General Purpose AC/DC 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 enhanced performance versions
Optional overvoltage protection (Z type)

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
- FN 2030 filters offer an optimized filter range for high performance AC and DC applications, in same compact size (M, N1 types)
- 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 (Z type).
- Various terminal options allow you to select the desired connection style

Technical specifications

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
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<tbody>
<tr>
<td>Rated voltage*</td>
<td>250 VAC, 50/60 Hz; 250 VDC</td>
</tr>
<tr>
<td>Operating frequency</td>
<td>DC to 400 Hz</td>
</tr>
<tr>
<td>Rated currents</td>
<td>1 to 30 A @ 40°C max.</td>
</tr>
<tr>
<td>High potential test voltage</td>
<td>P –&gt; PE 2000 VAC for 2 sec (equiv. cap &lt;88 nF)</td>
</tr>
<tr>
<td></td>
<td>P –&gt; PE 2550 VDC for 2 sec (equiv. cap &gt;88 nF)</td>
</tr>
<tr>
<td>Temperature range (operation and storage)</td>
<td>-25°C to +100°C (25/100/21)**</td>
</tr>
<tr>
<td>Certified to</td>
<td>UL 1283, CSA 22.2 No. 8 1986, IEC/EN 60939 (applies to AC and DC applications)</td>
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<tr>
<td>Flammability corresponding to</td>
<td>UL 94 V-2 or better</td>
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<tr>
<td>Surge pulse protection (Z type)</td>
<td>Helps compliance to IEC61000-4-5 (Differential Mode only)</td>
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<tr>
<td>MTBF @ 40°C/230 V (MIL-HB-217F)</td>
<td>2,200,000 hours (1 to 10 A types)</td>
</tr>
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<td>1,200,000 hours (12 to 30 A types)</td>
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<td>Pollution degree</td>
<td>2 acc. IEC 60664-1</td>
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<td>Overvoltage category</td>
<td>11 acc. IEC 60664-1</td>
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<tr>
<td>Altitude</td>
<td>2000m (above derating applies)</td>
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</table>

* 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.

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
- FN 2030 filters offer an optimized filter range for high performance AC and DC applications, in same compact size (M, N1 types)
- 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 (Z type).
- 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

<table>
<thead>
<tr>
<th>Filter*</th>
<th>Rated current @ 40°C (25°C)</th>
<th>Leakage current** @ 250 VAC/50 Hz (@ 120 VAC/60 Hz)</th>
<th>Inductance*** L</th>
<th>Capacitance*** Cx</th>
<th>Capacitance*** Cy</th>
<th>Resistance*** R</th>
<th>Input/Output connections</th>
<th>Weight</th>
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</thead>
</table>
| FN 2030-1-.. | 1 (1.1) | 0.31 (0.18) | 20 | 0.22 | 2.2 | 1000 | -06 | -07 | 58
| FN 2030-3-.. | 3 (3.4) | 0.47 (0.27) | 14 | 0.33 | 3.3 | 1000 | -06 | -07 | 87
| FN 2030-4-.. | 4 (4.5) | 0.47 (0.27) | 14 | 0.33 | 3.3 | 1000 | -06 | -07 | 92
| FN 2030-6-.. | 6 (6.7) | 0.66 (0.38) | 8 | 0.47 | 4.7 | 680 | -06 | -07 | 100
| FN 2030-8-.. | 8 (8.9) | 0.66 (0.38) | 8 | 0.47 | 4.7 | 680 | -06 | -07 | 170
| FN 2030-10-.. | 10 (11.2) | 0.66 (0.38) | 8 | 0.47 | 4.7 | 680 | -06 | -07 | 196
| FN 2030-12-.. | 12 (13.4) | 0.79 (0.45) | 4 | 1.0 | 10 | 330 | -06 | -07 | 185
| FN 2030-16-.. | 16 (17.9) | 0.79 (0.45) | 4 | 1.0 | 10 | 330 | -06 | -07 | 225
| FN 2030-20-.. | 20 (22.4) | 0.79 (0.45) | 4 | 1.0 | 10 | 330 | -06 | -07 | 285
| FN 2030-30-08 | 30 (33.5) | 0.79 (0.45) | 2 | 1.0 | 10 | 330 | -06 | -07 | 326
| FN 2030 A-1-.. | 1 (1.1) | 0.07 (0.04) | 20 | 0.22 | 0.47 | 1000 | -06 | -07 | 58
| FN 2030 A-3-.. | 3 (3.4) | 0.07 (0.04) | 14 | 0.33 | 0.47 | 1000 | -06 | -07 | 87
| FN 2030 A-4-.. | 4 (4.5) | 0.07 (0.04) | 14 | 0.33 | 0.47 | 1000 | -06 | -07 | 92
| FN 2030 A-6-.. | 6 (6.7) | 0.07 (0.04) | 8 | 0.47 | 0.47 | 680 | -06 | -07 | 100
| FN 2030 A-8-.. | 8 (8.9) | 0.07 (0.04) | 8 | 0.47 | 0.47 | 680 | -06 | -07 | 170
| FN 2030 A-10-.. | 10 (11.2) | 0.07 (0.04) | 8 | 0.47 | 0.47 | 680 | -06 | -07 | 196
| FN 2030 A-12-.. | 12 (13.4) | 0.07 (0.04) | 4 | 1.0 | 0.47 | 330 | -06 | -07 | 185
| FN 2030 A-16-.. | 16 (17.9) | 0.07 (0.04) | 4 | 1.0 | 0.47 | 330 | -06 | -07 | 225
| FN 2030 A-20-.. | 20 (22.4) | 0.07 (0.04) | 4 | 1.0 | 0.47 | 330 | -06 | -07 | 285
| FN 2030 A-30-08 | 30 (33.5) | 0.07 (0.04) | 2 | 1.0 | 0.47 | 330 | -06 | -07 | 326
| FN 2030 B-1-.. | 1 (1.1) | 0.00 | 20 | 0.22 | 0.47 | 1000 | -06 | -07 | 58
| FN 2030 B-3-.. | 3 (3.4) | 0.00 | 14 | 0.33 | 0.47 | 1000 | -06 | -07 | 87
| FN 2030 B-4-.. | 4 (4.5) | 0.00 | 14 | 0.33 | 0.47 | 1000 | -06 | -07 | 92
| FN 2030 B-6-.. | 6 (6.7) | 0.00 | 8 | 0.47 | 0.47 | 680 | -06 | -07 | 100
| FN 2030 B-8-.. | 8 (8.9) | 0.00 | 8 | 0.47 | 0.47 | 680 | -06 | -07 | 170
| FN 2030 B-10-.. | 10 (11.2) | 0.00 | 8 | 0.47 | 0.47 | 680 | -06 | -07 | 196
| FN 2030 B-12-.. | 12 (13.4) | 0.00 | 4 | 1.0 | 0.47 | 330 | -06 | -07 | 185
| FN 2030 B-16-.. | 16 (17.9) | 0.00 | 4 | 1.0 | 0.47 | 330 | -06 | -07 | 225
| FN 2030 B-20-.. | 20 (22.4) | 0.00 | 4 | 1.0 | 0.47 | 330 | -06 | -07 | 285
| FN 2030 B-30-08 | 30 (33.5) | 0.00 | 2 | 1.0 | 0.47 | 330 | -06 | -07 | 326
| Enhanced performance | | | | | | | | | |
| FN 2030 N1-1-06 | 1 (1.1) | 5.34 (3.08) | 20 | 0.22 | 68 | 1000 | -06 | -07 | 65
| FN 2030 M-3-06 | 3 (3.4) | 3.69 (2.28) | 14 | 0.33 | 47 | 1000 | -06 | -07 | 110
| FN 2030 M-4-06 | 4 (4.5) | 3.69 (2.28) | 14 | 0.33 | 47 | 1000 | -06 | -07 | 110
| FN 2030 M-6-06 | 6 (6.7) | 3.69 (2.28) | 8 | 0.47 | 47 | 680 | -06 | -07 | 120
| FN 2030 N1-8-06 | 8 (8.9) | 5.34 (3.08) | 8 | 0.47 | 68 | 3680 | -06 | -07 | 3680
| FN 2030 N1-10-06 | 10 (11.2) | 5.34 (3.08) | 8 | 0.47 | 68 | 680 | -06 | -07 | 3600
| FN 2030 N1-12-06 | 12 (13.4) | 5.34 (3.08) | 4 | 1.0 | 68 | 330 | -06 | -07 | 36
| FN 2030 M-16-06 | 16 (17.9) | 3.69 (2.28) | 4 | 1.0 | 68 | 330 | -06 | -07 | 265
| FN 2030 M-20-.. | 20 (22.4) | 3.69 (2.28) | 4 | 1.0 | 68 | 330 | -06 | -07 | 326
| FN 2030 M-30-08 | 30 (33.5) | 3.69 (2.28) | 2 | 1.0 | 68 | 330 | -06 | -07 | 346

* 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 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%
Typical filter attenuation

Per CISPR 17; A=50 Ω/50 Ω sym; B=50 Ω/50 Ω asym
Product selector

Connection style -06, 1 A types

Connection style -06, 3 to 6 A types

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

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

Connection style -08, 16 to 30 A types

Connection style -06, 8 to 20 A types
## Dimensions

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### Recommended torque (Nm)
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All dimensions in mm; 1 inch = 25.4 mm
Tolerances according: ISO 2768-m/EN 22768-m
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