M Series

Power Inlet Filters & Power Entry Modules

Slim Power Entry Module Family with Multiple Options

UL Recognized
CSA Certified
VDE Approved

Ordering Information

5 E F M 4 S C

Mounting Type
C - Snap-In
Omit for flange mount

Switch Option
S - DPST on/off switch
Omit for none

Voltage Selection Positions
1 or 4

M Series

Filter Type
F - General purpose
H - Medical
X - High performance
Z - Premium performance
V - Non-filtered

Leakage current designation
E - Low leakage (<0.5 mA)
(Filtered models only)

Current Rating @120 VAC
3, 5 or 6A

Filter Types

H Models provide a basic performance dual element circuit EMI filter with minimal leakage current, suitable for medical applications, with attenuation similar to the EAH Series power inlet filter.

F Models provide a basic performance dual element circuit EMI filter, with attenuation similar to the EEA Series Power Inlet Filter.

X Models provide a high performance three element differential circuit filter, with extended EMI attenuation similar to the X Series chassis filter, suitable for bringing most digital equipment (including switching power supplies) into compliance with FCC Part 15J, Class B conducted emissions limits.

Z Models provide a premium performance three element differential circuit filter, with enhanced EMI low frequency attenuation similar to the P Series Z models, suitable for bringing most digital equipment (including switching power supplies) into compliance with EN55022 Level B as well as FCC Part 15J. For minimum panel footprint, see the P series on page 192.

Dimensions are in inches and millimeters unless otherwise specified. Values in italics are metric equivalents. Dimensions are shown for reference purposes only. Specifications subject to change.

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M Series

Specifications

Maximum leakage current each Line to Ground:

<table>
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<th></th>
<th>HM</th>
<th>FM</th>
<th>XM/ZM</th>
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<tbody>
<tr>
<td>@ 120 VAC 60 Hz:</td>
<td>2 µA</td>
<td>.25 mA</td>
<td>.30 mA</td>
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<tr>
<td>@250 VAC 50 Hz:</td>
<td>5 µA</td>
<td>.50 mA</td>
<td>.50 mA</td>
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Hipot rating (one minute):
- Line to Ground: 2250 VDC
- Line to Line: 1450 VDC
- Line to Load (switch off) non-filtered: 2500 VAC

Rated Voltage (max.): 250VAC

Operating Frequency: 50/60 Hz

Rated Current @ 250 VAC:
- 3A models: 2A
- 5A models: 4A
- 6A Switched models: 5A
- 6A non-switched models: 6A

Required Fuse(s): Reversible fuseholder accepts one .25 x 1.25” (not included) or two 5 x 20mm (not included)

Switch: DPST 100,000 operations at 70A max. inrush

Available Part Numbers

Non-Filtered Models

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<th>Voltage Selections</th>
<th>Flange Mount</th>
<th>Snap-In</th>
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General Purpose Filters

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Medical Filters

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High Performance - FCC-B

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Premium Performance - EN55022-B

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Accessories

GA400: NEMA 5-15P to IEC 60320-1 C-13 line cord

MA100: Power interconnect assembly
For voltage select models. 8.5” wire leads

MA101: Plug only

MA102: Strip of 100 pins for use with MA101

MA104: Individual pins for use with MA101

MA302: Two Voltage Selection Card
Marked 120V/240V. One card comes standard with every 2 voltage M series module

MA304: Four Voltage Selection Card
Marked 100V/120V/230V/240V. One card comes standard with every 4 voltage M series module

MA400: Medical safety bracket assembly
Prevents inadvertent removal of fuse(s)

MA401: Bracket only

MA402: Standoff only
M Series

Accessories (continued)
MA601 - 604: Insulating Boot
Plastic shroud for back of M series to prevent inadvertent access to connections

MA601: Fits M4S versions
MA602: Fits M1S versions
MA603: Fits M4 versions
MA604: First M1 versions

Voltage Selection
1. Open cover, using small blade screwdriver or similar tool (see illustration on right)
2. Set aside cover/fuse block assembly
3. Pull voltage selector card straight out of housing, using indicator pin
4. Orient selector card so that desired voltage is readable at the bottom
5. Orient indicator pin to point up when desired voltage is readable at bottom (note that when indicator pin is fixed, successive voltages are selected by rotating the card 90° clockwise)
6. Insert voltage selector card into housing, printed side of card facing forward toward IEC connector and edge containing the desired voltage first
7. Replace cover, and verify that indicator pin shows the desired voltage

Fuse Installation Instructions
1. Remove power cord
2. Insert a pocket screwdriver at point “X” as shown
3. Gently lift the entire door UP approximately 1/4” (minimum) Once lifted, the door will pivot on it’s hinges to expose the fuse holder
4. When the fuse holder is installed in the single fuse position, apply the screwdriver as shown and gently lift up Use screwdriver as shown, do not use fingers
5. Install one (1) AG fuse or two (2) metric fuses (see below)
6. Replace fuse holder into housing
7. Swing and push to snap door back in place

Fuse Options
North American single fuse installation
Metric dual fuse installation

Install fuses on one side only, do not install both AG and metric fuses at the same time

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**M Series**

**Electrical Schematics**

**Non-Filtered Models**

**VM1**

- Neutral
- Power On/Off
- Note 3
- Hot
- Note 2

**VM2**

- Neutral
- Power On/Off
- 120V
- 240V
- Note 1
- Note 3
- Hot

**VM4**

- Neutral
- Power On/Off
- 120V
- 240V
- Note 3
- Hot

**Filtered Models**

**FM1 & HM1**

- Neutral
- Power On/Off

**FM4 & HM4**

- Neutral
- Power On/Off

**XM1 & ZM1**

- Neutral
- Power On/Off

**XM4 & ZM4**

- Neutral
- Power On/Off

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Note 1: Jumper required if no input filter is used
Note 2: Provision for dual Metric style fusing
Note 3: On/off switch present only in “S” suffix models
Note 4: When using a center-tapped transformer, the C-F winding should be the low voltage (high current) winding and must be capable of handling the full primary current in the 120V position

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**Dimensions**

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M Series

Case Styles - Non-filtered Models

6VM1

Typical Dimensions:
- Line Inlet (1):
- Backplate Terminals:
- Mounting holes (2):

6VM1C

Typical Dimensions:
- Line Inlet (1):
- Backplate Terminals:

6VM1S

Typical Dimensions:
- Line Inlet (1):
- Backplate Terminals:
- Mounting holes (2):

6VM1SC

Typical Dimensions:
- Line Inlet (1):
- Backplate Terminals:

6VM2 & 6VM4

Typical Dimensions:
- Line Inlet (1):
- Backplate Terminals:
- Mounting holes (2):

6VM2S & 6VM4S

Typical Dimensions:
- Line Inlet (1):
- Backplate Terminals:
- Mounting holes (2):

6VM4C

Typical Dimensions:
- Line Inlet (1):
- Backplate Terminals:

6VM4SC

Typical Dimensions:
- Line Inlet (1):
- Backplate Terminals:

Power Inlet Filters & Power Entry Modules

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M Series

Case Styles - Filtered Models
3EXM1S & 3EZM1S

![Diagram of 3EXM1S & 3EZM1S]

**Typical Dimensions:**
- **Line Inlet (1):** IEC 60320-1 C14
- **Backplate Terminals:** .110 (2.79)
- **Threaded insert:** 6-32 x .25
- **Mounting holes (2):** .155 (3.94) Dia. x .279 (7.08) Dia. x 82° countersink for #8 flathead screw

3EXM4 & 3EZM4S

![Diagram of 3EXM4 & 3EZM4S]

**Typical Dimensions:**
- **Line Inlet (1):** IEC 60320-1 C14
- **Backplate Terminals:** .110 (2.79)
- **Threaded insert:** 6-32 x .25
- **Mounting holes (2):** .155 (3.94) Dia. x .279 (7.08) Dia. x 82° countersink for #8 flathead screw

3EXM4S & 3EZM4S

![Diagram of 3EXM4S & 3EZM4S]

**Typical Dimensions:**
- **Line Inlet (1):** IEC 60320-1 C14
- **Backplate Terminals:** .110 (2.79)
- **Threaded insert:** 6-32 x .25
- **Mounting holes (2):** .155 (3.94) Dia. x .279 (7.08) Dia. x 82° countersink for #8 flathead screw

5EHM1 & 5EFM1

![Diagram of 5EHM1 & 5EFM1]

**Typical Dimensions:**
- **Line Inlet (1):** IEC 60320-1 C14
- **Backplate Terminals:** .110 (2.79)
- **Mounting holes (2):** .155 (3.94) Dia. x .279 (7.08) Dia. x 82° countersink for #8 flathead screw

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M Series

Case Styles - Filtered Models (continued)

5EFM1C

Typical Dimensions:
- Line Inlet (1):
  - IEC 60320-1 C14
- Backplate Terminals:
  - .110 [2.79]

5EHM1S & 5EFM1S

Typical Dimensions:
- Line Inlet (1):
  - IEC 60320-1 C14
- Backplate Terminals:
  - .110 [2.79]
- Mounting holes (2):
  - .155 [3.94] Dia. with .279 [7.08] Dia. x 82°
  - countersink for #6 flathead screw

5EFM1SC

Typical Dimensions:
- Line Inlet (1):
  - IEC 60320-1 C14
- Backplate Terminals:
  - .110 [2.79]

5EHM4 & 5EFM4

Typical Dimensions:
- Line Inlet (1):
  - IEC 60320-1 C14
- Backplate Terminals:
  - .110 [2.79]
- Mounting holes (2):
  - .155 [3.94] Dia. with .279 [7.08] Dia. x 82°
  - countersink for #6 flathead screw

5EFM4C

Typical Dimensions:
- Line Inlet (1):
  - IEC 60320-1 C14
- Backplate Terminals:
  - .110 [2.79]

5EHM4S & 5EFM4S

Typical Dimensions:
- Line Inlet (1):
  - IEC 60320-1 C14
- Backplate Terminals:
  - .110 [2.79]
- Mounting holes (2):
  - .155 [3.94] Dia. with .279 [7.08] Dia. x 82°
  - countersink for #6 flathead screw

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## M Series

### Case Styles - Filtered Models (continued)

#### 5EFM4SC

![Diagram of 5EFM4SC](image)

**Typical Dimensions:**
- Line Inlet: IEC 60320-1 C14
- Backplate Terminals: .110 (2.79)

#### Recommended Panel Cutouts

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<th>Insert on XM and ZM models only</th>
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<td>15 &amp; 4 models 1.13</td>
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### Case Dimensions

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<th>B (max.)</th>
<th>C</th>
<th>D ≤ .015 (max.)</th>
<th>E</th>
<th>F</th>
<th>G</th>
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<td>3.7</td>
<td>2.19</td>
<td>3.75</td>
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<td></td>
<td>97.0</td>
<td>-</td>
<td>29.0</td>
<td>94.0</td>
<td>55.6</td>
<td>95.3</td>
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</tbody>
</table>

Note: XM and ZM models allow back mount only
FM and HM models allow front or back mounting
Mounting holes on flange mount models only
Snap-In models allow front mounting only
Snap-In models panel thickness: .06 - .09 (1.53 - 2.29)

Dimensions are in inches and millimeters unless otherwise specified. Values in italics are metric equivalents. Dimensions are shown for reference purposes only. Specifications subject to change.
M Series

Performance Data

Typical Insertion Loss

Measured in closed 50 Ohm system

Minimum Insertion Loss

Measured in closed 50 Ohm system

<table>
<thead>
<tr>
<th>Common Mode / Asymmetrical (Line to Ground)</th>
<th>Frequency – MHz</th>
<th>Part No.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0.01 0.05 0.15 0.5 1 5 10 30</td>
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<tr>
<td>5EHM Models</td>
<td>- - 14 18 19 22 22 17</td>
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<tr>
<td>5EFM Models</td>
<td>- - 14 21 26 40 45 40</td>
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<tr>
<td>3EXM Models</td>
<td>2 13 23 40 46 44 44 44</td>
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<tr>
<td>3EZM Models</td>
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</table>

<table>
<thead>
<tr>
<th>Differential Mode / Symmetrical (Line to Line)</th>
<th>Frequency – MHz</th>
<th>Part No.</th>
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<tr>
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<tr>
<td>3EXM Models</td>
<td>- - 5 34 62 68 60 50 40</td>
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</tr>
<tr>
<td>3EZM Models</td>
<td>5 13 28 37 55 75 75 62 54 44</td>
<td></td>
</tr>
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</table>

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