

# Compact EMC/RFI Filter for Industrial Motor Drive Applications

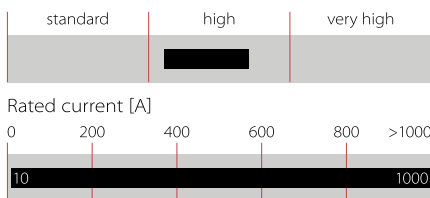


- Very compact and light weight design requiring minimum space
- Easy, time-saving installation and contacting
- Protective covers as optional accessory available
- Attenuation performance according to EN 61800-3/A11



### Performance indicators

Attenuation performance



## Technical specifications

|  |  |
|--|--|
| <b>Maximum continuous operating voltage</b>      | 3x 520/300 VAC (480 VAC +10% possible)   |
| <b>Operating frequency</b>                       | DC to 60 Hz  |
| <b>Rated currents</b>                            | 10 to 1000 A @ 50°C  |
| <b>High potential test voltage</b>               | P → E 2750 VDC for 2 sec<br>P → P 2250 VDC for 2 sec                             |
| <b>Protection category</b>                       | IP 20 (10 to 100 A)<br>IP 00 (150 to 1000 A)                                     |
| <b>Overload capability</b>                       | 4x rated current at switch on,<br>1.5x rated current for 1 minute, once per hour |
| <b>Temperature range (operation and storage)</b> | -25°C to +100°C (25/100/21)  |
| <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 @ 50°C/400 V (Mil-HB-217F)</b>           | >320,000 hours   |

### Approvals



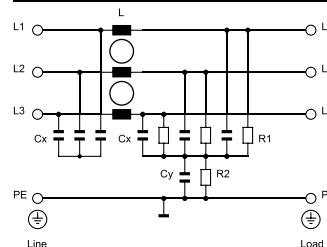
### Features and benefits

- An extremely compact and light weight filter design requiring minimum mounting space in installations and cabinets
- Simple and time-saving installation with good accessibility for automatic and hand tools
- Solid, touch-safe terminal blocks, for all filters from 10 to 100 A, offering sufficient contacting cross section according to the EN 60204-1 installation standard
- Optionally available transparent protective covers for all filters with busbars from 150 to 1000 A, to protect the installer, operator or inspector from accidental touching of live conductors. They can easily be retrofitted even if the filter is already installed and connected
- These EMC filters provide the attenuation performance needed to fulfill EN 61800-3/A11
- Guaranteed filter performance under fullload operating conditions
- 15 different filter models allow the specific choice and deployment for most industrial applications

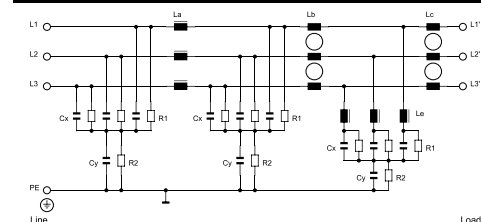
### Typical applications

- Variable speed electrical power drive systems/motor drives for mainly industrial purpose
- Various industrial applications comprising frequency inverters, motor drives and servo drives



### Typical electrical schematic (up to 100 A)



### Typical electrical schematic (>100 A)



## Filter selection table

| Filter                   | Rated current<br>@ 50°C (40°C) | Typical drive<br>power rating* | Leakage current<br>@ 520 VAC/50 Hz | Power loss<br>@ 25°C/50 Hz | Input/Output<br>connections   |   | Weight | Protective<br>covers*** |
|--------------------------|--------------------------------|--------------------------------|------------------------------------|----------------------------|---|---|--------|-------------------------|
|                          | [A]                            | [kW]                           | [mA]**                             | [W]                        |  |  | [kg]   | Order code              |
| <b>FN 3270 H-10-44</b>   | 10 (11)                        | 5.5                            | 3.1                                | 2.4                        | -44   |   | 0.4    |                         |
| <b>FN 3270 H-20-44</b>   | 20 (22)                        | 11                             | 3.1                                | 4.1                        | -44   |   | 0.5    |                         |
| <b>FN 3270 H-35-33</b>   | 35 (38)                        | 22                             | 3.4                                | 6.8                        | -33   |   | 0.7    |                         |
| <b>FN 3270 H-50-34</b>   | 50 (55)                        | 30                             | 3.4                                | 12.8                       | -34   |   | 1.2    |                         |
| <b>FN 3270 H-65-34</b>   | 65 (71)                        | 37                             | 3.4                                | 13.5                       | -34   |   | 1.3    |                         |
| <b>FN 3270 H-80-35</b>   | 80 (88)                        | 45                             | 3.4                                | 13.5                       | -35   |   | 2.2    |                         |
| <b>FN 3270 H-100-35</b>  | 100 (110)                      | 55                             | 3.4                                | 17.1                       | -35   |   | 2.6    |                         |
| <b>FN 3270 H-150-99</b>  | 150 (164)                      | 75                             | 6.9                                | 7.5                        | -99   |   | 6.1    | 801916                  |
| <b>FN 3270 H-200-99</b>  | 200 (219)                      | 110                            | 6.9                                | 13.2                       | -99   |   | 6.1    | 801916                  |
| <b>FN 3270 H-250-99</b>  | 250 (274)                      | 132                            | 6.9                                | 20.6                       | -99   |   | 6.1    | 801916                  |
| <b>FN 3270 H-320-99</b>  | 320 (350)                      | 160                            | 6.9                                | 12.2                       | -99   |   | 7.2    | 801916                  |
| <b>FN 3270 H-400-99</b>  | 400 (438)                      | 220                            | 6.9                                | 19.2                       | -99   |   | 7.2    | 801916                  |
| <b>FN 3270 H-600-99</b>  | 600 (657)                      | 315                            | 6.9                                | 35.6                       | -99   |   | 7.7    | 801916                  |
| <b>FN 3270 H-800-99</b>  | 800 (876)                      | 400                            | 6.9                                | 51.8                       | -99   |   | 15.8   | 806275                  |
| <b>FN 3270 H-1000-99</b> | 1000 (1095)                    | 560                            | 6.9                                | 81.0                       | -99   |   | 15.8   | 806275                  |

\* Calculated at rated current, 480 VAC and  $\cos \phi=0.8$ . The exact value depends upon the efficiency of the drive, the motor and the entire application.

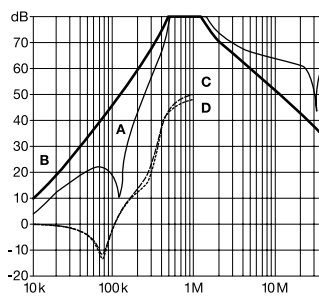
\*\* Standardized calculated leakage current acc. IEC60939 under normal operating conditions.

\*\*\* Please contact your local Schaffner partner to order the optional protective covers with the order code in the table above.

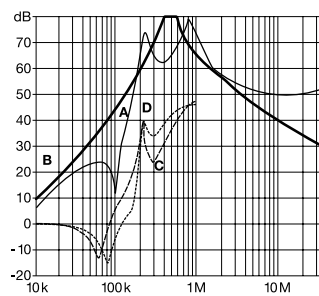
## Typical filter attenuation

Per CISPR 17; A=50  $\Omega$ /50  $\Omega$  sym; B=50  $\Omega$ /50  $\Omega$  asym; C=0.1  $\Omega$ /100  $\Omega$  sym; D=100  $\Omega$ /0.1  $\Omega$  sym

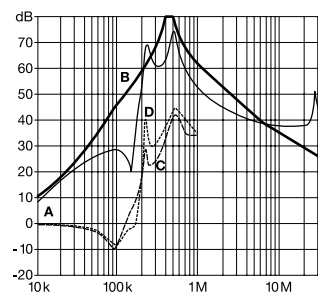
10 and 20 A types



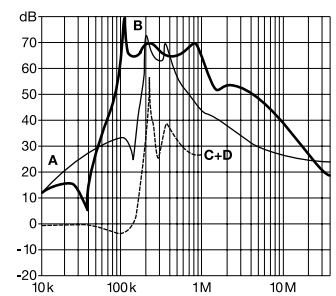
35 to 65 A types



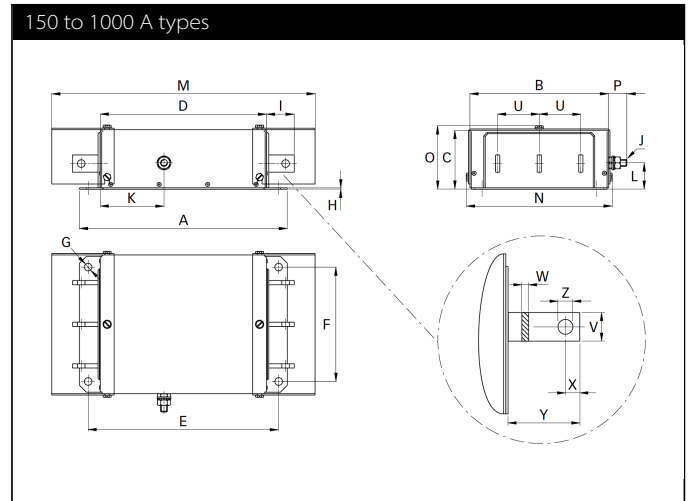
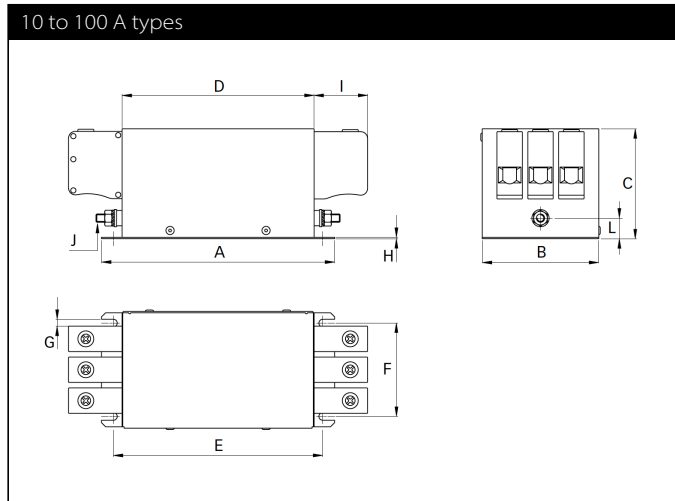
80 and 100 A types



150 to 1000 A types



### Mechanical data



### Dimensions

|          | 10 A  | 20 A  | 35 A  | 50 A  | 65 A  | 80 A  | 100 A | 150 A | 200 A | 250 A | 320 A | 400 A | 600 A | 800 A | 1000 A |
|----------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|--------|
| <b>A</b> | 150   | 150   | 160   | 170   | 170   | 200   | 230   | 300   | 300   | 300   | 300   | 300   | 300   | 370   | 370    |
| <b>B</b> | 58    | 58    | 70    | 85    | 85    | 95    | 95    | 200   | 200   | 200   | 200   | 200   | 200   | 190   | 190    |
| <b>C</b> | 58    | 58    | 68    | 80    | 80    | 90    | 90    | 86    | 86    | 86    | 86    | 86    | 86    | 125   | 125    |
| <b>D</b> | 120   | 120   | 130   | 140   | 140   | 170   | 200   | 240   | 240   | 240   | 240   | 240   | 240   | 310   | 310    |
| <b>E</b> | 132.5 | 132.5 | 142.5 | 152.5 | 152.5 | 182.5 | 212.5 | 275   | 275   | 275   | 275   | 275   | 275   | 345   | 345    |
| <b>F</b> | 42    | 42    | 50    | 65    | 65    | 75    | 75    | 165   | 165   | 165   | 165   | 165   | 165   | 155   | 155    |
| <b>G</b> | 4.5   | 4.5   | 5.5   | 5.5   | 5.5   | 5.5   | 5.5   | Ø11   | Ø11   | Ø11   | Ø11   | Ø11   | Ø11   | Ø11   | Ø11    |
| <b>H</b> | 1     | 1     | 1     | 1     | 1     | 1.5   | 1.5   | 2     | 2     | 2     | 2     | 2     | 2     | 3     | 3      |
| <b>I</b> | 22    | 22    | 25    | 39    | 39    | 45    | 45    | 40    | 40    | 40    | 40    | 40    | 40    | 50    | 50     |
| <b>J</b> | M4    | M4    | M5    | M6    | M6    | M8    | M8    | M10   | M10   | M10   | M10   | M10   | M10   | M12   | M12    |
| <b>K</b> |       |       |       |       |       |       |       | 92    | 92    | 92    | 92    | 92    | 92    | 138   | 138    |
| <b>L</b> | 20.5  | 20.5  | 20    | 15    | 15    | 16    | 16    | 37    | 37    | 37    | 37    | 37    | 37    | 67    | 67     |
| <b>M</b> |       |       |       |       |       |       |       | 380   | 380   | 380   | 380   | 380   | 380   | 610   | 610    |
| <b>N</b> |       |       |       |       |       |       |       | 211   | 211   | 211   | 211   | 211   | 211   | 201   | 201    |
| <b>O</b> |       |       |       |       |       |       |       | 93    | 93    | 93    | 93    | 93    | 93    | 132   | 132    |
| <b>P</b> |       |       |       |       |       |       |       | 26.5  | 26.5  | 26.5  | 26.5  | 26.5  | 26.5  | 29    | 29     |
| <b>U</b> |       |       |       |       |       |       |       | 60    | 60    | 60    | 60    | 60    | 60    | 60    | 60     |
| <b>V</b> |       |       |       |       |       |       |       | 20    | 20    | 20    | 25    | 25    | 25    | 40    | 40     |
| <b>W</b> |       |       |       |       |       |       |       | 3     | 3     | 3     | 6     | 6     | 8     | 8     | 8      |
| <b>X</b> |       |       |       |       |       |       |       | 10    | 10    | 10    | 12.5  | 12.5  | 12.5  | 20    | 20     |
| <b>Y</b> |       |       |       |       |       |       |       | 37    | 37    | 37    | 37    | 37    | 37    | 47    | 47     |
| <b>Z</b> |       |       |       |       |       |       |       | Ø9    | Ø9    | Ø9    | Ø11   | Ø11   | Ø11   | Ø13.5 | Ø13.5  |

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

### Filter input/output connector cross sections

|                           | -33                | -34                | -35                | -44                |
|---------------------------|--------------------|--------------------|--------------------|--------------------|
|                           |                    |                    |                    |                    |
| <b>Solid wire</b>         | 16 mm <sup>2</sup> | 35 mm <sup>2</sup> | 50 mm <sup>2</sup> | 10 mm <sup>2</sup> |
| <b>Flex wire</b>          | 10 mm <sup>2</sup> | 25 mm <sup>2</sup> | 50 mm <sup>2</sup> | 6 mm <sup>2</sup>  |
| <b>AWG type wire</b>      | AWG 6              | AWG 2              | AWG 1/0            | AWG 8              |
| <b>Recommended torque</b> | 1.5-1.8 Nm         | 4.0-4.5 Nm         | 7-8 Nm             | 1.5-1.8 Nm         |

Please visit [www.schaffner.com](http://www.schaffner.com) to find more details on filter connectors.



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