

# Multi-stage High Performance AC/DC EMI Filter



- Rated currents from 1 to 16 A
- High differential and common-mode attenuation
- Good low frequency attenuation
- Optional medical versions (B type)
- Optional safety versions (A type)



## Performance indicators

Attenuation performance



## Technical specifications

|                                                  |                                                                                              |
|--------------------------------------------------|----------------------------------------------------------------------------------------------|
| <b>Rated voltage*</b>                            | 250 VAC, 50/60 Hz; 250 VDC                                                                   |
| <b>Operating frequency</b>                       | DC to 400 Hz                                                                                 |
| <b>Rated currents</b>                            | 1 to 16 A @ 40°C max.                                                                        |
| <b>High potential test voltage</b>               | P → PE 2000 VAC for 2 sec<br>P → PE 2500 VAC for 2 sec (B types)<br>P → N 1100 VDC for 2 sec |
| <b>Temperature range (operation and storage)</b> | -25°C to +100°C (25/100/21)                                                                  |
| <b>Certified to</b>                              | UL 1283, CSA 22.2 No. 8 1986, IEC/EN 60939 (applies to AC and DC applications)               |
| <b>Flammability corresponding to</b>             | UL 94 V-2 or better                                                                          |
| <b>Design corresponding to</b>                   | UL 1283, CSA 22.2 No. 8 1986, IEC/EN 60939                                                   |
| <b>MTBF @ 40°C/230 V (Mil-HB-217F)</b>           | 1,650,000 hours<br>1,700,000 hours (B types)                                                 |

\*maximum RMS operating voltage at rated frequency or the maximum DC operating voltage

## Approvals



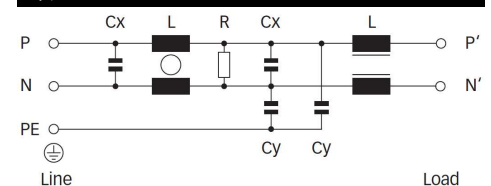
## Features and benefits

- FN 2080 two-stage filters are designed for easy and fast chassis mounting
- FN 2080 filters are also available as B versions without Y-capacitors for medical applications as well as A version with low capacitance 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
- FN 2080 two-stage filters are designed with good low frequency attenuation
- FN 2080 filters are also available as single-stage filters
- FN 2080 filters are also available with two common mode choke configuration (FN 2070 series)
- Various terminal options allow you to select the desired connection style

## 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

## Typical electrical schematic



## Filter selection table

| Filter*        | Rated current<br>@ 40°C (25°C) | Leakage current**<br>@ 250 VAC/50 Hz<br>(@ 120 VAC/60 Hz) | Inductance |      | Capacitance |      | Resistance<br>R | Input/Output<br>connections                                                         |                                                                                     |                                                                                     | Weight<br>[g] |
|----------------|--------------------------------|-----------------------------------------------------------|------------|------|-------------|------|-----------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|---------------|
|                |                                |                                                           | L          | L1   | Cx          | Cy   |                 |  |  |  |               |
|                | [A]                            | [mA]                                                      | [mH]       | [μH] | [μF]        | [nF] | [kΩ]            |                                                                                     |                                                                                     |                                                                                     |               |
| FN 2080-1-..   | 1 (1.2)                        | 0.66 (0.38)                                               | 22         | 490  | 0.33        | 4.7  | 1000            | -06                                                                                 | -07                                                                                 |                                                                                     | 200           |
| FN 2080-3-..   | 3 (3.5)                        | 0.66 (0.38)                                               | 9.8        | 160  | 0.47        | 4.7  | 470             | -06                                                                                 | -07                                                                                 |                                                                                     | 270           |
| FN 2080-6-..   | 6 (6.9)                        | 0.66 (0.38)                                               | 7.8        | 110  | 1           | 4.7  | 220             | -06                                                                                 | -07                                                                                 |                                                                                     | 470           |
| FN 2080-10-..  | 10 (11.5)                      | 0.66 (0.38)                                               | 4.5        | 60   | 1           | 4.7  | 220             | -06                                                                                 | -07                                                                                 |                                                                                     | 750           |
| FN 2080-12-..  | 12 (13.8)                      | 0.66 (0.38)                                               | 3.25       | 50   | 1           | 4.7  | 220             | -06                                                                                 | -07                                                                                 |                                                                                     | 750           |
| FN 2080-16-..  | 16 (18.4)                      | 0.66 (0.38)                                               | 2.8        | 43   | 1           | 4.7  | 220             | -06                                                                                 | -07                                                                                 | -08                                                                                 | 1020          |
| FN 2080A-1-..  | 1 (1.2)                        | 0.07 (0.04)                                               | 22         | 490  | 0.33        | 0.47 | 1000            | -06                                                                                 | -07                                                                                 |                                                                                     | 200           |
| FN 2080A-3-..  | 3 (3.5)                        | 0.07 (0.04)                                               | 9.8        | 160  | 0.47        | 0.47 | 470             | -06                                                                                 | -07                                                                                 |                                                                                     | 270           |
| FN 2080A-6-..  | 6 (6.9)                        | 0.07 (0.04)                                               | 7.8        | 110  | 1           | 0.47 | 220             | -06                                                                                 | -07                                                                                 |                                                                                     | 470           |
| FN 2080A-10-.. | 10 (11.5)                      | 0.07 (0.04)                                               | 4.5        | 60   | 1           | 0.47 | 220             | -06                                                                                 | -07                                                                                 |                                                                                     | 750           |
| FN 2080A-12-.. | 12 (13.8)                      | 0.07 (0.04)                                               | 3.25       | 50   | 1           | 0.47 | 220             | -06                                                                                 | -07                                                                                 |                                                                                     | 750           |
| FN 2080A-16-.. | 16 (18.4)                      | 0.07 (0.04)                                               | 2.8        | 43   | 1           | 0.47 | 220             | -06                                                                                 | -07                                                                                 | -08                                                                                 | 1020          |
| FN 2080B-1-..  | 1 (1.2)                        | 0.00                                                      | 22         | 490  | 0.33        |      | 1000            | -06                                                                                 | -07                                                                                 |                                                                                     | 200           |
| FN 2080B-3-..  | 3 (3.5)                        | 0.00                                                      | 9.8        | 160  | 0.47        |      | 470             | -06                                                                                 | -07                                                                                 |                                                                                     | 270           |
| FN 2080B-6-..  | 6 (6.9)                        | 0.00                                                      | 7.8        | 110  | 1           |      | 220             | -06                                                                                 | -07                                                                                 |                                                                                     | 470           |
| FN 2080B-10-.. | 10 (11.5)                      | 0.00                                                      | 4.5        | 60   | 1           |      | 220             | -06                                                                                 | -07                                                                                 |                                                                                     | 750           |
| FN 2080B-12-.. | 12 (13.8)                      | 0.00                                                      | 3.25       | 50   | 1           |      | 220             | -06                                                                                 | -07                                                                                 |                                                                                     | 750           |
| FN 2080B-16-.. | 16 (18.4)                      | 0.00                                                      | 2.8        | 43   | 1           |      | 220             | -06                                                                                 | -07                                                                                 | -08                                                                                 | 1020          |

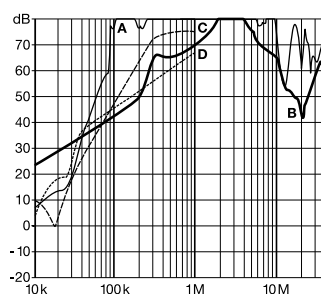
\* To compile a complete part number, please replace the .. with the required I/O connection style (e.g. FN 2080-16-08, FN 2080B-10-06).

\*\* Maximum leakage under usual AC operating conditions (acc. IEC 60939-3). Note: if the neutral line is interrupted, worst case leakage could reach twice this level. Leakage current for DC application is 0 mA;

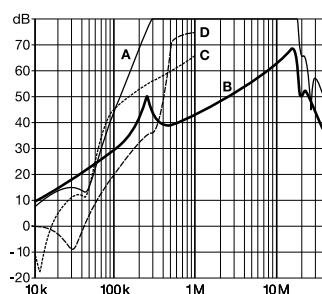
## Typical filter attenuation

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

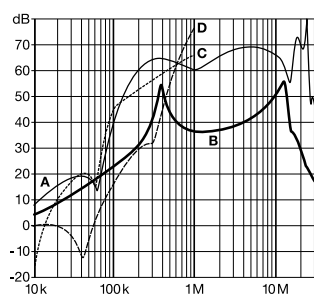
1 to 6 A types



10 and 12 A types

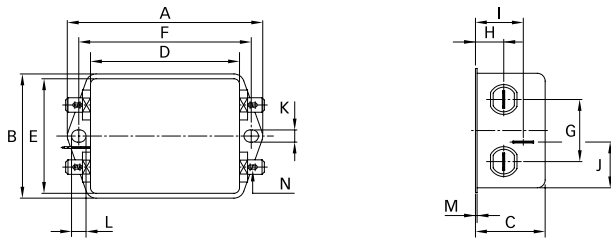


16 A types

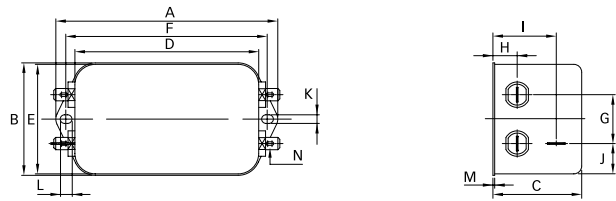


## Mechanical data

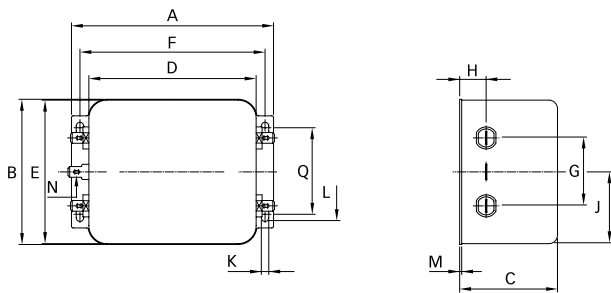
Connection style -06, 1 and 3 A types



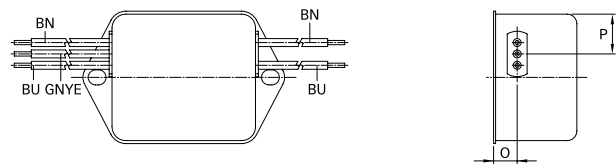
Connection style -06, 6 to 12 A types



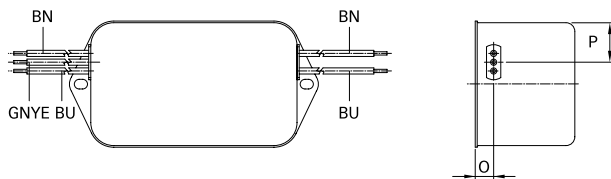
Connection style -06, 16 A types



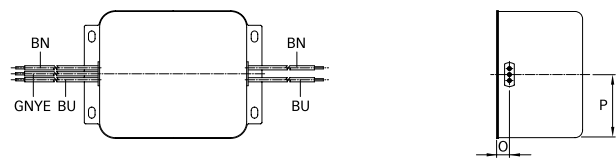
Connection style -07, 1 and 3 A types (same dimensions as style -06)



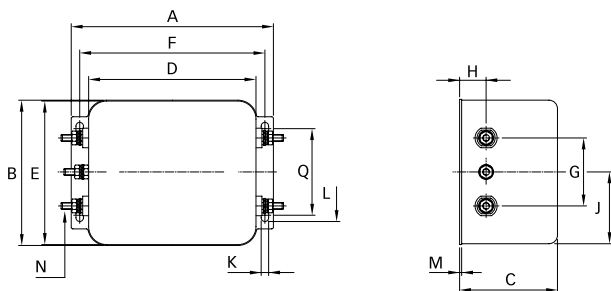
Connection style -07, 6 to 12 A types (same dimensions as style -06)



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



Connection style -08, 16 A types (same dimensions as style -06)



## Dimensions

|                                | 1 A       | 3 A       | 6 A       | 10 A      | 12 A      | 16 A      | Tolerances |
|--------------------------------|-----------|-----------|-----------|-----------|-----------|-----------|------------|
| <b>A</b>                       | 85        | 85        | 113.5 ±1  | 156 ±1    | 156 ±1    | 119 ±1    | ±0.5       |
| <b>B</b>                       | 54        | 54        | 57.5 ±1   | 57.5 ±1   | 57.5 ±1   | 85.5 ±1   | ±0.5       |
| <b>C</b>                       | 30.3      | 40.3      | 45.4 ±1   | 45.4 ±1   | 45.4 ±1   | 57.6 ±1   | ±0.5       |
| <b>D</b>                       | 64.8      | 64.8      | 94 ±1     | 130.5 ±1  | 130.5 ±1  | 98.5 ±1   | ±0.5       |
| <b>E</b>                       | 49.8      | 49.8      | 56        | 56        | 56        | 84.5      | ±0.5       |
| <b>F</b>                       | 75        | 75        | 103       | 143       | 143       | 109       | ±0.3       |
| <b>G</b>                       | 27        | 27        | 25        | 25        | 25        | 40        | ±0.2       |
| <b>H</b>                       | 12.3      | 12.3      | 12.4      | 12.4      | 12.4      | 15.6      | ±0.5       |
| <b>I</b>                       | 20.8      | 29.8      | 32.4      | 32.5      | 32.5      |           | ±0.5       |
| <b>J</b>                       | 19.9      | 11.4      | 15.5      | 15.5      | 15.5      | 42.25     | ±0.5       |
| <b>K</b>                       | 5.3       | 5.3       | 4.4       | 5.3       | 5.3       | 4.4       |            |
| <b>L</b>                       | 6.3       | 6.3       | 6         | 6         | 6         | 7.4       |            |
| <b>M</b>                       | 0.7       | 0.7       | 0.9       | 1         | 1         | 1.2       |            |
| <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 |            |
| <b>Connection style -07</b>    |           |           |           |           |           |           |            |
| <b>O</b>                       | 8.3       | 8.3       | 8.4       | 8.4       | 8.4       | 8.6       | ±0.5       |
| <b>P</b>                       | 14.9      | 14.9      | 18        | 18        | 18        | 42.25     | ±0.5       |
| <b>AWG type wire</b>           | AWG 20    | AWG 20    | AWG 18    | AWG 18    | AWG 16    | AWG 16    |            |
| <b>Wire length</b>             | 140       | 140       | 140       | 140       | 140       | 140       | +5         |
| <b>Connection style -08</b>    |           |           |           |           |           |           |            |
| <b>N</b>                       |           |           |           |           |           | M4        |            |
| <b>Q</b>                       |           |           |           |           |           | 51        | ±0.2       |
| <b>Recommended torque (Nm)</b> |           |           |           |           |           | 1.2 - 1.3 |            |

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.



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