           |           |           |           |           |           |            |
| <b>N</b>                    |           |           |           |           |           |           |           |           | M4        | M4        |            |

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



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