

1-phase filters FN 2030

General purpose EMI filter with high attenuation performance

SCHAFFNER

energy efficiency and reliability



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

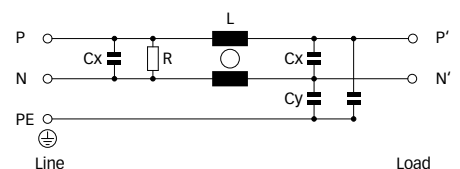
Approvals



Technical specifications

| | |
|--|--|
| Maximum continuous operating voltage: | 250VAC, 50/60Hz |
| Operating frequency: | dc to 400Hz |
| Rated currents: | 1 to 30A @ 40°C max. |
| High potential test voltage: | P → E 2000VAC for 2 sec (standard types) P → E 2500VAC for 2 sec (B types) P → N 1100VDC for 2 sec |
| Temperature range (operation and storage): | -25°C to +100°C (25/100/21) |
| Design corresponding to: | UL 1283, CSA 22.2 No. 8 1986, IEC/EN 60939 |
| Flammability corresponding to: | UL 94V-2 or better |
| Surge pulse protection (optional): | 2kV, IEC 61000-4-5 |
| MTBF @ 40°C/230V (Mil-HB-217F): | 2,200,000 hours (1 to 10A types) 1,200,000 hours (12 to 30A types) |

Typical electrical schematic






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 applications

- 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

Filter selection table

| Filter* | Rated current @ 40°C (25°C) | Leakage current** @ 230VAC/50Hz | Inductance L | Capacitance Cx Cy | | Resistance R | Input/Output connections | | | Weight |
|----------------|--------------------------------|------------------------------------|-----------------|-------------------------|------|-----------------|---|---|---|--------|
| | [A] | [mA] | [mH] | [μF] | [nF] | [kΩ] |  |  |  | [g] |
| 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 | 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 |

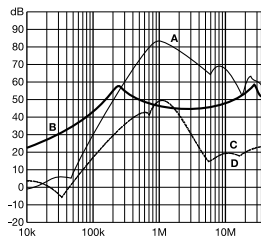
* To compile a complete part number, please replace the -.. with the required I/O connection style. For surge pulse protection, please add Z (e.g. FN 2030Z-10-06, FN 2030BZ-20-08).

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

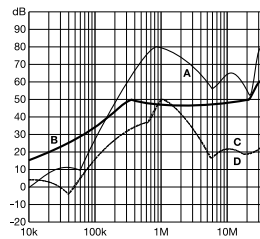
Typical filter attenuation

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

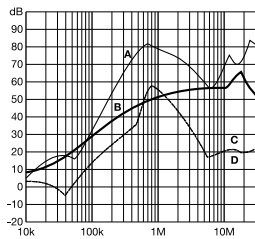
1 to 4A types



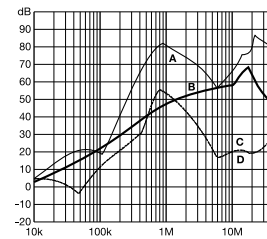
6 to 10A types



12 to 20A types

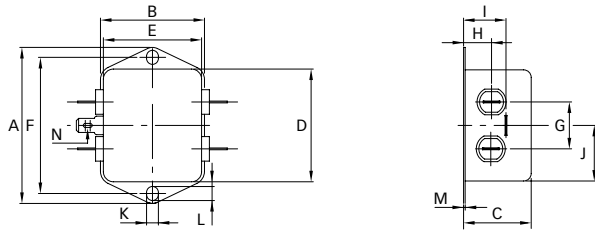


30A types

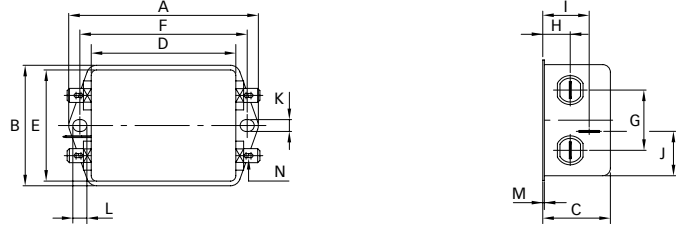


Mechanical data

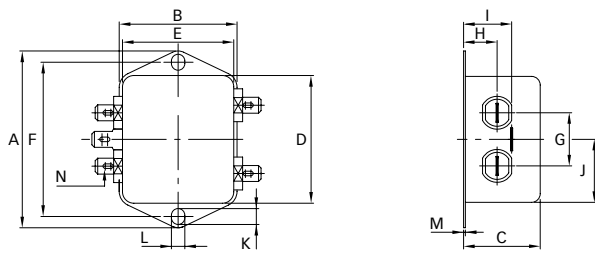
Connection style -06, 1A types



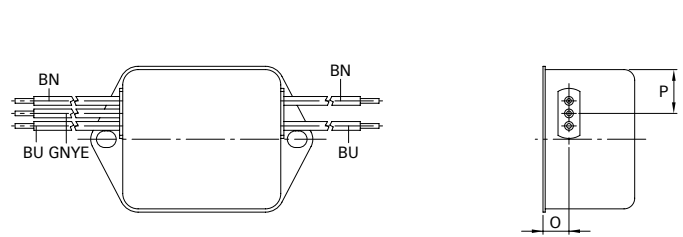
Connection style -06, 8 to 20A types



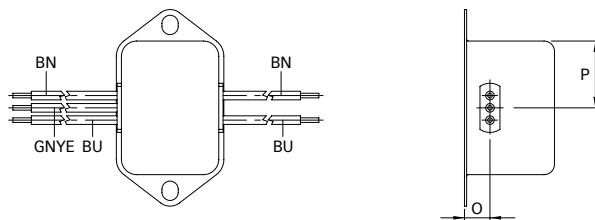
Connection style -06, 3 to 6A types



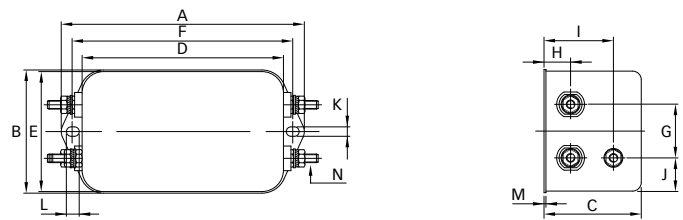
Connection style -07, 8 to 16A types (same dimensions as style -06)



Connection style -07, 1 to 6A types (same dimensions as style -06)



Connection style -08, 20 and 30A types



Dimensions

| | 1A | 3A | 4A | 6A | 8A | 10A | 12A | 16A | 20A | 30A | Tolerances |
|---|------|-------|-------|-------|------|------|------|------|------|------|------------|
| A | 64 | 71 | 71 | 71 | 85 | 85 | 85 | 85 | 85 | 85 | ±0.5 |
| B | 35 | 46.6 | 46.6 | 46.6 | 54 | 54 | 54 | 54 | 54 | 54 | ±0.5 |
| C | 24.3 | 22.3 | 22.3 | 22.3 | 30.3 | 30.3 | 30.3 | 40.3 | 40.3 | 40.3 | ±0.5 |
| D | 43.5 | 50.5 | 50.5 | 50.5 | 64.8 | 64.8 | 64.8 | 64.8 | 64.8 | 64.8 | ±0.5 |
| E | 32.5 | 44.5 | 44.5 | 44.5 | 49.8 | 49.8 | 49.8 | 49.8 | 49.8 | 49.8 | ±0.5 |
| F | 54 | 61 | 61 | 61 | 75 | 75 | 75 | 75 | 75 | 75 | ±0.3 |
| G | 21 | 21 | 21 | 21 | 27 | 27 | 27 | 27 | 27 | 27 | ±0.2 |
| H | 9.3 | 10.8 | 10.8 | 10.8 | 12.3 | 12.3 | 12.3 | 12.3 | 12.3 | 12.3 | ±0.5 |
| I | 15.3 | 16.8 | 16.8 | 16.8 | 20.8 | 20.8 | 20.8 | 29.8 | 29.8 | 29.8 | ±0.5 |
| J | 21.8 | 25.25 | 25.25 | 25.25 | 19.9 | 19.9 | 19.9 | 11.4 | 11.4 | 11.4 | ±0.5 |
| K | 5.3 | 5.3 | 5.3 | 5.3 | 5.3 | 5.3 | 5.3 | 5.3 | 5.3 | 5.3 | |
| L | 6.3 | 6.3 | 6.3 | 6.3 | 6.3 | 6.3 | 6.3 | 6.3 | 6.3 | 6.3 | |
| M | 0.7 | 0.7 | 0.7 | 0.7 | 0.7 | 0.7 | 0.7 | 0.7 | 0.7 | 0.7 | |

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 | 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 | 8.3 | 8.3 | 8.3 | 8.3 | 8.3 | 8.3 | | | ±0.5 |
| P | 21.8 | 14 | 14 | 14 | 14.9 | 14.9 | 14.9 | 14.9 | | | ±0.5 |

| | | | | | | | | | | | |
|---------------|--------|--------|--------|--------|--------|--------|--------|--------|--|--|--|
| AWG type wire | AWG 20 | AWG 20 | AWG 20 | AWG 18 | AWG 18 | AWG 18 | AWG 16 | AWG 16 | | | |
|---------------|--------|--------|--------|--------|--------|--------|--------|--------|--|--|--|

| | | | | | | | | | | | |
|--------------|-----|-----|-----|-----|-----|-----|-----|-----|--|--|--|
| Wire length* | 140 | 140 | 140 | 140 | 140 | 140 | 140 | 140 | | | |
|--------------|-----|-----|-----|-----|-----|-----|-----|-----|--|--|--|

Connection style -08

| | | | | | | | | | | | |
|---|--|--|--|--|--|--|--|--|----|----|--|
| N | | | | | | | | | M4 | M4 | |
|---|--|--|--|--|--|--|--|--|----|----|--|

All dimensions in mm; 1 inch = 25.4mm

Tolerances according: ISO 2768-m / EN 22768-m

* Other cable length or additional wire connector on request.

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