emi power filters
find the ideal method to filter the AC or DC power entering your system to prevent radiated or conducted EMI with our line of standard power filters and custom power solutions

EMI Power Filters

Power Entry Modules, Power Line & 3 Phase Power Filters are designed in multiple configurations to cover a range of industrial applications. These have excellent attenuation for high voltage impulse, are available in single and dual stage and address FCC Part 15 regulations while meeting your power filtering needs... PF5-PF6 & PF16-PF89

Single Line Feed-Through (SLFT) Power Filters provide superior filtering in a compact, durable package with single, dual, and triple feed-throughs available. These filters are ideal for meeting broad frequency applications with a bolt-in style for easy installation... PF7-PF14

Military/Aerospace Multisection Filters provide excellent EMI filtering for demanding high reliability applications. We offer standard filters, as well as custom designed mechanical packages for unusual or tight fitting spaces and higher performance filtering and expanded voltage ratings... PF91-PF98

EMI Power Filter Solutions will lower your costs and reduce your time to market while providing your system with protection from radiated or conducted EMI. Our comprehensive consulting, diagnostic testing and world class manufacturing allows us to meet your design/project parameters... PF99

Power Entry Modules, Power Line & 3 Phase Power Filters

EMI Power Filters Expertise

We differentiate ourselves from typical filter suppliers by offering our customers an integrated approach to EMC problem solving through consulting, diagnostic testing, design and manufacturing.

- In-house test facilities to provide a total solution for your compliance issues – anechoic chamber, shielded room and NARTE certified engineers ready to test for European emission and immunity regulations, FCC Part 15 and MIL standards

- Global manufacturing and design support with agency approved products available

- Engineering expertise and vertical integration reduce your time to market and save you money

- High reliability products with low leakage and nonmagnetic options available

- Available to meet MIL-PRF-15733 and MIL-STD-461 standards
Need for EMI suppression
Global regulatory agencies have established limits to the amount of noise that man-made electronic devices can radiate or conduct. These regulations have gained greater importance as the world’s electronic population intensifies and the proximity of electronic devices becomes closer.

EMI can propagate through two basic avenues: Conducted and Radiated
Conducted refers to events where the EMI energy flowsthrough power lines, data cables and other wiring that carries functional data or power.
Radiated refers to energy that is propagated by magnetic or electric fields, which originate from other electronic or electrical systems.

Interference types
There are two modes of conducted noise: differential mode (symmetrical or normal mode) and common mode (asymmetrical mode).
Differential mode interference signals are present on one side of the line, referenced to the other. The currents flow along one phase and return along another phase.
Common mode interference signals are present on both sides of the line referenced to ground. The current flows from the source to ground along the ground path and returns along the phases.

Sources of EMI
Electromagnetic interference can occur naturally or through electronic sources. Lightning discharges, precipitation, sand and dust storms, and cosmic noise are sources of natural EMI.
EMI generated from power electrical products cause the most concern. These man-made sources, such as power lines, rotating machinery, power supplies and electronic transmission devices, all have their own signatures and noise pollution.

EMI filters, insertion loss and attenuation
Power line EMI filters are designed to attenuate (or reduce) all radio frequency emissions or energy that is above the applicable EMC specification. Most power line EMI filters utilize inductor/capacitor “low pass” component configurations that pass all DC or low frequency AC necessary energy and attenuate (suppress) higher frequencies containing noise or unwanted energy.

To insure a customer’s “in system” unit to unit attenuation uniformity of power line filters, an insertion loss production line test is performed by API Technologies.
Each of the specific frequencies is measured using RF test equipment and the “reference signal level” of each frequency is stored. Some systems sweep the entire frequency range and store this “reference signal level”. The filter to be measured, tested, or evaluated is then “inserted” between the generator and receiver that established the stored “reference signal level” on the RF test analyzer.
The measured difference without a filter (“the reference signal level”) and with the filter “inserted” into the RF test equipment/analyzer is defined as insertion loss. The unit of measure for insertion loss is the decibel (dB). As noted on most curves in this bulletin, as frequency increases, the higher the insertion loss or dB value. The plot of frequency versus dB value establishes the typical insertion loss curve.

Installation Criteria
Proper installation of a filter network is critical to achieving successful filtering of electromagnetic interference. API recommends that power line filters be installed where the power line enters the equipment. The filter acts as a barrier between polluted energy and clean energy going into your equipment. It is important that the filter is connected to an effective ground plane and where proximity does not couple radiated noise to the clean lines.
Measurement Guidelines

API Technologies has the capability to perform a wide range of tests for EMI filters. Unique custom testing systems designed by Spectrum assure the accuracy required in today’s demanding environments. Testing is performed by employing a 50 ohm source and load impedance per MIL-STD-220. The individual filter performance is stated in terms of insertion loss. Overall attenuation reflects the filter's interaction within the system. Individual filter performance may differ from system to system and each application should be verified through system testing. Examples of various testing abilities and configurations are outlined below.

Differential (Normal or Symmetrical) Mode Insertion Loss
Differential mode noise is caused by non-sinusoidal conduction of rectifiers and other switching devices creating harmonic distortion. This noise is predominant from the power frequency to approximately 10 MHz. Since it follows conventional current flow, it is considered to be of the same magnitude but opposite phase of the other line. Spectrum measures differential mode insertion loss in a 50 ohm system with Balun transformers as shown.

Leakage Current
Leakage is a measurement of reactive current (capacitance) to ground per line. Spectrum uses the following test setup for leakage current measurement.

AC Voltage Drop
AC voltage drop is defined as $E_{in} - E_{out} = AC$ voltage drop. Spectrum Control uses the following circuit for AC voltage drop testing:

DC Voltage Drop
DC voltage drop is performed on each line individually. This test provides the total DC voltage drop for that line of the filter. The following circuit is used in testing:

Common (Asymmetrical) Mode Insertion Loss
Since common mode insertion loss is of the same phase as the opposite line, they may not be of the same magnitude, depending on the end system circuitry. Spectrum Control tests common mode insertion loss on each line in a 50 ohm system as shown.
# Power Entry Modules, Power Line Filters & 3 Phase Power Filters Part Numbering System

## Part Numbering System

*Example: 12-PMB-025-5-A*

Part number 12-PMB-025-5A represents a power line filter with threaded studs, current rated for 25 Amps and with a leakage current of 0.50 mA.

<table>
<thead>
<tr>
<th>Product Line Series</th>
<th>Product Style</th>
<th>Current Rating</th>
<th>Leakage Current (Y Cap)</th>
<th>Outline Drawing/Case Style</th>
</tr>
</thead>
<tbody>
<tr>
<td>10 = Filtered IEC Inlets</td>
<td>BBF = 3 Phase, terminal block connection</td>
<td>001 = 1.0 Amp</td>
<td>250 VAC</td>
<td>1 Select case style from following</td>
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<tr>
<td>11 = Power Line Filters</td>
<td>BFF = Bolt-in IEC Filters</td>
<td>002 = 2.0 Amps</td>
<td>0 = 0.075 mA</td>
<td>* Cylindrical</td>
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<tr>
<td>12 = Three Phase Power Line Filters</td>
<td>BPF = Bolt-in IEC w/Fast-on rear terminals</td>
<td>003 = 3.0 Amps</td>
<td>125 VAC</td>
<td>* Power line w/Fast-on</td>
</tr>
<tr>
<td>13 = Switched &amp; Dual Fused</td>
<td>BPL = Bolt-line IEC w/wire lead termination</td>
<td>004 = 5.0 Amps</td>
<td>DC = DC</td>
<td>* Power line w/threaded studs</td>
</tr>
<tr>
<td>14 = Fused or Switched &amp; Fused Power Entry Filters (250V)</td>
<td>BSF = Bolt-line switched &amp; fused</td>
<td>005 = 6.0 Amps</td>
<td>1 = 0.01 mA</td>
<td>* Power line w/threaded studs</td>
</tr>
<tr>
<td>15 = Switched &amp; Dual Fused</td>
<td>CCL = Cylindrical, capacitive inputs w/Fast-ons</td>
<td>006 = 10 Amps</td>
<td>2 = 0.20 mA</td>
<td>* PCB mount</td>
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<tr>
<td>16 = Single Phase (250V)</td>
<td>CLF = Cylindrical, inductive inputs w/wire leads</td>
<td>007 = 15 Amps</td>
<td>3 = 0.35 mA</td>
<td>* Large case 3 Phase delta</td>
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<td></td>
<td>MMB = Multiple stage filtering w/threading studs</td>
<td>008 = 16 Amps</td>
<td>4 = 0.10 mA</td>
<td>* Large case 3 Phase wye</td>
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<tr>
<td></td>
<td>MMF = Multiple stage filtering w/30 Amps</td>
<td>009 = 20 Amps</td>
<td>5 = 0.50 mA</td>
<td>* IEC Inlet</td>
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<td>MPC = Miniature PCB mountable</td>
<td>010 = 25 Amps</td>
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<td>PDB = 3 Phase, delta w/threading studs</td>
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<td>PMF = Power line filter w/Fast-ons</td>
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<td>PML = Power line filter w/threaded leads</td>
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<td>PWB = 3 Phase, wye w/threaded studs</td>
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<td>017 = 100 Amps</td>
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<td>018 = 150 Amps</td>
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<td>PWL = 3 Phase, wye w/wire leads</td>
<td>020 = 200 Amps</td>
<td>15 = 15.0 mA</td>
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*Note: Not all series offer the product style, rating and leakage current*
Part Numbering System

Example: 60-BPR-060-5-4

Part number 60-BPR-060-5-4 represents a power entry module, bolt-in style with fast-on terminals, a current rating of 6 Amps, leakage current of 0.50 mA and capacitance of 0.047 µF.

<table>
<thead>
<tr>
<th>Product Line Series</th>
<th>Product Style</th>
<th>Current Rating</th>
<th>Leakage Current (Y Cap)</th>
<th>Capacitance (X Cap)</th>
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<tbody>
<tr>
<td>60</td>
<td>AFL</td>
<td>010 = 1.0 Amps</td>
<td>250 VAC</td>
<td>0 = none</td>
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<tr>
<td></td>
<td>AFC</td>
<td>015 = 1.5 Amps</td>
<td>125 VAC</td>
<td>1 = 0.01 µF</td>
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<td>61</td>
<td>ARL</td>
<td>020 = 2.0 Amps</td>
<td>0.075 mA</td>
<td>2 = 0.022 µF</td>
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<tr>
<td></td>
<td>BFF</td>
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<td>0.05 mA</td>
<td>3 = 0.033 µF</td>
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<tr>
<td>62</td>
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<td>0.50 mA</td>
<td>4 = 0.047 µF</td>
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<tr>
<td></td>
<td>BHS</td>
<td>050 = 5.0 Amps</td>
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<td>5 = 0.050 µF</td>
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<td>63</td>
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<td>6 = 0.068 µF</td>
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<tr>
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<td>01 = 2 x 0.01 µF</td>
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<td>64</td>
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<td>100 = 10.0 Amps</td>
<td>0.05 mA</td>
<td>02 = 0.10 µF &amp; 0.22 µF</td>
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<tr>
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<td>BFH</td>
<td>150 = 15.0 Amps</td>
<td>0.05 mA</td>
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<td>200 = 20.0 Amps</td>
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<td>06 = 2 x 0.4 µF &amp; 0.22 µF</td>
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<td>0.05 mA</td>
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<td>67</td>
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<td>0.05 mA</td>
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<td>0.05 mA</td>
<td>16 = 0.22µF &amp; 2 x 0.33 µF</td>
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<tr>
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<td>BFH</td>
<td></td>
<td>0.05 mA</td>
<td>21 = 1.00 µF</td>
</tr>
</tbody>
</table>

* Note: Not all series offer the product style, rating and leakage current
High Current DC Single Line Feed-through Series

Features
- Voltage rating of 130VDC
- C configuration with Class Y4 capacitors
- Current rating up to 300 Amps
- Operating temperature range: -40°C to +85°C
- Excellent filtering in compact package
- Bolt-in style with D-shaped bushing for easy installation
- Low cost EMI solution
- Design flexibility
- UL and Semko approved

Applications
- Telecommunications (cellular base stations, telephone switching racks, etc.)
- Power supplies
- Medical equipment
- C.O.T.S. (Commercial-Off-The-Shelf) Military
- Industrial equipment controls
- Data transmission equipment

Specifications

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Rated Current</th>
<th>Min. Cap.</th>
<th>Minimum Insertion Loss (db)*</th>
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<td>63A</td>
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<tr>
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* Optimum performance with proper installation
# High Current DC Single Line Feed-through Series

<table>
<thead>
<tr>
<th>Part Number</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
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<tr>
<td>52F226-011-32</td>
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<td>0.55 (14)</td>
<td>0.87 (22)</td>
<td>1 (25.40)</td>
<td>1.02 (26)</td>
<td>1.18 (30)</td>
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Dimensions in inches (mm)
High Current
DC Single Line
Pi Series

Features
- Voltage rating of 130VDC
- Pi configuration with Class Y4 capacitors
- Current rating up to 200 Amps
- Excellent filtering in compact package
- Bolt-in style with D-shaped bushing for easy installation
- Low cost EMI solution
- UL and Semko approved

Applications
- Telecommunications (cellular base stations, telephone switching racks, etc.)
- Power supplies
- Medical equipment
- C.O.T.S. (Commercial-Off-The-Shelf) Military
- Industrial equipment controls
- Data transmission equipment

Specifications

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* Optimum performance with proper installation
# High Current DC Single Line Pi Series

## Dimensions

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Dimensions in inches (mm)
High Current
AC Single Line Feed-through Series

Features
- Voltage rating of 250VAC
- C configuration with Class Y2 capacitors
- Current rating up to 300 Amps
- Excellent filtering in compact package
- Bolt-in style with D-shaped bushing for easy installation
- Low cost EMI solution
- Design flexibility
- UL and Semko approvals pending

Applications
- Telecommunications (cellular base stations, telephone switching racks, etc.)
- Power supplies
- Medical equipment
- C.O.T.S. (Commercial-Off-The-Shelf) Military
- Industrial equipment controls
- Data transmission equipment

Specifications

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* Optimum performance with proper installation
# High Current AC Single Line Feed-through Series

![Diagram of High Current AC Single Line Feed-through Series](image)

## Dimensions

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Dimensions in inches (mm)

- **A**: 0.025 (0.64) SHOULDER
- **B**: 0.025 (0.64) SHOULDER
- **C**: 0.025 (0.64) SHOULDER
- **D**: 0.025 (0.64) SHOULDER
- **E**: 0.025 (0.64) SHOULDER
- **F**: 0.025 (0.64) SHOULDER

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### Part Numbers
- 52F226-016-10
- 52F226-016-16
- 52F226-016-32
- 52F226-016-63
- 52F226-016-100
- 52F226-016-200
- 52F226-016-250
- 52F226-016-300
- 52F226-026-10
- 52F226-026-16
- 52F226-026-32
- 52F226-026-63
- 52F226-026-100
- 52F226-026-200
- 52F226-026-250
- 52F226-026-300
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- 52F226-036-100
- 52F226-036-200
- 52F226-036-250
- 52F226-036-300
- 52F226-046-16
- 52F226-046-32
- 52F226-046-63
- 52F226-046-100
- 52F226-046-200
- 52F226-046-250
- 52F226-046-300
Features
- Voltage rating of 250VAC
- Pi configuration with Class Y2 capacitors
- Current rating up to 300 Amps
- Excellent filtering in compact package
- Bolt-in style with D-shaped bushing for easy installation
- Low cost EMI solution
- Design flexibility
- UL and Semko approvals pending

Applications
- Telecommunications (cellular base stations, telephone switching racks, etc.)
- Power supplies
- Medical equipment
- C.O.T.S. (Commercial-Off-The-Shelf) Military
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* Optimum performance with proper installation
**High Current AC Single Line Pi Series**

Dimensions

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<td>52F226-037-63</td>
<td>6.30 (160)</td>
<td>0.55 (14)</td>
<td>0.87 (22)</td>
<td>1.25 (31.75)</td>
<td>1.26 (32)</td>
<td>4.09 (104)</td>
</tr>
<tr>
<td>52F226-037-100</td>
<td>7.24 (184)</td>
<td>0.63 (16)</td>
<td>1.06 (27)</td>
<td>1.57 (40)</td>
<td></td>
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<tr>
<td>52F226-037-200</td>
<td>8.23 (209)</td>
<td>0.75 (19)</td>
<td>1.57 (40)</td>
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</tr>
<tr>
<td>52F226-037-250</td>
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<tr>
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<td>6.30 (160)</td>
<td>0.55 (14)</td>
<td>0.87 (22)</td>
<td>1.25 (31.75)</td>
<td>1.26 (32)</td>
<td>4.09 (104)</td>
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<tr>
<td><strong>High Performance</strong></td>
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<tr>
<td>52F226-019-10</td>
<td>4.21 (107)</td>
<td>0.47 (12)</td>
<td>0.67 (17)</td>
<td>0.75 (19.05)</td>
<td>0.63 (16)</td>
<td>2.6 (66)</td>
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<tr>
<td>52F226-019-16</td>
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<td>0.87 (22)</td>
<td>1 (25.40)</td>
<td>0.71 (18)</td>
<td>2.72 (69)</td>
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<tr>
<td>52F226-019-32</td>
<td>6.81 (173)</td>
<td>0.63 (16)</td>
<td>1.06 (27)</td>
<td>1.25 (31.75)</td>
<td>1.02 (26)</td>
<td>4.13 (105)</td>
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<tr>
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<td>5.71 (145)</td>
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<td>9.57 (243)</td>
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<td>1.5 (38.10)</td>
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<td>5.75 (146)</td>
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<tr>
<td>52F226-019-200</td>
<td>10.5 (267)</td>
<td></td>
<td></td>
<td>2 (50.80)</td>
<td>1.57 (40)</td>
<td>6.30 (160)</td>
</tr>
</tbody>
</table>

Dimensions in inches (mm)
High Current Filtered Terminal Blocks

Features
- Ideal for high current applications
- Design flexibility
- Available in 2 x 2 through 2 x 6 positions
- UL approved

Applications
- Telecommunications switching networks
- Cellular base stations
- Power supplies
- UPS
- Instrumentation
- High reliability radar and transmission systems
- Industrial controls
- Power distribution

Specifications

**ELECTRICAL**

Voltage rating: 100 VDC per terminal
Capacitance: .015µF +80% / -20% per cap
.030µF +80% / -20% per pair

Dielectric
withstanding voltage: 1000VDC for 1 minute
Current rating: 60 Amps max per terminal

**MECHANICAL**

Center spacing: US .200: (5.08 mm)
Wire size: AWG #12-26
Screw material: Steel, zinc chromate plate
Recommended PCB hole diameter: .05” (1.30 mm) contact hole
Molded material: UL rated 94VO polyamide
Tightening torque: 2.5 in.-lbs. max. (28 Ncm)
Terminal: Brass, tin-plated

* For filter elements with additional capacitance values, consult factory.

**Typical Insertion Loss — dB:**

<table>
<thead>
<tr>
<th>Frequency</th>
<th>Insertion Loss (dB)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 MHz......</td>
<td>8</td>
</tr>
<tr>
<td>5 MHz......</td>
<td>24</td>
</tr>
<tr>
<td>10 MHz.....</td>
<td>32</td>
</tr>
<tr>
<td>50 MHz.....</td>
<td>38</td>
</tr>
</tbody>
</table>

In 50 Ohm Circuit

<table>
<thead>
<tr>
<th>Frequency</th>
<th>Insertion Loss (dB)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 MHz......</td>
<td>8</td>
</tr>
<tr>
<td>5 MHz......</td>
<td>24</td>
</tr>
<tr>
<td>10 MHz.....</td>
<td>32</td>
</tr>
<tr>
<td>50 MHz.....</td>
<td>38</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Number of Terminals</th>
<th>A (mm)</th>
<th>B (mm)</th>
<th>C (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>52-1013-102</td>
<td>2x2</td>
<td>2.60</td>
<td>66.04</td>
<td>2.00</td>
</tr>
<tr>
<td>52-1013-103</td>
<td>2x3</td>
<td>3.35</td>
<td>85.09</td>
<td>2.75</td>
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<tr>
<td>52-1013-104</td>
<td>2x4</td>
<td>4.10</td>
<td>104.14</td>
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<tr>
<td>52-1013-105</td>
<td>2x5</td>
<td>4.85</td>
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<td>52-1013-106</td>
<td>2x6</td>
<td>5.60</td>
<td>142.24</td>
<td>5.00</td>
</tr>
</tbody>
</table>

Dimensions in inches (mm)
**Power Entry Modules**

**Bolt-in Rear Terminals**

### 60-BPR & BPS Series

**Features**
- Ideally suited for products that must conform to FCC part 15 regulations
- Metal case offers high performance
- Meets over voltage of IEC 664 category II and complies with IEC 950
- Uses IEC connector that meets most safety standards
- Solder lug and Fast-on tab terminals available
- Operating temperature: -25°C to +85°C (including temperature rise, see graph on page PF17)
- UL approved low leakage version also available

**Applications**
- Digital equipment
- Personal computers and peripherals
- Measuring instruments
- Monitor and display units

### Specifications

<table>
<thead>
<tr>
<th>Model*</th>
<th>Rated Voltage (@ 50/60Hz)</th>
<th>Rated Current</th>
<th>Leakage Current (Max.)</th>
<th>Capacitance</th>
<th>Inductance (L1)</th>
<th>Temperature Rise (Max.)</th>
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</thead>
<tbody>
<tr>
<td>60-XXX-010-3-2</td>
<td>250VAC</td>
<td>1A</td>
<td>0.35mA</td>
<td>2200pF ± 20%</td>
<td>.022uF ± 20%</td>
<td>6.0mH</td>
</tr>
<tr>
<td>60-XXX-010-3-4</td>
<td>250VAC</td>
<td>1A</td>
<td>0.50mA</td>
<td>3300pF ± 20%</td>
<td>.022uF ± 20%</td>
<td>6.0mH</td>
</tr>
<tr>
<td>60-XXX-010-5-2</td>
<td>250VAC</td>
<td>1A</td>
<td>0.35mA</td>
<td>2200pF ± 20%</td>
<td>.047uF ± 20%</td>
<td>6.0mH</td>
</tr>
<tr>
<td>60-XXX-010-5-4</td>
<td>250VAC</td>
<td>1A</td>
<td>0.50mA</td>
<td>3300pF ± 20%</td>
<td>.047uF ± 20%</td>
<td>6.0mH</td>
</tr>
<tr>
<td>60-XXX-020-3-2</td>
<td>250VAC</td>
<td>2A</td>
<td>0.35mA</td>
<td>2200pF ± 20%</td>
<td>.022uF ± 20%</td>
<td>2.4mH</td>
</tr>
<tr>
<td>60-XXX-020-3-4</td>
<td>250VAC</td>
<td>2A</td>
<td>0.50mA</td>
<td>3300pF ± 20%</td>
<td>.022uF ± 20%</td>
<td>2.4mH</td>
</tr>
<tr>
<td>60-XXX-020-5-2</td>
<td>250VAC</td>
<td>2A</td>
<td>0.35mA</td>
<td>2200pF ± 20%</td>
<td>.047uF ± 20%</td>
<td>2.4mH</td>
</tr>
<tr>
<td>60-XXX-020-5-4</td>
<td>250VAC</td>
<td>2A</td>
<td>0.50mA</td>
<td>3300pF ± 20%</td>
<td>.047uF ± 20%</td>
<td>2.4mH</td>
</tr>
<tr>
<td>60-XXX-030-3-2</td>
<td>250VAC</td>
<td>3A</td>
<td>0.35mA</td>
<td>2200pF ± 20%</td>
<td>.022uF ± 20%</td>
<td>1.2mH</td>
</tr>
<tr>
<td>60-XXX-030-3-4</td>
<td>250VAC</td>
<td>3A</td>
<td>0.50mA</td>
<td>3300pF ± 20%</td>
<td>.022uF ± 20%</td>
<td>1.2mH</td>
</tr>
<tr>
<td>60-XXX-030-5-2</td>
<td>250VAC</td>
<td>3A</td>
<td>0.35mA</td>
<td>2200pF ± 20%</td>
<td>.047uF ± 20%</td>
<td>1.2mH</td>
</tr>
<tr>
<td>60-XXX-030-5-4</td>
<td>250VAC</td>
<td>3A</td>
<td>0.50mA</td>
<td>3300pF ± 20%</td>
<td>.047uF ± 20%</td>
<td>1.2mH</td>
</tr>
<tr>
<td>60-XXX-060-3-2</td>
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<td>6A</td>
<td>0.35mA</td>
<td>2200pF ± 20%</td>
<td>.022uF ± 20%</td>
<td>0.53mH</td>
</tr>
<tr>
<td>60-XXX-060-3-4</td>
<td>250VAC</td>
<td>6A</td>
<td>0.50mA</td>
<td>3300pF ± 20%</td>
<td>.022uF ± 20%</td>
<td>0.53mH</td>
</tr>
<tr>
<td>60-XXX-060-5-2</td>
<td>250VAC</td>
<td>6A</td>
<td>0.35mA</td>
<td>2200pF ± 20%</td>
<td>.047uF ± 20%</td>
<td>0.53mH</td>
</tr>
<tr>
<td>60-XXX-060-5-4</td>
<td>250VAC</td>
<td>6A</td>
<td>0.50mA</td>
<td>3300pF ± 20%</td>
<td>.047uF ± 20%</td>
<td>0.53mH</td>
</tr>
<tr>
<td>60-XXX-100-3-2</td>
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<td>10A</td>
<td>0.35mA</td>
<td>2200pF ± 20%</td>
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<td>0.26mH</td>
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<tr>
<td>60-XXX-100-3-4</td>
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<td>10A</td>
<td>0.50mA</td>
<td>3300pF ± 20%</td>
<td>.022uF ± 20%</td>
<td>0.26mH</td>
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<tr>
<td>60-BPR-150-3-11</td>
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<td>15A</td>
<td>0.35mA</td>
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<td>.1uF ± 20%</td>
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<tr>
<td>60-BPS-150-3-11</td>
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<td>15A</td>
<td>0.50mA</td>
<td>3300pF ± 20%</td>
<td>.1uF ± 20%</td>
<td>0.15mH</td>
</tr>
</tbody>
</table>

Note: Test voltage: 1500VAC one minute, line to ground
Insulation resistance: 300 Mohm min. at 500VDC
Voltage drop: 1V max. at rated current
Weight: 45g
Input: Compatible with IEC-320

* Substitute BPR or BPS for XXX
  - BPS - Solder lug terminals
  - BPR - Fast-on tab terminals

**Circuit Diagram**

---

[Image of circuit diagram]
Power Entry Modules
Bolt-in Rear Terminals

60-BPR & BPS Series

Temperature Characteristics

Common Mode

Normal Mode

Dimensions in inches (mm)

* General tolerance ± 0.5 (0.3)

Insertion Loss (dB)

Frequency (MHz)

Ambient Temperature (°C)

Current (%)

60-BPX-010; -020; -030

60-BPX-060; -100

60-BPX-010; -020; -030

60-BPX-060; -100

Frequency (MHz)
Power Entry Modules
Bolt-in Right Angle Terminals

60-BPF Series

Features
- Ideally suited for products that must conform to FCC part 15 regulations
- Metal case offers high performance
- Meets over voltage of IEC 664 category II and complies with IEC 950
- Uses IEC connector that meets most safety standards
- PCB mounting types available (see page PF46)
- Length under tab is shortened for small spaces
- Operating temperature: -25°C to +85°C (including temperature rise, see graph on page PF19)
- UL approved low leakage version also available

Applications
- Digital equipment
- Personal computers and peripherals
- Measuring instruments
- Monitor and display units

Specifications

<table>
<thead>
<tr>
<th>Model</th>
<th>Rated Voltage (@ 50/60Hz)</th>
<th>Rated Current</th>
<th>Leakage Current (Max.)</th>
<th>Capacitance</th>
<th>Inductance (L1)</th>
<th>Temperature Rise (Max.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>60-BPF-010-3-2</td>
<td>250VAC</td>
<td>0.35mA</td>
<td>2200pF ± 20%</td>
<td>.022uF ± 20%</td>
<td>6.0mH</td>
<td>30°C</td>
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<tr>
<td>60-BPF-010-3-4</td>
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<td>0.50mA</td>
<td>3300pF ± 20%</td>
<td>.022uF ± 20%</td>
<td>6.0mH</td>
<td>30°C</td>
</tr>
<tr>
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<td>30°C</td>
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<td>0.50mA</td>
<td>3300pF ± 20%</td>
<td>.022uF ± 20%</td>
<td>6.0mH</td>
<td>30°C</td>
</tr>
<tr>
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<td>0.35mA</td>
<td>2200pF ± 20%</td>
<td>.022uF ± 20%</td>
<td>2.4mH</td>
<td>30°C</td>
</tr>
<tr>
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<td>3300pF ± 20%</td>
<td>.022uF ± 20%</td>
<td>2.4mH</td>
<td>30°C</td>
</tr>
<tr>
<td>60-BPF-020-5-2</td>
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<td>0.35mA</td>
<td>2200pF ± 20%</td>
<td>.022uF ± 20%</td>
<td>2.4mH</td>
<td>30°C</td>
</tr>
<tr>
<td>60-BPF-020-5-4</td>
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<td>0.50mA</td>
<td>3300pF ± 20%</td>
<td>.022uF ± 20%</td>
<td>2.4mH</td>
<td>30°C</td>
</tr>
<tr>
<td>60-BPF-030-3-2</td>
<td>250VAC</td>
<td>0.35mA</td>
<td>2200pF ± 20%</td>
<td>.022uF ± 20%</td>
<td>1.2mH</td>
<td>30°C</td>
</tr>
<tr>
<td>60-BPF-030-3-4</td>
<td></td>
<td>0.50mA</td>
<td>3300pF ± 20%</td>
<td>.022uF ± 20%</td>
<td>1.2mH</td>
<td>30°C</td>
</tr>
<tr>
<td>60-BPF-030-5-2</td>
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<td>0.35mA</td>
<td>2200pF ± 20%</td>
<td>.022uF ± 20%</td>
<td>1.2mH</td>
<td>30°C</td>
</tr>
<tr>
<td>60-BPF-030-5-4</td>
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<td>3300pF ± 20%</td>
<td>.022uF ± 20%</td>
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<td>30°C</td>
</tr>
<tr>
<td>60-BPF-060-3-2</td>
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<td>2200pF ± 20%</td>
<td>.022uF ± 20%</td>
<td>0.53mH</td>
<td>45°C</td>
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<tr>
<td>60-BPF-060-3-4</td>
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<td>0.50mA</td>
<td>3300pF ± 20%</td>
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<td>0.53mH</td>
<td>45°C</td>
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<td>45°C</td>
</tr>
<tr>
<td>60-BPF-060-5-4</td>
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<td>0.50mA</td>
<td>3300pF ± 20%</td>
<td>.022uF ± 20%</td>
<td>0.53mH</td>
<td>45°C</td>
</tr>
</tbody>
</table>

Note: Test voltage: 1500VAC one minute, line to ground
Insulation resistance: 300 Mohm min. at 500VDC
Voltage drop: 1V max. at rated current
Weight: 50g
Input: Compatible with IEC-320
60-BPF Series

Temperature Characteristics

![Graph showing temperature characteristics of 60-BPF Series modules.](image)

Common Mode

60-BPF-010-020

![Graph showing insertion loss for 60-BPF-010-020.](image)

Normal Mode

60-BPF-010-020

![Graph showing insertion loss for 60-BPF-010-020.](image)
Power Entry Modules
High Frequency Attenuation

60-BHS Series

Features

- Ideally suited for products that must conform to FCC part 15 regulations
- Metal cased miniature filter offers high performance
- Meets over voltage of IEC 664 category II and complies with IEC 950
- PCB mounting types available (see page PF48)
- PCB mounting minimizes space and provides economical installation
- Excellent filtering characteristics for high frequencies
- Earth coil standard
- Operating temperature: -25°C to +85°C (including temperature rise, see graph on page PF21)

Applications

- Digital equipment
- Personal computers and peripherals
- Measuring instruments
- Monitor and display units

Specifications

<table>
<thead>
<tr>
<th>Model</th>
<th>Rated Voltage (@ 50/60Hz)</th>
<th>Rated Current</th>
<th>Leakage Current (Max.)</th>
<th>Capacitance</th>
<th>Inductance (L₁)</th>
<th>Temperature Rise (Max.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>60-BHS-010-3-11</td>
<td>250VAC</td>
<td>1A</td>
<td>0.35mA</td>
<td>.1μF ± 20%</td>
<td>.007μF ± 20%</td>
<td>6mH 18.3μH 30°C</td>
</tr>
<tr>
<td>60-BHS-010-3-4</td>
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<td>1A</td>
<td>0.50mA</td>
<td>.1μF ± 20%</td>
<td>.007μF ± 20%</td>
<td>2.4mH 18.3μH 30°C</td>
</tr>
<tr>
<td>60-BHS-010-5-11</td>
<td>250VAC</td>
<td>2A</td>
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</tr>
<tr>
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<td>250VAC</td>
<td>4A</td>
<td>0.50mA</td>
<td>.1μF ± 20%</td>
<td>.007μF ± 20%</td>
<td>.53μH 18.3μH 45°C</td>
</tr>
<tr>
<td>60-BHS-030-3-11</td>
<td>250VAC</td>
<td>5A</td>
<td>0.35mA</td>
<td>.1μF ± 20%</td>
<td>.007μF ± 20%</td>
<td>.53μH 18.3μH 45°C</td>
</tr>
<tr>
<td>60-BHS-030-3-4</td>
<td>250VAC</td>
<td>5A</td>
<td>0.50mA</td>
<td>.1μF ± 20%</td>
<td>.007μF ± 20%</td>
<td>.53μH 18.3μH 45°C</td>
</tr>
<tr>
<td>60-BHS-030-5-11</td>
<td>250VAC</td>
<td>6A</td>
<td>0.35mA</td>
<td>.1μF ± 20%</td>
<td>.007μF ± 20%</td>
<td>.53μH 18.3μH 45°C</td>
</tr>
<tr>
<td>60-BHS-030-5-4</td>
<td>250VAC</td>
<td>6A</td>
<td>0.50mA</td>
<td>.1μF ± 20%</td>
<td>.007μF ± 20%</td>
<td>.53μH 18.3μH 45°C</td>
</tr>
</tbody>
</table>

Note: Test voltage: 1500VAC one minute, line to ground
Insulation resistance: 300 Mohm min. at 500VDC
Voltage drop: 1V max. at rated current
Weight: 50g
Input: Compatible with IEC-320
Power Entry Modules
High Frequency Attenuation

60-BHS Series

Temperature Characteristics

Common Mode

Normal Mode
### 10-BPF Series

**Features**
- Ideally suited for products that must conform to FCC part 15 regulations
- Metal case offers high performance
- Meets over voltage of IEC 664 category II and complies with IEC 950
- Uses IEC connector that meets most safety standards
- Operating temperature: -25°C to +70°C
- Compact configuration

**Applications**
- Digital equipment
- Personal computers and peripherals
- Measuring instruments
- Monitor and display units

### Specifications

<table>
<thead>
<tr>
<th>Model</th>
<th>Rated Voltage ( @ 50/60Hz)</th>
<th>Rated Current</th>
<th>Leakage Current (Max.)</th>
<th>CY</th>
<th>CX</th>
<th>Inductance (L1)</th>
<th>Circuit Diagram</th>
<th>Figure</th>
<th>Temperature Rise (Max.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>10-BPF-001-5-A</td>
<td>120/250VAC</td>
<td>1A</td>
<td>0.50mA</td>
<td>3300pF</td>
<td>2200pF</td>
<td>3.0mH</td>
<td>1</td>
<td>A</td>
<td>30°C</td>
</tr>
<tr>
<td>10-BPF-001-5-C</td>
<td>120/250VAC</td>
<td>3A</td>
<td></td>
<td>4700pF</td>
<td>0.01uF</td>
<td>1.5mH</td>
<td>2</td>
<td>B</td>
<td></td>
</tr>
<tr>
<td>10-BPF-003-5-A</td>
<td>120/250VAC</td>
<td>6A</td>
<td></td>
<td>3300pF</td>
<td></td>
<td>0.5mH</td>
<td>1</td>
<td>A</td>
<td></td>
</tr>
<tr>
<td>10-BPF-003-5-C</td>
<td>120/250VAC</td>
<td>10A</td>
<td></td>
<td>3300pF</td>
<td>0.01uF</td>
<td>0.5mH</td>
<td>1</td>
<td>A</td>
<td></td>
</tr>
<tr>
<td>10-BPF-006-5-A</td>
<td>120/250VAC</td>
<td>10A</td>
<td></td>
<td>3300pF</td>
<td>0.01uF</td>
<td>1.5mH</td>
<td>2</td>
<td>B</td>
<td></td>
</tr>
</tbody>
</table>

**Notes:**
- Test voltage: 1500VAC one minute, line to ground
- Insulation resistance: 300 Mohm min. at 500VDC
- Voltage drop: 1V max. at rated current
- Weight: 45g
- Input: Compatible with IEC-320

---

**Circuit Diagram**
Power Entry Modules
Bolt-in Rear Terminals
For General Purpose Applications

Figure A

Figure B

Figure C

Dimensions in inches (mm)

Common Mode

Normal Mode

10-BPF-001-003

10-BPF-006-010
Power Entry Modules
Bolt-in Rear Terminals
For Medical Purpose Applications

10-BPF Series

Features
- Ideally suited for products that must conform to FCC part 15 regulations
- Metal case offers high performance
- Meets over voltage of IEC 664 category II and complies with IEC 950
- Uses IEC connector that meets most safety standards
- Operating temperature: -25°C to +70°C
- Compact configuration
- Low leakage current

Applications
- Digital equipment
- Personal computers and peripherals
- Measuring instruments
- Monitor and display units

Specifications

<table>
<thead>
<tr>
<th>Model</th>
<th>Rated Voltage (@ 50/60Hz)</th>
<th>Rated Current</th>
<th>Leakage Current (Max.)</th>
<th>Capacitance $C_X$</th>
<th>Inductance $(L_1)$</th>
<th>Circuit Diagram</th>
<th>Figure</th>
<th>Temperature Rise (Max.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>10-BPF-001-2-A</td>
<td>120/250VAC</td>
<td>1A</td>
<td>5uA</td>
<td>0.01uF</td>
<td>3.0mH</td>
<td>1</td>
<td>A</td>
<td>30°C</td>
</tr>
<tr>
<td>10-BPF-003-2-A</td>
<td></td>
<td>3A</td>
<td></td>
<td></td>
<td>1.5mH</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>10-BPF-006-2-A</td>
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<td>6A</td>
<td></td>
<td></td>
<td>0.5mH</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: Test voltage: 1500VAC one minute, line to ground
Insulation resistance: 300 Mohm min. at 500VDC
Voltage drop: 1V max. at rated current
Weight: 45g
Input: Compatible with IEC-320

Circuit Diagram

Figure A
Power Entry Modules
Bolt-in Rear Terminals
For Medical Purpose Applications

10-BPF Series

Dimensions in inches (mm)

Common Mode

Normal Mode

Insertion Loss (dB)

Frequency (MHz)
Power Entry Modules
Snap-in with Wire Leads

60-SPL Series

Features
- Ideally suited for products that must conform to FCC part 15 regulations
- Metal cased miniature filter offers high performance
- Meets over voltage of IEC 664 category II and complies with IEC 950
- Uses IEC connector that meets most safety standards
- Snap-in style saves labor and hardware inventory
- Wire output minimizes space and provides economical installation
- Operating temperature: -25°C to +85°C (including temperature rise, see graph on page PF27)

Applications
- Digital equipment
- Personal computers and peripherals
- Measuring instruments
- Monitor and display units

Specifications

<table>
<thead>
<tr>
<th>Model</th>
<th>Rated Voltage (@ 50/60Hz)</th>
<th>Rated Current</th>
<th>Leakage Current (Max.)</th>
<th>Capacitance</th>
<th>Inductance (L1)</th>
<th>Temperature Rise (Max.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>60-SPL-010-3-2</td>
<td>250VAC</td>
<td>1A</td>
<td>0.35mA</td>
<td>2200pF ± 20%</td>
<td>6.0mH</td>
<td>30°C</td>
</tr>
<tr>
<td>60-SPL-010-3-3</td>
<td>250VAC</td>
<td>2A</td>
<td>0.35mA</td>
<td>2200pF ± 20%</td>
<td>2.4mH</td>
<td>30°C</td>
</tr>
<tr>
<td>60-SPL-010-5-2</td>
<td>250VAC</td>
<td>3A</td>
<td>0.35mA</td>
<td>2200pF ± 20%</td>
<td>1.2mH</td>
<td>30°C</td>
</tr>
<tr>
<td>60-SPL-010-5-3</td>
<td>250VAC</td>
<td>6A</td>
<td>0.35mA</td>
<td>2200pF ± 20%</td>
<td>0.53mH</td>
<td>45°C</td>
</tr>
</tbody>
</table>

Note: Test voltage: 1500VAC one minute, line to ground
Insulation resistance: 300 Mohm min. at 500VDC
Voltage drop: 1V max. at rated current
Weight: 50g
Input: Compatible with IEC-320
Power Entry Modules
Snap-in with Wire Leads

60-SPL Series

Temperature Characteristics

![Temperature Characteristics Graph]

Common Mode

![Common Mode Diagram]

60-SPL-010-020

![Insertion Loss Graph 60-SPL-010-020]

60-SPL-030-060

![Insertion Loss Graph 60-SPL-030-060]

Normal Mode

![Normal Mode Diagram]

60-SPL-010-020

![Insertion Loss Graph 60-SPL-010-020]

60-SPL-030-060

![Insertion Loss Graph 60-SPL-030-060]
Power Entry Modules
Bolt-in with Wire Leads

60-BPL Series

Features
- Ideally suited for products that must conform to FCC part 15 regulations
- Metal case filter offers high performance
- Meets over voltage of IEC 664 category II and complies with IEC 950
- Uses IEC connector that meets most safety standards
- Wire output for minimizing space use and economical installation
- Operating temperature: -25°C to +85°C (including temperature rise, see graph on page PF28)

Applications
- Digital equipment
- Personal computers and peripherals
- Measuring instruments
- Monitor and display units

Specifications

<table>
<thead>
<tr>
<th>Model</th>
<th>Rated Voltage (@ 50/60Hz)</th>
<th>Rated Current</th>
<th>Leakage Current (Max.)</th>
<th>Capacitance CY</th>
<th>Cy Capacitance CX</th>
<th>Inductance (L1)</th>
<th>Temperature Rise (Max.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>60-BPL-010-3-2</td>
<td>250VAC</td>
<td>1A</td>
<td>0.35mA</td>
<td>2200pF ± 20%</td>
<td>22nF ± 20%</td>
<td>6.0mH</td>
<td>30°C</td>
</tr>
<tr>
<td>60-BPL-010-3-3</td>
<td>250VAC</td>
<td>1A</td>
<td>0.50mA</td>
<td>3300pF ± 20%</td>
<td>22nF ± 20%</td>
<td>6.0mH</td>
<td>30°C</td>
</tr>
<tr>
<td>60-BPL-010-5-2</td>
<td>250VAC</td>
<td>2A</td>
<td>0.35mA</td>
<td>2200pF ± 20%</td>
<td>22nF ± 20%</td>
<td>2.4mH</td>
<td>30°C</td>
</tr>
<tr>
<td>60-BPL-010-5-3</td>
<td>250VAC</td>
<td>2A</td>
<td>0.50mA</td>
<td>3300pF ± 20%</td>
<td>22nF ± 20%</td>
<td>2.4mH</td>
<td>30°C</td>
</tr>
<tr>
<td>60-BPL-020-3-2</td>
<td>250VAC</td>
<td>3A</td>
<td>0.35mA</td>
<td>2200pF ± 20%</td>
<td>22nF ± 20%</td>
<td>1.2mH</td>
<td>30°C</td>
</tr>
<tr>
<td>60-BPL-020-3-3</td>
<td>250VAC</td>
<td>3A</td>
<td>0.50mA</td>
<td>3300pF ± 20%</td>
<td>22nF ± 20%</td>
<td>1.2mH</td>
<td>30°C</td>
</tr>
<tr>
<td>60-BPL-020-5-2</td>
<td>250VAC</td>
<td>6A</td>
<td>0.35mA</td>
<td>2200pF ± 20%</td>
<td>22nF ± 20%</td>
<td>0.53mH</td>
<td>45°C</td>
</tr>
<tr>
<td>60-BPL-020-5-3</td>
<td>250VAC</td>
<td>6A</td>
<td>0.50mA</td>
<td>3300pF ± 20%</td>
<td>22nF ± 20%</td>
<td>0.53mH</td>
<td>45°C</td>
</tr>
<tr>
<td>60-BPL-030-3-2</td>
<td>250VAC</td>
<td>3A</td>
<td>0.35mA</td>
<td>2200pF ± 20%</td>
<td>.022uF ± 20%</td>
<td>1.2mH</td>
<td>30°C</td>
</tr>
<tr>
<td>60-BPL-030-3-3</td>
<td>250VAC</td>
<td>3A</td>
<td>0.50mA</td>
<td>3300pF ± 20%</td>
<td>.033uF ± 20%</td>
<td>1.2mH</td>
<td>30°C</td>
</tr>
<tr>
<td>60-BPL-030-5-2</td>
<td>250VAC</td>
<td>6A</td>
<td>0.35mA</td>
<td>2200pF ± 20%</td>
<td>22nF ± 20%</td>
<td>0.53mH</td>
<td>45°C</td>
</tr>
<tr>
<td>60-BPL-030-5-3</td>
<td>250VAC</td>
<td>6A</td>
<td>0.50mA</td>
<td>3300pF ± 20%</td>
<td>22nF ± 20%</td>
<td>0.53mH</td>
<td>45°C</td>
</tr>
</tbody>
</table>

Note: Test voltage: 1500VAC one minute, line to ground
Insulation resistance: 300 Mohm min. at 500VDC
Voltage drop: 1V max. at rated current
Weight: 50g
Input: Compatible with IEC-320

Circuit Diagram

---

API TECHNOLOGIES • 8061 Avonia Rd. • Fairview, PA 16415 • Ph: 814-474-1571 • Fax: 814-474-3110 • eis.apitech.com
API TECHNOLOGIES' SPECTRUM CONTROL GmbH • Hansastrasse 6 • 91126 Schwabach, Germany • Phone: (49)-9122-795-0 • Fax: (49)-9122-795-58
Power Entry Modules
Bolt-in with Wire Leads

60-BPL Series

Temperature Characteristics

<table>
<thead>
<tr>
<th>Current (%)</th>
<th>Ambient Temperature (°C)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>20</td>
</tr>
<tr>
<td>20</td>
<td>40</td>
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<tr>
<td>40</td>
<td>60</td>
</tr>
<tr>
<td>60</td>
<td>80</td>
</tr>
<tr>
<td>80</td>
<td>90</td>
</tr>
</tbody>
</table>

Common Mode

Normal Mode

60-BPL-010-020

60-BPL-030-060

Insertion Loss (dB)

Frequency (MHz)

0.1 0.2 0.5 1 2 5 10 20 50

0 10 20 30 40 50 60 70 80

Ambient Temperature (°C)

Current (%)

0 20 40 60 80 100 120

Panel cutout dimensions
mounts from back side

Panel cutout dimensions
mounts from front side

Dimensions in inches (mm)

* General tolerance ±0.012 (0.3)

* Custom lengths available upon request.
Power Entry Modules
Bolt-in with Wire Leads

10-BPL Series

Features
- Ideally suited for products that must conform to FCC part 15 regulations
- Metal case filter offers high performance
- Meets over voltage of IEC 664 category II and complies with IEC 950
- Uses IEC connector that meets most safety standards
- Wire output for minimizing space use and economical installation
- Operating temperature: -25°C to +70°C
- Compact configuration

Applications
- Digital equipment
- Personal computers and peripherals
- Measuring instruments
- Monitor and display units

Circuit Diagram

Specifications

<table>
<thead>
<tr>
<th>Model</th>
<th>Rated Voltage (50/60Hz)</th>
<th>Rated Current</th>
<th>Leakage Current (Max.)</th>
<th>C_Y</th>
<th>C_X</th>
<th>Inductance (L_1)</th>
<th>Circuit Diagram</th>
<th>Figure</th>
<th>Temperature Rise (Max.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>10-BPL-001-5-B</td>
<td>250VAC</td>
<td>1A</td>
<td>0.50mA</td>
<td>3300pF</td>
<td>0.01uF</td>
<td>3.0mH</td>
<td>1</td>
<td>A</td>
<td>30°C</td>
</tr>
<tr>
<td>10-BPL-003-5-B</td>
<td></td>
<td>3A</td>
<td></td>
<td></td>
<td></td>
<td>1.5mH</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10-BPL-006-5-B</td>
<td></td>
<td>6A</td>
<td></td>
<td></td>
<td></td>
<td>0.5mH</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: Test voltage: 1500VAC one minute, line to ground
Insulation resistance: 300 Mohm min. at 500VDC
Voltage drop: 1V max. at rated current
Weight: 50g
Input: Compatible with IEC-320
**Power Entry Modules**  
**Bolt-in with Wire Leads**

### 10-BPL Series

**Figure A**

**Common Mode**

![Common Mode Diagram]

**Normal Mode**

![Normal Mode Diagram]

<table>
<thead>
<tr>
<th>Frequency (MHz)</th>
<th>Insertion Loss (dB)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.1</td>
<td>10</td>
</tr>
<tr>
<td>0.5</td>
<td>30</td>
</tr>
<tr>
<td>1.0</td>
<td>50</td>
</tr>
<tr>
<td>2.0</td>
<td>70</td>
</tr>
<tr>
<td>5.0</td>
<td>80</td>
</tr>
</tbody>
</table>

---

**Dimensions in inches (mm)**

- **CUT-OUT**
  - 1.1 (28.5) +.01 -.00
  - .80 (20.5) +.01 -.00

- **M3 (2X)**
  - 1.6 (40) .007

- ** Ø1.4 (3.5) (2X)**
  - 1.9 (50)
  - 1.6 (40)
  - 1.2 (30)

- **Filter**
  - .82 (21)

- **PVC Insulated wire**
  - UL1617 AWG #22
  - UL1015 AWG #18

- **Custom lengths available upon request.**
Power Entry Modules
Snap-in Mount

60-SPR & SPS Series

Features
- Ideally suited for products that must conform to FCC part 15 regulations
- Metal cased miniature filter offers high performance
- Meets over voltage of IEC 664 category II and complies with IEC 950
- Uses IEC connector that meets most safety standards
- Snap-in style saves labor and hardware inventory
- Solder lug and fast-on tab terminations available
- Operating temperature: -25°C to +85°C (including temperature rise, see graph on page PF33)
- UL approved low leakage version also available

Applications
- Digital equipment
- Personal computers and peripherals
- Measuring instruments
- Monitor and display units

Specifications

<table>
<thead>
<tr>
<th>Model*</th>
<th>Rated Voltage (@50/60Hz)</th>
<th>Rated Current</th>
<th>Leakage Current (Max.)</th>
<th>Capacitance</th>
<th>Inductance (L1)</th>
<th>Temperature Rise (Max.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>60-XXX-010-3-2</td>
<td>250VAC</td>
<td>1A</td>
<td>0.35mA</td>
<td>2200pF ± 20%</td>
<td>0.022μF ± 20%</td>
<td>6.0mH</td>
</tr>
<tr>
<td>60-XXX-010-3-4</td>
<td>250VAC</td>
<td>1A</td>
<td>0.50mA</td>
<td>3300pF ± 20%</td>
<td>0.047μF ± 20%</td>
<td></td>
</tr>
<tr>
<td>60-XXX-010-5-2</td>
<td>250VAC</td>
<td>2A</td>
<td>0.35mA</td>
<td>2200pF ± 20%</td>
<td>0.022μF ± 20%</td>
<td>2.4mH</td>
</tr>
<tr>
<td>60-XXX-010-5-4</td>
<td>250VAC</td>
<td>2A</td>
<td>0.50mA</td>
<td>3300pF ± 20%</td>
<td>0.047μF ± 20%</td>
<td></td>
</tr>
<tr>
<td>60-XXX-020-3-2</td>
<td>250VAC</td>
<td>3A</td>
<td>0.35mA</td>
<td>2200pF ± 20%</td>
<td>0.022μF ± 20%</td>
<td>1.2mH</td>
</tr>
<tr>
<td>60-XXX-020-3-4</td>
<td>250VAC</td>
<td>3A</td>
<td>0.50mA</td>
<td>3300pF ± 20%</td>
<td>0.047μF ± 20%</td>
<td></td>
</tr>
<tr>
<td>60-XXX-020-5-2</td>
<td>250VAC</td>
<td>6A</td>
<td>0.35mA</td>
<td>2200pF ± 20%</td>
<td>0.022μF ± 20%</td>
<td>0.53mH</td>
</tr>
<tr>
<td>60-XXX-020-5-4</td>
<td>250VAC</td>
<td>6A</td>
<td>0.50mA</td>
<td>3300pF ± 20%</td>
<td>0.047μF ± 20%</td>
<td></td>
</tr>
<tr>
<td>60-XXX-030-3-2</td>
<td>250VAC</td>
<td>10A</td>
<td>0.35mA</td>
<td>2200pF ± 20%</td>
<td>0.022μF ± 20%</td>
<td>0.26mH</td>
</tr>
<tr>
<td>60-XXX-030-3-4</td>
<td>250VAC</td>
<td>10A</td>
<td>0.50mA</td>
<td>3300pF ± 20%</td>
<td>0.047μF ± 20%</td>
<td></td>
</tr>
<tr>
<td>60-XXX-060-3-2</td>
<td>250VAC</td>
<td>15A</td>
<td>0.35mA</td>
<td>2200pF ± 20%</td>
<td>0.1μF ± 20%</td>
<td>0.15mH</td>
</tr>
</tbody>
</table>

Note: Test voltage: 1500VAC one minute, line to ground
Insulation resistance: 300 Mohm min. at 500VDC
Voltage drop: 1V max. at rated current
Weight: 45g
Input: Compatible with IEC-320

* Substitute SPR or SPS for XXX
60-SPR - Fast-on terminals
60-SPS - Solder lug terminals

Circuit Diagram

Tested and found to be IAW VDE 0565 Part 3.
Power Entry Modules
Snap-in Mount

60-SPR & SPS Series

Temperature Characteristics

<table>
<thead>
<tr>
<th>Ambient Temperature (°C)</th>
<th>0</th>
<th>20</th>
<th>40</th>
<th>60</th>
<th>80</th>
<th>100</th>
<th>120</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current (%)</td>
<td>0</td>
<td>20</td>
<td>40</td>
<td>60</td>
<td>80</td>
<td>100</td>
<td>120</td>
</tr>
</tbody>
</table>

Common Mode

- Oscillator
- 50Ω Level Meter
- Filter

Normal Mode

- Oscillator
- 50Ω Level Meter
- Filter

Insertion Loss (dB)

Frequency (MHz)

Ambient Temperature (°C)

- Insertion Loss (dB)
- Frequency (MHz)
- Ambient Temperature (°C)

Dimensions in inches (mm)

- Panel cutout dimensions
- Panel Thickness
- T: Panel Thickness
- W
- Dimensions in inches (mm)

- Solder lug shown. Also available in fast-ons.
- Standard terminal
- General tolerance

- Insertion Loss (dB)
- Frequency (MHz)
- Ambient Temperature (°C)
- Current (%)

- Insertion Loss (dB)
- Frequency (MHz)
- Ambient Temperature (°C)
- Current (%)

- Insertion Loss (dB)
- Frequency (MHz)
- Ambient Temperature (°C)
- Current (%)
Fused Filtered
Power Entry Modules
For General Purpose Applications

Features
- North American and Metric fuse holders available
- Fuse holder provides effective EMI suppression of common and differential mode
- Suitable for products that must conform to FCC and FTZ requirements
- Meets over voltage category II of IEC 664 and complies with IEC 950
- Fast-on terminals or solder lug terminals
- Metal case provides effective EMI shielding
- Operating temperature: -25°C to +85°C (including temperature rise, see graph on page PF35)

Applications
- Computers and peripheral equipment
- Electronic equipment
- Digital equipment
- Measuring and testing instruments
- Telecommunications equipment

Specifications

<table>
<thead>
<tr>
<th>Model*</th>
<th>Rated Voltage (@ 50/60Hz)</th>
<th>Rated Current</th>
<th>Leakage Current (Max.)</th>
<th>Capacitance</th>
<th>Inductance (L1)</th>
<th>Temperature Rise (Max.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>64-XXX-020-3-11</td>
<td>250VAC</td>
<td>2A</td>
<td>0.35mA</td>
<td>2200pF ± 20%</td>
<td>0.1uF</td>
<td>6.5mH</td>
</tr>
<tr>
<td>64-XXX-020-5-11</td>
<td>250VAC</td>
<td>4A</td>
<td>0.50mA</td>
<td>3300pF ± 20%</td>
<td>0.22uF</td>
<td>4.2mH</td>
</tr>
<tr>
<td>64-XXX-020-3-12</td>
<td>250VAC</td>
<td>2A</td>
<td>0.35mA</td>
<td>2200pF ± 20%</td>
<td>0.1uF</td>
<td>1.6mH</td>
</tr>
<tr>
<td>64-XXX-020-5-12</td>
<td>250VAC</td>
<td>4A</td>
<td>0.50mA</td>
<td>3300pF ± 20%</td>
<td>0.22uF</td>
<td></td>
</tr>
<tr>
<td>64-XXX-040-3-11</td>
<td>250VAC</td>
<td>6A</td>
<td>0.35mA</td>
<td>2200pF ± 20%</td>
<td>0.1uF</td>
<td>6.5mH</td>
</tr>
<tr>
<td>64-XXX-040-5-11</td>
<td>250VAC</td>
<td>8A</td>
<td>0.50mA</td>
<td>3300pF ± 20%</td>
<td>0.22uF</td>
<td></td>
</tr>
<tr>
<td>64-XXX-040-3-12</td>
<td>250VAC</td>
<td>6A</td>
<td>0.35mA</td>
<td>2200pF ± 20%</td>
<td>0.1uF</td>
<td>4.2mH</td>
</tr>
<tr>
<td>64-XXX-040-5-12</td>
<td>250VAC</td>
<td>8A</td>
<td>0.50mA</td>
<td>3300pF ± 20%</td>
<td>0.22uF</td>
<td></td>
</tr>
<tr>
<td>64-XXX-060-3-11</td>
<td>250VAC</td>
<td>10A</td>
<td>0.35mA</td>
<td>2200pF ± 20%</td>
<td>0.1uF</td>
<td>1.6mH</td>
</tr>
<tr>
<td>64-XXX-060-5-11</td>
<td>250VAC</td>
<td>15A</td>
<td>0.50mA</td>
<td>3300pF ± 20%</td>
<td>0.22uF</td>
<td></td>
</tr>
<tr>
<td>65-XXX-020-3-11</td>
<td>125VAC</td>
<td>2A</td>
<td>0.20mA</td>
<td>2200pF ± 20%</td>
<td>0.1uF</td>
<td>6.5mH</td>
</tr>
<tr>
<td>65-XXX-020-5-11</td>
<td>125VAC</td>
<td>4A</td>
<td>0.25mA</td>
<td>3300pF ± 20%</td>
<td>0.22uF</td>
<td></td>
</tr>
<tr>
<td>65-XXX-020-3-12</td>
<td>125VAC</td>
<td>6A</td>
<td>0.20mA</td>
<td>2200pF ± 20%</td>
<td>0.1uF</td>
<td>4.2mH</td>
</tr>
<tr>
<td>65-XXX-020-5-12</td>
<td>125VAC</td>
<td>8A</td>
<td>0.25mA</td>
<td>3300pF ± 20%</td>
<td>0.22uF</td>
<td></td>
</tr>
<tr>
<td>65-XXX-040-3-11</td>
<td>125VAC</td>
<td>10A</td>
<td>0.20mA</td>
<td>2200pF ± 20%</td>
<td>0.1uF</td>
<td>1.6mH</td>
</tr>
<tr>
<td>65-XXX-040-5-11</td>
<td>125VAC</td>
<td>15A</td>
<td>0.25mA</td>
<td>3300pF ± 20%</td>
<td>0.22uF</td>
<td></td>
</tr>
<tr>
<td>65-XXX-040-3-12</td>
<td>125VAC</td>
<td>20A</td>
<td>0.20mA</td>
<td>2200pF ± 20%</td>
<td>0.1uF</td>
<td>1.6mH</td>
</tr>
<tr>
<td>65-XXX-040-5-12</td>
<td>125VAC</td>
<td>25A</td>
<td>0.25mA</td>
<td>3300pF ± 20%</td>
<td>0.22uF</td>
<td></td>
</tr>
</tbody>
</table>

Note: Test Voltage 1500VAC one minute, line to ground
Insulation Resistance: 300 M ohm at 500VDC
F(S) = Fast-on or (Solder lug terminals)
Voltage Drop: 1V max. at rated current
Weight: 78g
Inlet: Compatible with IEC-320

* Substitute BFF or BFS for XXX
BFF - Fast-on terminals
BFS - Solder lug terminals
Fused Filtered Power Entry Modules
For General Purpose Applications

64-65-BFF/64-65-BFS Series

**Temperature Characteristics**

![Temperature Characteristics Graph]

**Common Mode**

![Common Mode Diagram]

**0.50 mA Leakage Versions**

![Insertion Loss Graph]

**Normal Mode**

![Normal Mode Diagram]

**0.50 mA Leakage Versions**

![Insertion Loss Graph]

**0.35 mA Leakage Versions**

![Insertion Loss Graph]

**Dimensions 64/65-BFF Series**

![Dimensions Diagram]

**Fused Filtered Power Entry Modules**

Dimensions in inches (mm)

**Insertion Loss (dB)**

![Insertion Loss Graph]

**Frequency (MHz)**

![Frequency Graph]

**Current (%)**

![Current Graph]

**Ambient Temperature (°C)**

![Ambient Temperature Graph]

**Current (%)**

![Current Graph]

**Dimensions**

![Dimensions Diagram]

**Insertion Loss (dB)**

![Insertion Loss Graph]

**Frequency (MHz)**

![Frequency Graph]

**Current (%)**

![Current Graph]
Fused Filtered
Power Entry Modules
For Medical or General Purpose Applications

66-67-BFF/66-67-BFS Series

Features
- Metric and North American fuse holders available
- Fuse holder provides effective EMI suppression of common and differential mode
- Suitable for products that must conform to FCC and FTZ requirements
- Meets over voltage category II of IEC 664 and complies with IEC 950
- Fast-on terminations or solder lug terminations
- Metal case provides effective EMI shielding
- Provides susceptibility protection without the leakage current associated with line-to-ground capacitance
- Reduces the line to ground capacitance in order to meet patient care requirements
- Operating temperature: -25°C to +85°C (including temperature rise, see graph on page PF37)

Applications
- Medical equipment
- Electronic equipment
- Digital equipment
- Industrial equipment
- Telecommunications equipment
- Measuring and testing instruments
- Personal computers and peripherals

Circuit Diagrams

Specifications

<table>
<thead>
<tr>
<th>Model*</th>
<th>Rated Voltage (@ 50/60Hz)</th>
<th>Rated Current</th>
<th>Leakage Current (Max.)</th>
<th>Capacitance</th>
<th>Inductance (L1)</th>
<th>Temperature Rise (Max.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>66-XXX-020-1-11</td>
<td>250VAC</td>
<td>2A</td>
<td>0.01mA</td>
<td>none</td>
<td>0.01uF</td>
<td>6.5mH</td>
</tr>
<tr>
<td>66-XXX-020-1-12</td>
<td>250VAC</td>
<td>2A</td>
<td>0.075mA</td>
<td>330pF ± 20%</td>
<td>0.1uF</td>
<td>6.5mH</td>
</tr>
<tr>
<td>66-XXX-020-4-11</td>
<td>250VAC</td>
<td>4A</td>
<td>0.01mA</td>
<td>none</td>
<td>0.01uF</td>
<td>6.5mH</td>
</tr>
<tr>
<td>66-XXX-020-4-12</td>
<td>250VAC</td>
<td>4A</td>
<td>0.075mA</td>
<td>330pF ± 20%</td>
<td>0.1uF</td>
<td>6.5mH</td>
</tr>
<tr>
<td>66-XXX-040-1-11</td>
<td>250VAC</td>
<td>6A</td>
<td>0.01mA</td>
<td>none</td>
<td>0.01uF</td>
<td>6.5mH</td>
</tr>
<tr>
<td>66-XXX-040-1-12</td>
<td>250VAC</td>
<td>6A</td>
<td>0.075mA</td>
<td>330pF ± 20%</td>
<td>0.1uF</td>
<td>6.5mH</td>
</tr>
<tr>
<td>66-XXX-040-4-11</td>
<td>250VAC</td>
<td>4A</td>
<td>0.01mA</td>
<td>none</td>
<td>0.01uF</td>
<td>6.5mH</td>
</tr>
<tr>
<td>66-XXX-040-4-12</td>
<td>250VAC</td>
<td>4A</td>
<td>0.075mA</td>
<td>330pF ± 20%</td>
<td>0.1uF</td>
<td>6.5mH</td>
</tr>
<tr>
<td>66-XXX-060-1-11</td>
<td>250VAC</td>
<td>6A</td>
<td>0.01mA</td>
<td>none</td>
<td>0.01uF</td>
<td>6.5mH</td>
</tr>
<tr>
<td>66-XXX-060-1-12</td>
<td>250VAC</td>
<td>6A</td>
<td>0.075mA</td>
<td>330pF ± 20%</td>
<td>0.1uF</td>
<td>6.5mH</td>
</tr>
<tr>
<td>66-XXX-060-4-11</td>
<td>250VAC</td>
<td>4A</td>
<td>0.01mA</td>
<td>none</td>
<td>0.01uF</td>
<td>6.5mH</td>
</tr>
<tr>
<td>66-XXX-060-4-12</td>
<td>250VAC</td>
<td>4A</td>
<td>0.075mA</td>
<td>330pF ± 20%</td>
<td>0.1uF</td>
<td>6.5mH</td>
</tr>
<tr>
<td>66-XXX-080-1-11</td>
<td>250VAC</td>
<td>6A</td>
<td>0.01mA</td>
<td>none</td>
<td>0.01uF</td>
<td>6.5mH</td>
</tr>
<tr>
<td>66-XXX-080-1-12</td>
<td>250VAC</td>
<td>6A</td>
<td>0.075mA</td>
<td>330pF ± 20%</td>
<td>0.1uF</td>
<td>6.5mH</td>
</tr>
<tr>
<td>66-XXX-080-4-11</td>
<td>250VAC</td>
<td>4A</td>
<td>0.01mA</td>
<td>none</td>
<td>0.01uF</td>
<td>6.5mH</td>
</tr>
<tr>
<td>66-XXX-080-4-12</td>
<td>250VAC</td>
<td>4A</td>
<td>0.075mA</td>
<td>330pF ± 20%</td>
<td>0.1uF</td>
<td>6.5mH</td>
</tr>
<tr>
<td>66-XXX-100-1-11</td>
<td>250VAC</td>
<td>6A</td>
<td>0.01mA</td>
<td>none</td>
<td>0.01uF</td>
<td>6.5mH</td>
</tr>
<tr>
<td>66-XXX-100-1-12</td>
<td>250VAC</td>
<td>6A</td>
<td>0.075mA</td>
<td>330pF ± 20%</td>
<td>0.1uF</td>
<td>6.5mH</td>
</tr>
<tr>
<td>66-XXX-100-4-11</td>
<td>250VAC</td>
<td>4A</td>
<td>0.01mA</td>
<td>none</td>
<td>0.01uF</td>
<td>6.5mH</td>
</tr>
<tr>
<td>66-XXX-100-4-12</td>
<td>250VAC</td>
<td>4A</td>
<td>0.075mA</td>
<td>330pF ± 20%</td>
<td>0.1uF</td>
<td>6.5mH</td>
</tr>
<tr>
<td>66-XXX-120-1-11</td>
<td>250VAC</td>
<td>6A</td>
<td>0.01mA</td>
<td>none</td>
<td>0.01uF</td>
<td>6.5mH</td>
</tr>
<tr>
<td>66-XXX-120-1-12</td>
<td>250VAC</td>
<td>6A</td>
<td>0.075mA</td>
<td>330pF ± 20%</td>
<td>0.1uF</td>
<td>6.5mH</td>
</tr>
<tr>
<td>66-XXX-120-4-11</td>
<td>250VAC</td>
<td>4A</td>
<td>0.01mA</td>
<td>none</td>
<td>0.01uF</td>
<td>6.5mH</td>
</tr>
<tr>
<td>66-XXX-120-4-12</td>
<td>250VAC</td>
<td>4A</td>
<td>0.075mA</td>
<td>330pF ± 20%</td>
<td>0.1uF</td>
<td>6.5mH</td>
</tr>
</tbody>
</table>

Note: Test Voltage: 1500VAC one minute, line to ground insulation resistance: 300 MΩ min. at 500VDC
F(S) = Fast-on (Solder lug terminals) | Voltage Drop: 1V max. at rated current | Weight: 78g
Ph: 814-474-1571  •  Fax: 814-474-3110  •  eis.apitech.com
API TECHNOLOGIES • 8061 Avonia Rd.  •  Fairview, PA 16415  •  Hansasstrasse 6  •  91126 Schwabach, Germany  •  Phone: (49)-9122-795-0  •  Fax: (49)-9122-795-58

* Substitute BFF or BFS for XXX
BFF - Fast-on terminals
BFS - Solder lug terminals

PF36
66-67-BFF/66-67-BFS Series

**Fused Filtered Power Entry Modules**
For Medical or General Purpose Applications

---

### Temperature Characteristics

![Temperature Characteristics Graph](image)

### Dimensions

**66-67-BFF/66-67-BFS Series**

![Dimensions Diagram](image)

### Common Mode

**0.01 mA Leakage Current**

![Common Mode Graph](image)

**0.075 and 0.1 mA Leakage Current**

![Common Mode Graph](image)

### Normal Mode

**0.01 mA Leakage Current**

![Normal Mode Graph](image)

**0.075 and 0.1 mA Leakage Current**

![Normal Mode Graph](image)
Switched and Fused Filtered Power Entry Modules
For General Purpose Applications

### 64-65-BSF/64-65-SSF Series

#### Features
- North American and Metric fuse holders available
- Fuse holder and double pole power ON/OFF switch provided in a convenient/compact package
- Suitable for products that must conform to FCC and FTZ requirements
- Meets over voltage category II of IEC 664 and complies with IEC 950
- Metal case provides effective EMI shielding
- Easy access fuse drawer with space for spare fuse
- Flange-mounted or snap-in styles available for quick mounting
- Operating temperature: -25°C to +85°C (including temperature rise, see graph on page PF39)

#### Applications
- Computers and peripheral equipment
- Digital equipment
- Electronic equipment
- Measuring and testing instruments
- Telecommunications equipment

#### Circuit Diagram

![Circuit Diagram](image)

#### Specifications

<table>
<thead>
<tr>
<th>Model*</th>
<th>Rated Voltage (@ 50/60Hz)</th>
<th>Rated Current</th>
<th>Leakage Current (Max.)</th>
<th>Capacitance ($C_Y$, $C_X$, $C_{X1}$)</th>
<th>Inductance ($L_1$)</th>
<th>Temperature Rise (Max.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>64-XXX-005-3-12</td>
<td>250VAC</td>
<td>2A</td>
<td>0.35mA</td>
<td>2200pF</td>
<td>0.22uF</td>
<td>NONE</td>
</tr>
<tr>
<td>64-XXX-005-3-04</td>
<td>250VAC</td>
<td>2A</td>
<td>0.50mA</td>
<td>3300pF</td>
<td>0.22uF</td>
<td>NONE</td>
</tr>
<tr>
<td>64-XXX-005-3-14</td>
<td>250VAC</td>
<td>4A</td>
<td>0.35mA</td>
<td>2200pF</td>
<td>0.22uF</td>
<td>NONE</td>
</tr>
<tr>
<td>64-XXX-005-3-04</td>
<td>250VAC</td>
<td>4A</td>
<td>0.50mA</td>
<td>3300pF</td>
<td>0.22uF</td>
<td>NONE</td>
</tr>
<tr>
<td>64-XXX-005-3-14</td>
<td>250VAC</td>
<td>4A</td>
<td>0.50mA</td>
<td>3300pF</td>
<td>0.47uF</td>
<td>NONE</td>
</tr>
<tr>
<td>64-XXX-005-3-04</td>
<td>250VAC</td>
<td>6A</td>
<td>0.35mA</td>
<td>2200pF</td>
<td>0.22uF</td>
<td>NONE</td>
</tr>
<tr>
<td>64-XXX-005-3-04</td>
<td>250VAC</td>
<td>6A</td>
<td>0.50mA</td>
<td>3300pF</td>
<td>0.22uF</td>
<td>NONE</td>
</tr>
<tr>
<td>64-XXX-005-3-12</td>
<td>125VAC</td>
<td>2A</td>
<td>0.20mA</td>
<td>2200pF</td>
<td>0.22uF</td>
<td>NONE</td>
</tr>
<tr>
<td>64-XXX-005-3-04</td>
<td>125VAC</td>
<td>2A</td>
<td>0.25mA</td>
<td>3300pF</td>
<td>0.22uF</td>
<td>NONE</td>
</tr>
<tr>
<td>64-XXX-005-3-04</td>
<td>125VAC</td>
<td>4A</td>
<td>0.20mA</td>
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<td>64-XXX-005-3-04</td>
<td>125VAC</td>
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<td>0.20mA</td>
<td>2200pF</td>
<td>0.22uF</td>
<td>NONE</td>
</tr>
</tbody>
</table>

**Note:** Test Voltage 1500VAC one minute, line to ground

**Specifications**
- Insulation Resistance: 300 MΩ min. at 500VDC
- Weight: 130g
- B(8) = Bolt-in terminals or (Snap-in terminals)
- Inlet: Compatible with IEC-320

**Tested and found to be IAW VDE 0565 Part 3.**
Switched and Fused Filtered Power Entry Modules
For General Purpose Applications

Dimensions

64/65-BSF Series

Dimensions in inches (mm)

64/65-SSF Series

Common Mode

0.35 mA Leakage Versions

0.50 mA Leakage Versions

Normalized Mode

64/65-B(S)SF-*-*-02(04,06)

64/65-B(S)SF-*-*-11(12,14)

Temperature Characteristics

Temperature Characteristics

Ambient Temperature (°C)

Ambient Temperature (°C)

Insertion Loss (dB)

Insertion Loss (dB)

Frequency (MHz)

Frequency (MHz)

Frequency (MHz)

Frequency (MHz)

PG39
Switched and Fused Filtered Power Entry Modules
For Medical or General Purpose Applications

66-67-BSF/66-67-SSF Series

Features
- Metric and North American fuse holders available
- Fuse holder and a double pole power ON/OFF switch provides a convenient/compact package
- Suitable for products that must conform to FCC and FTZ requirements
- Meets over voltage category II of IEC 664 and complies with IEC 950
- Provides susceptibility protection without the leakage current associated with line-to-ground capacitors
- Designed to meet requirements for non-patient and patient care equipment
- Metal case provides effective EMI shielding
- Easy access fuse drawer - space for spare fuse
- Provides susceptibility protection without the leakage current associated with line-to-ground capacitors
- Suitable for products that must conform to FCC and FTZ requirements
- Provides a convenient/compact package

Specifications

<table>
<thead>
<tr>
<th>Model*</th>
<th>Rated Voltage 50/60Hz</th>
<th>Rated Current</th>
<th>Leakage Current (Max.)</th>
<th>Capacitance C_y</th>
<th>Capacitance C_x1</th>
<th>Capacitance C_x2</th>
<th>Temp. Induct. (L)</th>
<th>Rise (Max.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>66-XXX-020-0-12</td>
<td>67-XXX-020-0-12</td>
<td>2A</td>
<td>.075mF 330pF</td>
<td>.22uF</td>
<td>.022uF</td>
<td>NONE</td>
<td>10.5mH</td>
<td>40°C</td>
</tr>
<tr>
<td>66-XXX-020-0-04</td>
<td>67-XXX-020-0-04</td>
<td>4A</td>
<td>.01mF NONE</td>
<td>.22uF</td>
<td>.022uF</td>
<td>NONE</td>
<td>4.2mH</td>
<td>45°C</td>
</tr>
<tr>
<td>66-XXX-020-0-06</td>
<td>67-XXX-020-0-06</td>
<td>6A</td>
<td>.01mF NONE</td>
<td>.22uF</td>
<td>.022uF</td>
<td>NONE</td>
<td>1.6mH</td>
<td></td>
</tr>
</tbody>
</table>

Note: Test Voltage: 1500VAC one minute, line to ground
Insulation Resistance: 300 MΩ min. at 500VDC
Voltage Drop: 1V max. at rated current

Applications
- Medical equipment
- Industrial equipment
- Telecommunications equipment
- Measuring and testing instruments
- Digital equipment (including switching power supplies)
- General purpose filter for susceptibility or high frequency "clean up" applications

Circuit Diagram

Note: C_y and C_x capacitors omitted on 66/67 B(S)F-XXX-1-X Filters
Switched and Fused Filtered Power Entry Modules
For Medical or General Purpose Applications

Dimensions

66/67-BSF Series

66/67-SSF Series

Common Mode

Normal Mode

Temperature Characteristics

0.01 mA Leakage Current

0.075 and 0.1 mA Leakage Current

Dimensions in inches (mm)

Insertion Loss (dBA)

Frequency (MHz)

Insertion Loss (dBA)

Frequency (MHz)

Insertion Loss (dBA)

Frequency (MHz)
Switched and Fused Filtered Power Entry Modules
Dual Fuse for European Applications

68-BSF Series

Features
- Dual fuse for European applications
- Fuse holder and double pole power ON/OFF switch provides a convenient/compact package
- Suitable for products that must conform to FCC and FTZ requirements
- Meets over voltage category II of IEC 664 and complies with IEC 950
- Metal case provides effective EMI shielding
- IEC connector meets the safety standards of most certifying agencies
- Easy access fuse drawer
- Flange-mounted
- UL, CSA, and SEMKO approved
- Designed to be in accordance with VDE 0565, part 3
- Operating temperature: -25°C to +85°C (including temperature rise, see graph on page PF43)

Applications
- Computers and peripheral equipment
- Electronic equipment
- Digital equipment
- Measuring and testing instruments
- Telecommunications equipment

Specifications

<table>
<thead>
<tr>
<th>Model</th>
<th>Rated Voltage (@ 50/60Hz)</th>
<th>Rated Current</th>
<th>Leakage Current (Max.)</th>
<th>( C_{V1} )</th>
<th>( C_{V2} )</th>
<th>( C_{X1} )</th>
<th>( C_{X2} )</th>
<th>Inductance ( (L_1) )</th>
<th>Temperature Rise (Max.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>68-BSF-020-3-01</td>
<td>250VAC</td>
<td>2A</td>
<td>0.35mA</td>
<td>2200pF</td>
<td>2200pF</td>
<td>0.1uF</td>
<td>0.1uF</td>
<td>10.5mH</td>
<td>45°C</td>
</tr>
<tr>
<td>68-BSF-020-3-04</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.22uF</td>
<td>0.22uF</td>
<td></td>
<td></td>
</tr>
<tr>
<td>68-BSF-040-3-01</td>
<td></td>
<td>4A</td>
<td></td>
<td></td>
<td></td>
<td>0.1uF</td>
<td>0.1uF</td>
<td>4.2mH</td>
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<tr>
<td>68-BSF-040-3-04</td>
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<td></td>
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<td>0.22uF</td>
<td>0.22uF</td>
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<tr>
<td>68-BSF-060-3-01</td>
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<td>6A</td>
<td></td>
<td></td>
<td></td>
<td>0.1uF</td>
<td>0.1uF</td>
<td>1.6mH</td>
<td></td>
</tr>
<tr>
<td>68-BSF-060-3-04</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.22uF</td>
<td>0.22uF</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: Test Voltage 1500VAC one minute, line to ground
Insulation Resistance: 300 MΩ min. at 500VDC
Voltage Drop: 1V max. at rated current
Weight: 130g
Inlet: Compatible with IEC-320
B(S) = Bolt-in terminals
Switched and Fused Filtered Power Entry Modules
Dual Fuse for European Applications

68-BSF Series

Temperature Characteristics

Common Mode

Normal Mode
PCB Power Filters
Miniature Printed Circuit Board

61-MPC Series

Features
- Miniature general purpose PCB mounted filter
- Requires minimal PCB real estate space
- Low cost
- Designed for two wire cord systems
- For three wire cord systems, Y capacitors can be attached externally
- Operating temperature: -25°C to +85°C (including temperature rise, see graph on page PF45)

Applications
- Personal computers and peripherals
- Digital equipment
- Measuring instruments and medical equipment
- TV & VCR monitors and display units
- Home appliances

Circuit Diagram

Specifications

<table>
<thead>
<tr>
<th>Model</th>
<th>Rated Voltage (@50/60Hz)</th>
<th>Rated Current</th>
<th>Leakage Current (Max.)</th>
<th>Capacitance</th>
<th>Inductance (L1)</th>
<th>Temperature Rise (Max.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>61-MPC-010-1-11</td>
<td>250VAC</td>
<td>1A</td>
<td>0.1mA</td>
<td>Cx1</td>
<td>0.1μF</td>
<td>11mH</td>
</tr>
<tr>
<td>61-MPC-016-1-11</td>
<td>250VAC</td>
<td>1.6A</td>
<td>0.1mA</td>
<td>Cx1</td>
<td>0.1μF</td>
<td>6.0mH</td>
</tr>
<tr>
<td>61-MPC-025-1-11</td>
<td>250VAC</td>
<td>2.5A</td>
<td>0.1mA</td>
<td>Cx1</td>
<td>0.1μF</td>
<td>2.4mH</td>
</tr>
<tr>
<td>61-MPC-036-1-11</td>
<td>250VAC</td>
<td>3.6A</td>
<td>0.1mA</td>
<td>Cx1</td>
<td>0.1μF</td>
<td>1.2mH</td>
</tr>
</tbody>
</table>

Note: Test voltage: 1500VAC one minute, line to ground
Insulation resistance: 300 Mohm min. at 500VDC
Voltage drop: 1V max. at rated current
Weight: 17.5g
61-MPC Series

**Common Mode**

- Common mode with Y cap.
  (Test circuit 1)

- Oscillator
  50Ω

- Filter
  2

- 50Ω Level Meter

- Y Cap
  2 x 3300pF

61-MPC

**Temperature Characteristics**

- Current (%)

- Ambient Temperature (°C)

61-MPC

**Normal Mode**

- Oscillator
  50Ω

- Filter
  2

- 50Ω Level Meter

61-MPC

**Dimensions in inches (mm)**
Power Entry Modules
Bolt-in Right Angle Terminals
for PCB Applications

60-BPP Series

Features
- Ideally suited for products that must conform to FCC part 15 regulations
- Metal case offers high performance
- Meets over voltage of IEC 664 category II and complies with IEC 950
- Uses IEC connector that meets most safety standards
- Solder lug, Fast-on tab styles available (see page PF18)
- PCB mounting style minimizes space and provides economical installation
- Operating temperature: -25°C to +85°C (including temperature rise, see graph on page PF47)
- UL approved low leakage version also available

Applications
- Digital equipment
- Personal computers and peripherals
- Measuring instruments
- Monitor and display units

Specifications

<table>
<thead>
<tr>
<th>Model</th>
<th>Rated Voltage (50/60Hz)</th>
<th>Rated Current</th>
<th>Leakage Current (Max.)</th>
<th>Capacitance CY</th>
<th>Capacitance CX</th>
<th>Inductance (L1)</th>
<th>Temperature Rise (Max.)</th>
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</thead>
<tbody>
<tr>
<td>60-BPP-010-3-2</td>
<td>250VAC</td>
<td>1A</td>
<td>0.35mA</td>
<td>2200pF</td>
<td>0.022uF</td>
<td>6.0mH</td>
<td>30°C</td>
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<tr>
<td>60-BPP-010-3-4</td>
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<td>0.50mA</td>
<td>3300pF</td>
<td>0.022uF</td>
<td>0.047uF</td>
<td></td>
<td></td>
</tr>
<tr>
<td>60-BPP-010-5-2</td>
<td></td>
<td>0.50mA</td>
<td>3300pF</td>
<td>0.022uF</td>
<td>0.047uF</td>
<td></td>
<td></td>
</tr>
<tr>
<td>60-BPP-010-5-4</td>
<td></td>
<td>0.50mA</td>
<td>3300pF</td>
<td>0.022uF</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>60-BPP-020-3-2</td>
<td></td>
<td>2A</td>
<td>0.35mA</td>
<td>2200pF</td>
<td>0.022uF</td>
<td>2.4mH</td>
<td>30°C</td>
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<tr>
<td>60-BPP-020-3-4</td>
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<td>0.50mA</td>
<td>3300pF</td>
<td>0.022uF</td>
<td>0.047uF</td>
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<td></td>
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<tr>
<td>60-BPP-020-5-2</td>
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<td>0.50mA</td>
<td>3300pF</td>
<td>0.022uF</td>
<td>0.047uF</td>
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</tr>
<tr>
<td>60-BPP-020-5-4</td>
<td></td>
<td>0.50mA</td>
<td>3300pF</td>
<td>0.022uF</td>
<td>0.047uF</td>
<td></td>
<td></td>
</tr>
<tr>
<td>60-BPP-030-3-2</td>
<td></td>
<td>3A</td>
<td>0.35mA</td>
<td>2200pF</td>
<td>0.022uF</td>
<td>1.2mH</td>
<td>30°C</td>
</tr>
<tr>
<td>60-BPP-030-3-4</td>
<td></td>
<td>0.50mA</td>
<td>3300pF</td>
<td>0.022uF</td>
<td>0.047uF</td>
<td></td>
<td></td>
</tr>
<tr>
<td>60-BPP-030-5-2</td>
<td></td>
<td>0.50mA</td>
<td>3300pF</td>
<td>0.022uF</td>
<td>0.047uF</td>
<td></td>
<td></td>
</tr>
<tr>
<td>60-BPP-030-5-4</td>
<td></td>
<td>0.50mA</td>
<td>3300pF</td>
<td>0.022uF</td>
<td>0.047uF</td>
<td></td>
<td></td>
</tr>
<tr>
<td>60-BPP-060-3-2</td>
<td></td>
<td>6A</td>
<td>0.35mA</td>
<td>2200pF</td>
<td>0.022uF</td>
<td>0.53mH</td>
<td>45°C</td>
</tr>
<tr>
<td>60-BPP-060-3-4</td>
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<td>0.50mA</td>
<td>3300pF</td>
<td>0.022uF</td>
<td>0.047uF</td>
<td></td>
<td></td>
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<tr>
<td>60-BPP-060-5-2</td>
<td></td>
<td>0.50mA</td>
<td>3300pF</td>
<td>0.022uF</td>
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<td></td>
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</tr>
<tr>
<td>60-BPP-060-5-4</td>
<td></td>
<td>0.50mA</td>
<td>3300pF</td>
<td>0.022uF</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: Test voltage: 1500VAC one minute, line to ground
Insulation resistance: 300 Mohm min. at 500VDC
Voltage drop: 1V max. at rated current
Weight: 50g
Input: Compatible with IEC-320
Power Entry Modules
Bolt-in Right Angle Terminals
for PCB Applications

60-BPP Series

Temperature Characteristics

Common Mode

Normal Mode
Power Entry Modules
High Frequency Attenuation
Bolt-in for PCB Applications

60-BHP Series

Features
- Ideally suited for products that must conform to FCC part 15 regulations
- Metal cased filter offers high performance
- Meets over voltage of IEC 664 category II and complies with IEC 950
- Solder lug, Fast-on tab styles available (see page PF20)
- PCB mounting minimizes space and provides economical installation
- Excellent filtering characteristics for high frequencies
- Earth coil standard
- Operating temperature: -25°C to +85°C (including temperature rise, see graph on page PF49)

Applications
- Digital equipment
- Personal computers and peripherals
- Measuring instruments
- Monitor and display units

Specifications

<table>
<thead>
<tr>
<th>Model</th>
<th>Rated Voltage (@50/60Hz)</th>
<th>Rated Current</th>
<th>Leakage Current (Max.)</th>
<th>Capacitance CY</th>
<th>CX</th>
<th>Inductance (L1)</th>
<th>(L2)</th>
<th>Temperature Rise (Max.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>60-BHP-010-3-11</td>
<td>250VAC</td>
<td>1A</td>
<td>0.35mA</td>
<td>2200pF±20%</td>
<td>.01uF±20%</td>
<td>.047uF±20%</td>
<td>6mH</td>
<td>30°C</td>
</tr>
<tr>
<td>60-BHP-010-3-4</td>
<td>250VAC</td>
<td>1A</td>
<td>0.50mA</td>
<td>3300pF±20%</td>
<td>.1uF±20%</td>
<td>.047uF±20%</td>
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<tr>
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<td>0.35mA</td>
<td>2200pF±20%</td>
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<td>.047uF±20%</td>
<td>2.4mH</td>
<td>30°C</td>
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<tr>
<td>60-BHP-050-3-4</td>
<td>250VAC</td>
<td>2A</td>
<td>0.50mA</td>
<td>3300pF±20%</td>
<td>.1uF±20%</td>
<td>.047uF±20%</td>
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<tr>
<td>60-BHP-010-5-11</td>
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<td>3A</td>
<td>0.35mA</td>
<td>2200pF±20%</td>
<td>.01uF±20%</td>
<td>.047uF±20%</td>
<td>1.2mH</td>
<td>30°C</td>
</tr>
<tr>
<td>60-BHP-010-5-4</td>
<td>18.3 uH</td>
<td>3A</td>
<td>0.50mA</td>
<td>3300pF±20%</td>
<td>.1uF±20%</td>
<td>.047uF±20%</td>
<td></td>
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</tr>
<tr>
<td>60-BHP-020-3-11</td>
<td>45°C</td>
<td>6A</td>
<td>0.35mA</td>
<td>2200pF±20%</td>
<td>.01uF±20%</td>
<td>.047uF±20%</td>
<td>0.53mH</td>
<td>45°C</td>
</tr>
<tr>
<td>60-BHP-020-3-4</td>
<td>45°C</td>
<td>6A</td>
<td>0.50mA</td>
<td>3300pF±20%</td>
<td>.1uF±20%</td>
<td>.047uF±20%</td>
<td></td>
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</tr>
<tr>
<td>60-BHP-030-3-11</td>
<td></td>
<td>6A</td>
<td>0.35mA</td>
<td>2200pF±20%</td>
<td>.01uF±20%</td>
<td>.047uF±20%</td>
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<td></td>
</tr>
<tr>
<td>60-BHP-030-3-4</td>
<td></td>
<td>6A</td>
<td>0.50mA</td>
<td>3300pF±20%</td>
<td>.1uF±20%</td>
<td>.047uF±20%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: Test voltage: 1500VAC one minute, line to ground
Insulation resistance: 300 Mohm min. at 500VDC
Voltage drop: 1V max. at rated current
Weight: 50g
Input: Compatible with IEC-320
Power Entry Modules
High Frequency Attenuation
Bolt-in for PCB Applications

60-BHP Series

Temperature Characteristics

Common Mode

Normal Mode
Power Line Filters
Appliance Filters

11-MPC Series

Features
- Miniature general purpose PCB mounted filter
- Requires minimal PCB real estate space
- Low cost
- Operating temperature: -25°C to +70°C
- Two forms of cases are available: metal case and plastic case

Applications
- Personal computers and peripherals
- Digital equipment
- Measuring instruments and medical equipment
- TV & VCR monitors and display units
- Home appliances

Circuit Diagram

Specifications

<table>
<thead>
<tr>
<th>Model</th>
<th>Rated Voltage (@ 50/60Hz)</th>
<th>Rated Current</th>
<th>Leakage Current (Max.)</th>
<th>Circuit Diagram</th>
<th>Figure</th>
<th>Temperature Rise (Max.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>11-MPC-001-2-B</td>
<td>120/250VAC</td>
<td>1A</td>
<td>5uA</td>
<td>1</td>
<td>A1</td>
<td></td>
</tr>
<tr>
<td>11-MPC-001-5-A</td>
<td></td>
<td>2A</td>
<td>0.50mA</td>
<td>2</td>
<td>A</td>
<td></td>
</tr>
<tr>
<td>11-MPC-002-5-B</td>
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<td>3A</td>
<td></td>
<td>3</td>
<td>D</td>
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<tr>
<td>11-MPC-003-5-E</td>
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<td>6A</td>
<td>0.2mA</td>
<td>2</td>
<td>A1</td>
<td>30°C</td>
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<tr>
<td>11-MPC-006-5-B</td>
<td></td>
<td>16A</td>
<td></td>
<td>4</td>
<td>B</td>
<td></td>
</tr>
</tbody>
</table>

Note: Test voltage: 1500VAC one minute, line to ground
Insulation resistance: 300 Mohm min. at 500VDC
Voltage drop: 1V max. at rated current
Weight: 17.5g
11-MPC Series

**Common Mode**

![Figure A](image1)

![Figure A1](image2)

![Figure B](image3)

![Figure C](image4)

![Figure D](image5)

![Figure E](image6)

**Normal Mode**

![11-MPC-001-002](image7)

![11-MPC-003-006-016](image8)
Power Line Filters
Appliance Filters

62-AL/62-AC Series

Features
- Low-cost plastic case
- Compact design requires minimal real estate space
- Suitable for products that must conform to FCC regulations
- Wide variety of circuit and filtering options
- Good filtering characteristics for both normal mode and common mode
- Epoxy molded for reliability
- Operating temperature: -25°C to +85°C (including temperature rise, see graph on page PF53)

Applications
- Personal computers and peripherals
- Digital equipment
- Industrial equipment
- Vending machines
- Home appliances
- Office equipment

Specifications

<table>
<thead>
<tr>
<th>Model*</th>
<th>Rated Voltage (@ 50/60Hz)</th>
<th>Rated Current</th>
<th>Leakage Current (Max.)</th>
<th>Capacitance</th>
<th>Inductance (L1)</th>
<th>Temperature Rise (Max.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>62-AFL-010-3-11</td>
<td>1.0A</td>
<td>0.35mA</td>
<td>2200pF</td>
<td>11.0mH</td>
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<tr>
<td>62-AFL-010-5-11</td>
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<td>0.35mA</td>
<td>2200pF</td>
<td>2.4mH</td>
<td>40°C</td>
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<tr>
<td>62-AFL-016-5-11</td>
<td>4.5A</td>
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<td>2200pF</td>
<td>1.0mH</td>
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<td>62-AFL-030-3-11</td>
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<td>2200pF</td>
<td>0.53mH</td>
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</table>

Note: All types are designed to meet the requirement of UL 1283, CSA 22.2. VDE 0565-3
Test voltage: 1500VAC one minute, line to ground
Insulation resistance: 300 Mohm min. at 500VDC
Voltage drop: 1V max.

* Available with bleeder resistor
Replace F with R for part number

Dimensions

- **62-A-L Series**
- **62-A-C Series**

Circuit Diagrams
62-AL/62-AC Series

Power Line Filters
Appliance Filters

Common Mode

Normal Mode
**Power Line Filters**

**Single Stage**

### 62-PPF/PQF/PRF Series

#### Features
- Low-cost plastic case
- Compact design requires minimal real estate space
- Suitable for products that must conform to FCC and FTZ regulations
- Wide variety of circuit and filtering options
- Good filtering characteristics for both normal mode and common mode
- Epoxy molded for reliability
- Operating temperature: -25°C to +85°C (including temperature rise, see graph on page PF55)

#### Applications
- Personal computers and peripherals
- Digital equipment
- Industrial equipment
- Vending machines
- Office equipment

#### Circuit Diagrams

62-PQF* Series

62-PPF* Series

62-PRF* Series

* Bleeder Resistor is available only for 62-P(Q/R/P)F-XXX-X-12

### Specifications

<table>
<thead>
<tr>
<th>Model</th>
<th>Rated Voltage (@ 50/60Hz)</th>
<th>Rated Current</th>
<th>Leakage Current (Max.)</th>
<th>Capacitance (Cx)</th>
<th>Inductance (L1)</th>
<th>Temperature Rise (Max.)</th>
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<tbody>
<tr>
<td>62-PQF-020-5-11</td>
<td>250VAC</td>
<td>2A</td>
<td>0.50mA</td>
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<td>6A</td>
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<td>2A</td>
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</table>

Note: All types are designed to meet the requirement of UL 1283, CSA 22.2. VDE 0565-3

Test voltage: 1500VAC one minute, line to ground
Insulation resistance: 300 Mohm min. at 500VDC
Voltage drop: 1V max. (except 62-PRF-010-5-11) at rated current
62-PRF-010-5-11: 1.5V max. at rated current
Weight: 62-PPF & PQF Series: 2.11 ounces (60 grams)
62-PRF Series: 1.76 ounces (50 grams)
Power Line Filters
Single Stage

62-PPF/PQF/PRF Series

Temperature Characteristics

Normal Mode

Common Mode

62-P(P/Q/R)F Series

62-PRF Series
# Power Line Filters
## Single Stage Wire Leads

### 62-PML Series

#### Features
- Compact design requires minimal real estate space
- Suitable for products that must conform to FCC and FTZ regulations
- Excellent attenuation for high voltage impulse
- Metal case provides effective shielding
- Excellent filtering characteristics for both normal mode and common mode
- Structure provides effective shielding for noise generated externally and internally
- Operating temperature: -25°C to +85°C (including temperature rise, see graph on page PF57)

#### Applications
- Digital equipment
- Personal computers and peripherals
- Measuring instruments
- Medical equipment
- Factory automation equipment

---

### Circuit Diagram

---

### Specifications

<table>
<thead>
<tr>
<th>Model</th>
<th>Rated Voltage (@ 50/60Hz)</th>
<th>Rated Current</th>
<th>Leakage Current (Max.)</th>
<th>Capacitance</th>
<th>Temperature Rise (Max.)</th>
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<tbody>
<tr>
<td>62-PML-015-3-11</td>
<td>250VAC</td>
<td>1.5A</td>
<td>0.35mA</td>
<td>2200pF</td>
<td>10.0mH</td>
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<tr>
<td>62-PML-015-5-11</td>
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<td>5.0mA</td>
<td>0.50mA</td>
<td>3300pF</td>
<td></td>
</tr>
<tr>
<td>62-PML-030-3-11</td>
<td></td>
<td>3.0A</td>
<td>0.35mA</td>
<td>2200pF</td>
<td></td>
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<tr>
<td>62-PML-030-5-11</td>
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<td>5.0mA</td>
<td>0.50mA</td>
<td>3300pF</td>
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<td>62-PML-050-3-11</td>
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<td>0.35mA</td>
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<tr>
<td>62-PML-050-5-11</td>
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<td>5.0mA</td>
<td>0.50mA</td>
<td>3300pF</td>
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Note: All types are designed to meet the requirement of UL 1283, CSA 22.2, VDE 0565-3
Test voltage: 1500VAC one minute, line to ground
Insulation resistance: 300 Mohm min. at 500VDC
Voltage drop: 1V max. at rated current
Weight: 62-PML-015 Series: 3.06 ounces (87 grams)
62-PML-030 Series: 3.17 ounces (90 grams)
62-PML-050 Series: 3.28 ounces (93 grams)
Discharge time: 0.4 sec. max.
Power Line Filters
Single Stage Wire Leads

62-PML Series

Temperature Characteristics

![Graph showing temperature characteristics]

Common Mode

![Diagram of common mode configuration]

Normal Mode

![Diagram of normal mode configuration]

Insertion Loss (dB)

Insertion Loss (dB)

Frequency (MHz)

Frequency (MHz)

* Custom lengths available upon request.  Dimensions in inches (mm)
Power Line Filters
Single Stage Wire Leads
for Medical Purpose Applications

12-PML & 12-PMF Series

Features
- Compact design requires minimal real estate space
- Suitable for products that must conform to FCC and FTZ regulations
- Excellent attenuation for high voltage impulse
- Metal case provides effective shielding
- Excellent filtering characteristics for both normal mode and common mode
- Structure provides effective shielding for noise generated externally and internally
- Operating temperature: -25°C to +70°C
- Low leakage current

Applications
- Digital equipment
- Personal computers and peripherals
- Measuring instruments
- Medical equipment
- Factory automation equipment

Circuit Diagram

Specifications

<table>
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<tr>
<th>Model</th>
<th>Rated Voltage (@ 50/60Hz)</th>
<th>Rated Current</th>
<th>Leakage Current (Max.)</th>
<th>Circuit Diagram</th>
<th>Figure</th>
<th>Temperature Rise (Max.)</th>
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</thead>
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<tr>
<td>12-PML-001-2-A</td>
<td>120/250VAC</td>
<td>1A</td>
<td>5µA</td>
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<td>A</td>
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<td>6A</td>
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<td></td>
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<td>12-PML-010-2-A</td>
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<td>10A</td>
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<td></td>
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<td>12-PMF-001-2-B</td>
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<td>1A</td>
<td></td>
<td>2</td>
<td>B</td>
<td>30°C</td>
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<tr>
<td>12-PMF-002-2-B</td>
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<td>2A</td>
<td></td>
<td></td>
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<tr>
<td>12-PMF-006-2-B</td>
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<td>6A</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12-PML-001-2-C</td>
<td></td>
<td>1A</td>
<td></td>
<td>1</td>
<td>C</td>
<td></td>
</tr>
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</table>

Note: All types are designed to meet the requirement of UL 1283, CSA 22.2. VDE 0565-3
Test voltage: 1500VAC one minute, line to ground
Insulation resistance: 300 Mohm min. at 500VDC
Voltage drop: 1V max. at rated current
Discharge time: 0.4 sec. max.
**Power Line Filters**
Single Stage Wire Leads
for Medical Purpose Applications

**12-PML & 12-PMF Series**

**Figure A**

**Figure B**

**Common Mode**

**Normal Mode**

- **Frequency (MHz)**: 0.1, 0.2, 0.5, 1, 2, 5, 10, 20, 50
- **Insertion Loss (dB)**: 0, 10, 20, 30, 40, 50, 60, 70, 80

Dimensions in inches (mm)
**Power Line Filters**  
**Single Stage**

### 62-LMF & LMB Series

**Features**
- Space saving, compact designs
- Suitable for products that must conform to FCC and FTZ regulations
- Excellent filtering characteristics for both normal mode and common mode
- Structure provides effective shielding for noise generated externally and internally
- Metal case provides effective shielding
- Rugged construction
- Operating temperature: -25°C to +85°C (including temperature rise, see graph on page PF61)

**Applications**
- Digital equipment
- Office automation equipment, such as copy and fax machines
- Computers and peripherals
- Instrumentation and controls

### Circuit Diagram

![Circuit Diagram](image)

### Specifications

<table>
<thead>
<tr>
<th>Model*</th>
<th>Rated Voltage (@ 50/60Hz)</th>
<th>Rated Current</th>
<th>Leakage Current (Max.)</th>
<th>Capacitance</th>
<th>Inductance (L1)</th>
<th>Temperature Rise (Max.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>62-LMB-030-5-11</td>
<td>250VAC</td>
<td>3A</td>
<td>0.50mA</td>
<td>3300pF</td>
<td>0.1uF &amp; 0.22uF</td>
<td>14mH</td>
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<tr>
<td>62-LMF-030-5-11</td>
<td>250VAC</td>
<td>5A</td>
<td></td>
<td></td>
<td>0.1uF &amp; 0.22uF</td>
<td>7.0mH</td>
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<tr>
<td>62-LMB-050-5-11</td>
<td>250VAC</td>
<td>8A</td>
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<td></td>
<td>.22uF</td>
<td>4.2mH</td>
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<tr>
<td>62-LMF-050-5-11</td>
<td>250VAC</td>
<td>10A</td>
<td></td>
<td></td>
<td>.33uF</td>
<td>2.2mH</td>
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</table>

*Note:  
Test voltage: 1500VAC one minute, line to ground  
Insulation resistance: 300 Mohm min. at 500VDC  
Voltage drop: 1V max. at rated current  
Discharge time: 0.4 sec. max.  
Weight: 5.3 ounces (150 grams)  

62-LMF - designates Fast-on terminals  
62-LMB - designates Bolt-in terminals  
62-LML - wire lead in/outputs also available
Power Line Filters
Single Stage

62-LMF & LMB Series

Temperature Characteristics

Common Mode

Normal Mode

Dimensions in inches (mm)
Power Line Filters
Single Stage

62-PMF & PMB Series

Features

- Space-saving, compact designs
- Suitable for products that must conform to FCC regulations
- Excellent attenuation for high voltage impulse
- Metal case provides effective EMI shielding
- Excellent filtering characteristics for both normal mode and common mode
- Epoxy molded for internal component reliability
- Structure provides effective shielding for noise generated externally and internally
- Operating temperature: -25°C to +85°C (including temperature rise, see graph on page PF63)

Applications

- Digital equipment
- Computers and peripherals
- Measuring instruments
- Medical equipment
- Equipment requiring very high impulse attenuation
- Factory automation equipment
- Industrial equipment such as UPS, inverters and converters
- Telecommunications equipment
- Office automation equipment, such as copy and fax machines

Specifications

<table>
<thead>
<tr>
<th>Model*</th>
<th>Rated Voltage (@ 50/60Hz)</th>
<th>Rated Current</th>
<th>Leakage Current (Max.)</th>
<th>Capacitance</th>
<th>Inductance (L₁)</th>
<th>Temperature Rise (Max.)</th>
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</thead>
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<td>5A</td>
<td>0.50mA</td>
<td>CY 3300pF</td>
<td>CX 0.1uF</td>
<td>L₁ 14mH</td>
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<tr>
<td>62-PMF-050-5-11</td>
<td>250VAC</td>
<td>15A</td>
<td>300pF</td>
<td>CY 0.33uF</td>
<td>CX .33uF</td>
<td>L₁ 1.8mH</td>
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<td>62-PMB-080-5-11</td>
<td>250VAC</td>
<td>8A</td>
<td>1.0mA</td>
<td>CY .1uF</td>
<td>CX .1uF</td>
<td>L₁ 7.0mH</td>
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<tr>
<td>62-PMF-080-5-11</td>
<td>250VAC</td>
<td>10A</td>
<td>1.5mA</td>
<td>CY .1uF</td>
<td>CX .1uF</td>
<td>L₁ 7.0mH</td>
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<tr>
<td>62-PMB-100-5-12</td>
<td>250VAC</td>
<td>10A</td>
<td>1.5mA</td>
<td>CY .1uF</td>
<td>CX .1uF</td>
<td>L₁ 7.0mH</td>
</tr>
<tr>
<td>62-PMF-100-5-12</td>
<td>250VAC</td>
<td>15A</td>
<td>2.0mA</td>
<td>CY .1uF</td>
<td>CX .1uF</td>
<td>L₁ 7.0mH</td>
</tr>
<tr>
<td>62-PMB-150-5-13</td>
<td>250VAC</td>
<td>15A</td>
<td>2.0mA</td>
<td>CY .1uF</td>
<td>CX .1uF</td>
<td>L₁ 7.0mH</td>
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<tr>
<td>62-PMF-150-5-13</td>
<td>250VAC</td>
<td>20A</td>
<td>2.5mA</td>
<td>CY .1uF</td>
<td>CX .1uF</td>
<td>L₁ 7.0mH</td>
</tr>
<tr>
<td>62-PMB-200-5-13</td>
<td>250VAC</td>
<td>20A</td>
<td>3.0mA</td>
<td>CY .1uF</td>
<td>CX .1uF</td>
<td>L₁ 7.0mH</td>
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<tr>
<td>62-PMF-200-5-13</td>
<td>250VAC</td>
<td>30A</td>
<td>3.5mA</td>
<td>CY .1uF</td>
<td>CX .1uF</td>
<td>L₁ 7.0mH</td>
</tr>
</tbody>
</table>

Note: Test voltage: 1500VAC one minute, line to ground
Insulation resistance: 300 Mohm min. at 500VDC
Voltage drop: 1V max.
Discharge time: 0.4 sec. max.
Weight: 8.82 ounces (250 grams)

* PMF - designates Fast-on terminals
PMB - designates Bolt-in terminals
** The temperature rise of 20 amp units can be decreased to 30°C by mounting on 200 X 200 x 1.0(mm) steel chassis
Power Line Filters
Single Stage

62-PMF & PMB Series

Temperature Characteristics

Common Mode

Normal Mode

Dimensions in inches (mm)

Insertion Loss (dB)

Current (%)
Power Line Filters
Single Stage

12-PMF Series

Features
- Space-saving, compact designs
- Suitable for products that must conform to FCC regulations
- Excellent attenuation for high voltage impulse
- Metal case provides effective EMI shielding
- Excellent filtering characteristics for both normal mode and common mode
- Epoxy molded for internal component reliability
- Structure provides effective shielding for noise generated externally and internally
- Operating temperature: -25°C to +85°C

Applications
- Digital equipment
- Computers and peripherals
- Measuring instruments
- Medical equipment
- Equipment requiring very high impulse attenuation
- Factory automation equipment
- Industrial equipment such as UPS, inverters and converters
- Telecommunications equipment
- Office automation equipment, such as copy and fax machines

Specifications

<table>
<thead>
<tr>
<th>Model</th>
<th>Rated Voltage (@ 50/60Hz)</th>
<th>Rated Current</th>
<th>Leakage Current (Max.)</th>
<th>Circuit Diagram</th>
<th>Figure</th>
<th>Temperature Rise (Max.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>12-PMF-001-5-A</td>
<td>120/250VAC</td>
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<td>0.5mA</td>
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<td>A</td>
<td>30°C</td>
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</table>

Note: Test voltage: 1500VAC one minute, line to ground
Insulation resistance: 300 Mohm min. at 500VDC
Voltage drop: 1V max.
Discharge time: 0.4 sec. max.
Power Line Filters
Single Stage

12-PMF Series

Figure A

Figure B

Figure C

Figure D

Figure E

Common Mode

Normal Mode

12-PMF-001;-002;-003-006

12-PMF-001-002-003-006

12-PMF-001-002-003-006

12-PMF-010-015-020
Power Line Filters
Single Stage - Higher Current

62-PMB Series

Features
- Space-saving, compact designs
- Suitable for products that must conform to FCC regulations
- Excellent attenuation for high voltage impulse
- Metal case provides effective shielding
- Excellent filtering characteristics for both normal mode and common mode
- Epoxy molded for internal component reliability
- Structure provides effective shielding for noise generated externally and internally
- Safety agency approvals pending
- Designed to be in accordance with VDE 0565 Part 3
- Operating temperature: -25°C to +85°C (including temperature rise)

Applications
- Digital equipment
- Computers and peripherals
- Measuring instruments
- Medical equipment
- Equipment requiring very high impulse attenuation
- Factory automation equipment
- Industrial equipment such as UPS, inverters and converters
- Telecommunications equipment
- Office automation equipment, such as copy and fax machines

Specifications

<table>
<thead>
<tr>
<th>Model</th>
<th>Rated Voltage (@ 50/60Hz)</th>
<th>Rated Current</th>
<th>Leakage Current (Max.)</th>
<th>Capacitance</th>
<th>Inductance (L₁)</th>
<th>Temperature Rise (Max.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>62-PMB-300-5-14</td>
<td>250VAC</td>
<td>30A</td>
<td>0.50mA</td>
<td>3300pF</td>
<td>1.6mH</td>
<td>45°C</td>
</tr>
<tr>
<td>62-PMB-400-5-14</td>
<td>250VAC</td>
<td>40A</td>
<td>0.8mH</td>
<td>.47uF</td>
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<td></td>
</tr>
</tbody>
</table>

Note: Test voltage: 1500VAC one minute, line to earth
Insulation resistance: 300 Mohm min. at 500VDC
Voltage drop: 1V max.
Discharge time: 0.4 sec. max.
Weight: 8.82 ounces (250 grams)
Power Line Filters
Single Stage - Higher Current

62-PMB Series

62-PMB-300-5-14 and 62-PMB-400-5-14

Normal Mode

Common Mode

Insertion Loss (dB)

Dimensions in inches (mm)
Power Line Filters
Single Stage - Higher Current

12-PMB Series

Features
- Space-saving, compact designs
- Suitable for products that must conform to FCC regulations
- Excellent attenuation for high voltage impulse
- Metal case provides effective shielding
- Excellent filtering characteristics for both normal mode and common mode
- Epoxy molded for internal component reliability
- Structure provides effective shielding for noise generated externally and internally
- Designed to be in accordance with VDE 0565 Part 3
- Operating temperature: -25°C to +85°C

Applications
- Digital equipment
- Computers and peripherals
- Measuring instruments
- Medical equipment
- Equipment requiring very high impulse attenuation
- Factory automation equipment
- Industrial equipment such as UPS, inverters and converters
- Telecommunications equipment
- Office automation equipment, such as copy and fax machines

Specifications

<table>
<thead>
<tr>
<th>Model</th>
<th>Rated Voltage (@ 50/60Hz)</th>
<th>Rated Current</th>
<th>Leakage Current (Max.)</th>
<th>Circuit Diagram</th>
<th>Figure</th>
<th>Temperature Rise (Max.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>12-PMB-025-5-A</td>
<td>120/250VAC</td>
<td>25A</td>
<td>0.5mA</td>
<td>1</td>
<td>A</td>
<td>30°C</td>
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<tr>
<td>12-PMB-030-5-A</td>
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<td>12-PMB-035-5-B</td>
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<td>35A</td>
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<td>12-PMB-050-5-B</td>
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<td>50A</td>
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<tr>
<td>12-PMB-100-8-C</td>
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<td>100A</td>
<td>1.0mA</td>
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<tr>
<td>12-PMB-120-8-C</td>
<td></td>
<td>120A</td>
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Note: Test voltage: 1500VAC one minute, line to earth
Insulation resistance: 300 Mohm min. at 500VDC
Voltage drop: 1V max.
Discharge time: 0.4 sec. max.
Weight: 8.82 ounces (250 grams)
Power Line Filters
Single Stage - Higher Current

12-PMB Series

Common Mode

Normal Mode
Power Line Filters
DC - Higher Current

12-PMF & 12 PMB DC Series

Features
- Space-saving, compact designs
- Suitable for products that must conform to FCC regulations
- Excellent attenuation for high voltage impulse
- Metal case provides effective shielding
- Excellent filtering characteristics for both normal mode and common mode
- Epoxy molded for internal component reliability
- Structure provides effective shielding for noise generated externally and internally
- Designed to be in accordance with VDE 0565 Part 3
- Operating temperature: -40°C to +85°C

Applications
- Digital equipment
- Computers and peripherals
- Measuring instruments
- Equipment requiring very high impulse attenuation
- Factory automation equipment
- Industrial equipment such as UPS, inverters and converters
- Telecommunications equipment

Specifications

<table>
<thead>
<tr>
<th>Model</th>
<th>Rated Voltage (@ 50/60Hz)</th>
<th>Rated Current</th>
<th>Circuit Diagram</th>
<th>Figure</th>
<th>Temperature Rise (Max.)</th>
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<tbody>
<tr>
<td>12-PMF-006-DC-C</td>
<td>48/250 VDC</td>
<td>6A</td>
<td></td>
<td>A</td>
<td></td>
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<tr>
<td>12-PMF-010-DC-C</td>
<td></td>
<td>10A</td>
<td></td>
<td>B</td>
<td></td>
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<tr>
<td>12-PMF-015-DC-C</td>
<td></td>
<td>15A</td>
<td></td>
<td>C</td>
<td></td>
</tr>
<tr>
<td>12-PMF-020-DC-C</td>
<td></td>
<td>20A</td>
<td></td>
<td>D</td>
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<tr>
<td>12-PMF-025-DC-D</td>
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<td>12-PMB-030-DC-F</td>
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<td>12-PMB-035-DC-F</td>
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<td>35A</td>
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<tr>
<td>12-PMB-040-DC-F</td>
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<td>H</td>
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</tr>
<tr>
<td>12-PMB-040-DC-B</td>
<td></td>
<td>50A</td>
<td></td>
<td>I</td>
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<tr>
<td>12-PMB-050-DC-B</td>
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<td>60A</td>
<td></td>
<td>J</td>
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<td>12-PMB-060-DC-B</td>
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<td>80A</td>
<td></td>
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<tr>
<td>12-PMB-080-DC-G</td>
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<td>12-PMB-140-DC-C</td>
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<td>180A</td>
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<td>200A</td>
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<tr>
<td>12-PMB-200-DC-E</td>
<td></td>
<td>260A</td>
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<td>Q</td>
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Note: Test voltage: 1500VAC one minute, line to earth
Insulation resistance: 300 Mohm min. at 500VDC
Voltage drop: 1V max.
Discharge time: 0.4 sec. max.
Weight: 8.82 ounces (250 grams)
Power Line Filters
DC - Higher Current

12-PMF & 12-PMB DC Series

Common Mode

Normal Mode

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Figure A

Figure B

Figure C

Figure D

Figure E

Figure F

Figure G

Dimensions in inches (mm)
Power Line Filters
Dual Stage

62-MMF Series

Features
- Suitable for products that must conform to FCC regulations
- Excellent attenuation for high voltage impulse
- Metal case provides effective EMI shielding
- Two stages for excellent filtering characteristics
- Epoxy molded for reliability
- Structure provides effective shielding for noise generated both externally and internally
- Operating temperature: -25°C to +85°C (including temperature rise, see graph on page PF73)

Applications
- Digital equipment
- Personal computers and peripherals
- Measuring instruments and medical equipment
- Telecommunications equipment
- Equipment requiring very high noise attenuation

Circuit Diagram
62-MMF-XXX-7-11

Specifications

<table>
<thead>
<tr>
<th>Model</th>
<th>Rated Voltage (@ 50/60Hz)</th>
<th>Rated Current</th>
<th>Leakage Current (Max.)</th>
<th>Capacitance</th>
<th>Inductance (L1) (2X)</th>
<th>Temperature Rise (Max.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>62-MMF-030-7-11</td>
<td>250VAC</td>
<td>3A</td>
<td>.7mA</td>
<td>3300pF</td>
<td>1000pF</td>
<td>3.7mH</td>
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<tr>
<td>62-MMF-050-7-11</td>
<td>250VAC</td>
<td>5A</td>
<td>.7mA</td>
<td>3300pF</td>
<td>1000pF</td>
<td>2.9mH</td>
</tr>
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</table>

Note: All types are designed to meet the requirement of UL 1283, CSA 22.2. VDE 0565-3
Test voltage: 1500VAC one minute, line to ground
Insulation resistance: 300 Mohm min. at 500VDC
Leakage current: 0.7 mA max.
Voltage drop: 1V max.
Discharge time: 0.4 sec. max.
Weight: 6.0 ounces (170 grams)
Power Line Filters
Dual Stage

62-MMF Series

Temperature Characteristics

![Graph showing temperature characteristics of 62-MMF Series](image)

Common Mode

![Diagram of Common Mode configuration](image)

Normal Mode

![Diagram of Normal Mode configuration](image)

Dimensions in inches (mm)

---

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PF73
Power Line Filters
Dual Stage

12-MMF & 12-MMB Series

Features
- Suitable for products that must conform to FCC regulations
- Excellent attenuation for high voltage impulse
- Metal case provides effective EMI shielding
- Two stages for excellent filtering characteristics
- Structure provides effective shielding for noise generated both externally and internally
- Operating temperature: -40°C to +85°C
- High performance
- Low leakage current

Applications
- Digital equipment
- Switching power supplies
- Personal computers and peripherals
- Measuring instruments and medical equipment
- Telecommunications equipment
- Equipment requiring very high noise attenuation

Specifications

<table>
<thead>
<tr>
<th>Model</th>
<th>Rated Voltage (@ 50/60Hz)</th>
<th>Rated Current</th>
<th>Leakage Current (Max.)</th>
<th>Circuit Diagram</th>
<th>Figure</th>
<th>Temperature Rise (Max.)</th>
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</thead>
<tbody>
<tr>
<td>12-MMF-002-5-F</td>
<td>120/250VAC</td>
<td>2A</td>
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<td>1</td>
<td>A</td>
<td>30°C</td>
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<td>12-MMF-003-5-F</td>
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<td>3A</td>
<td></td>
<td>3</td>
<td>B</td>
<td>30°C</td>
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<tr>
<td>12-MMF-003-5-A</td>
<td></td>
<td>6A</td>
<td>0.25mA @ 120VAC/0.5mA @ 250VAC</td>
<td>2</td>
<td>C</td>
<td>30°C</td>
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<tr>
<td>12-MMF-006-5-F</td>
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<td>8A</td>
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<td>12-MMF-006-5-G</td>
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<td>10A</td>
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<td>12-MMF-008-5-B</td>
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<td>12-MMF-010-5-F</td>
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<td>15A</td>
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<td></td>
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</tr>
<tr>
<td>12-MMF-010-5-G</td>
<td></td>
<td>20A</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12-MMF-010-5-B</td>
<td></td>
<td>30A</td>
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<tr>
<td>12-MMF-012-5-B</td>
<td></td>
<td>50A</td>
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<tr>
<td>12-MMB-015-5-E</td>
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<tr>
<td>12-MMB-020-5-F</td>
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<tr>
<td>12-MMB-030-5-D</td>
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<tr>
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</tbody>
</table>

Note: All types are designed to meet the requirement of UL 1283, CSA 22.2, VDE 0565-3
Test voltage: 1500VAC one minute, line to ground
Insulation resistance: 300 Mohm min. at 500VDC
Voltage drop: 1V max.
Discharge time: 0.4 sec. max.
Power Line Filters
Dual Stage

12-MMF & 12-MMB Series

Figure B

Figure C

Figure D

Figure E

Figure F

Figure G

Dimensions in inches (mm)

Common Mode

Normal Mode

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PF75
Power Line Filters
Dual Stage

12-MMF & 12-MMB Series

Features

- Suitable for products that must conform to FCC regulations
- Excellent attenuation for high voltage impulse
- Metal case provides effective EMI shielding
- Two stages for excellent filtering characteristics
- Structure provides effective shielding for noise generated both externally and internally
- Operating temperature: -40°C to +85°C
- High performance

Applications

- Digital equipment
- Personal computers and peripherals
- Measuring instruments and medical equipment
- Telecommunications equipment
- Equipment requiring very high noise attenuation

Specifications

<table>
<thead>
<tr>
<th>Model</th>
<th>Rated Voltage (@ 50/60Hz)</th>
<th>Rated Current</th>
<th>Leakage Current (Max.)</th>
<th>Circuit Diagram</th>
<th>Figure</th>
<th>Temperature Rise (Max.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>12-MMF-003-11-F</td>
<td>120/250VAC</td>
<td>3A</td>
<td></td>
<td>1</td>
<td>A</td>
<td>30°C</td>
</tr>
<tr>
<td>12-MMF-006-11-F</td>
<td></td>
<td>6A</td>
<td></td>
<td>1</td>
<td>C</td>
<td></td>
</tr>
<tr>
<td>12-MMF-010-11-F</td>
<td></td>
<td>10A</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12-MMB-015-11-G</td>
<td></td>
<td>15A</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12-MMB-020-11-D</td>
<td></td>
<td>20A</td>
<td></td>
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<tr>
<td>12-MMB-030-11-D</td>
<td></td>
<td>30A</td>
<td>1.5mA</td>
<td>2</td>
<td>D</td>
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<td>1</td>
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Note: All types are designed to meet the requirement of UL 1283, CSA 22.2, VDE 0565-3
Test voltage: 1500VAC one minute, line to ground
Insulation resistance: 300 Mohm min. at 500VDC
Leakage current: 0.7 mA max.
Voltage drop: 1V max.
Discharge time: 0.4 sec. max.
Weight: 6.0 ounces (170 grams)
Power Line Filters
Dual Stage

12-MMF & 12-MMB Series

Figure A

Figure B

Figure C

Figure D

Figure E

Figure F

Common Mode

Normal Mode

Dimensions in inches (mm)
Power Line Filters
Dual Stage

12-MMF & 12-MMB Series

Features
- Suitable for products that must conform to FCC regulations
- Excellent attenuation for high voltage impulse
- Metal case provides effective EMI shielding
- Two stages for excellent filtering characteristics
- Epoxy molded for reliability
- Structure provides effective shielding for noise generated both externally and internally
- Operating temperature: -25°C to +85°C

Applications
- Digital equipment
- Personal computers and peripherals
- Measuring instruments and medical equipment
- Telecommunications equipment
- Equipment requiring very high noise attenuation

Specifications

<table>
<thead>
<tr>
<th>Model</th>
<th>Rated Voltage (@ 50/60Hz)</th>
<th>Rated Current</th>
<th>Leakage Current (Max.)</th>
<th>Circuit Diagram</th>
<th>Figure</th>
<th>Temperature Rise (Max.)</th>
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<tbody>
<tr>
<td>12-MMF-001-5-F</td>
<td>120/250VAC</td>
<td>1A</td>
<td>0.5mA</td>
<td>3</td>
<td>A</td>
<td>30°C</td>
</tr>
<tr>
<td>12-MMF-003-5-G</td>
<td></td>
<td>3A</td>
<td>5uA</td>
<td>1</td>
<td>B</td>
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</tr>
<tr>
<td>12-MMF-003-2-G</td>
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<td>6A</td>
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<tr>
<td>12-MMF-006-5-G</td>
<td></td>
<td>10A</td>
<td>0.5mA</td>
<td>2</td>
<td>C</td>
<td></td>
</tr>
<tr>
<td>12-MMB-010-5-D</td>
<td></td>
<td>15A</td>
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<td>D</td>
<td></td>
</tr>
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<td>12-MMB-015-5-E</td>
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<td>20A</td>
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<tr>
<td>12-MMB-030-5-E</td>
<td></td>
<td>30A</td>
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</table>

Note: All types are designed to meet the requirement of UL 1283, CSA 22.2, VDE 0565-3
Test voltage: 1500VAC one minute, line to ground
Insulation resistance: 300 Mohm min. at 500VDC
Leakage current: 0.7 mA max.
Voltage drop: 1V max.
Discharge time: 0.4 sec. max.
Weight: 6.0 ounces (170 grams)
12-MMF & 12-MMB Series

Common Mode

Normal Mode
Power Line Filters
Three Phase
Low Current/High Performance

62-PMB/63-PMF Series

Features
- Excellent attenuation for high voltage impulse
- Effective for both balanced and unbalanced three-phase loads
- Metal case provides effective EMI shielding
- Epoxy molded for internal component reliability
- Compact and economical
- Excellent filtering characteristics for both normal and common mode
- Various current ratings available: 3, 5, 8 and 16 Amps
- Safety agency approvals pending
- Operating temperature: -25°C to +85°C (including temperature rise, see graph on page PF81)

Applications
- Digital equipment
- Industrial equipment (UPS, inverters and converters)
- Automation equipment
- Computerized washing machines

Circuit Diagram

62-PMB-050-6-12 (5 Amp Delta)

63-PMF-030-8-14 and 63-PMF-080-8-14 (3 and 8 Amp Wye)

63-PMF-160-9-21 (16 Amp Wye)

Specifications

<table>
<thead>
<tr>
<th>Model</th>
<th>Rated Voltage (@ 50/60Hz)</th>
<th>Rated Current</th>
<th>Leakage Current (Max.)</th>
<th>C_Y Capacitance</th>
<th>C_X Inductance (L_1)</th>
<th>Temperature Rise (Max.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>62-PMB-050-6-12</td>
<td>250VAC</td>
<td>5A</td>
<td>0.6mA</td>
<td>2200pF</td>
<td>0.22uF</td>
<td>115mH</td>
</tr>
<tr>
<td>63-PMF-030-8-14</td>
<td>480VAC</td>
<td>3A</td>
<td>1.0mA</td>
<td>4700pF (4X)</td>
<td>470uF (3X)</td>
<td>1.0mH (4X)</td>
</tr>
<tr>
<td>63-PMF-080-8-14</td>
<td></td>
<td>8A</td>
<td>3.0mA</td>
<td>470pF (4X)</td>
<td>0.74mH (4X)</td>
<td>0.74mH (4X)</td>
</tr>
<tr>
<td>63-PMF-160-9-21</td>
<td></td>
<td>16A</td>
<td>0.015uF (2X)</td>
<td>1.0uF (6X)</td>
<td>1.2mH (4X)</td>
<td>1.2mH (4X)</td>
</tr>
</tbody>
</table>

Note: Test Voltage 1500VAC one minute, line to ground.
Insulation Resistance: 300 MΩ min. at 500VDC.
Voltage Drop: 1V max. at rated current.
Weight: 8.82 ounces (250 grams) for 63-PMF-030-8-14 and 63-PMF-080-8-14
19.4 ounces (550 grams) for 62-PMB-050-6-12
51.5 ounces (1450 grams) for 63-PMF-160-9-21
Power Line Filters
Three Phase
Low Current/High Performance

62-PMB/63-PMF Series

**62-PMB-050-6-12 (5 Amp)**

**63-PMF-030-8-14 and 63-PMF-080-8-14 (3 and 8 Amp)**

**63-PMF-160-9-21 (16 Amp)**

*Common Mode*

62-PMB-050-6-12 (5 Amp)

63-PMF (3, 8 and 16 Amp)

*Normal Mode*

62-PMB-050-6-12 (5 Amp)

63-PMF (3, 8 and 16 Amp)

Dimensions in inches (mm)

Temperature Characteristics

- **Power Line Filters**
- **Three Phase**
- **Low Current/High Performance**

**62-PMB/63-PMF Series**

**62-PMB-050-6-12 (5 Amp)**

**63-PMF-030-8-14 and 63-PMF-080-8-14 (3 and 8 Amp)**

**63-PMF-160-9-21 (16 Amp)**

*Common Mode*

62-PMB-050-6-12 (5 Amp)

63-PMF (3, 8 and 16 Amp)

*Normal Mode*

62-PMB-050-6-12 (5 Amp)

63-PMF (3, 8 and 16 Amp)
Power Line Filters
Three Phase

13-PWF/PWL/PWB Series

Features
- Excellent attenuation for high voltage impulse
- Effective for both balanced and unbalanced three-phase loads
- Metal case provides effective EMI shielding
- Epoxy molded for internal component reliability
- Suitable for both Wye and Delta connection
- Excellent filtering characteristics for both normal and common mode
- Operating temperature: -40°C to +85°C
- Designed for 3-phase 4-line power supply systems

Applications
- Digital equipment
- Industrial equipment (UPS, inverters and converters)
- Automation equipment
- Computerized washing machines

Specifications

<table>
<thead>
<tr>
<th>Model</th>
<th>Rated Voltage (@ 50/60Hz)</th>
<th>Rated Current</th>
<th>Leakage Current (Max.)</th>
<th>Circuit Diagram</th>
<th>Figure</th>
<th>Temperature Rise (Max.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>13-PWF-005-12-H</td>
<td>440/250VAC</td>
<td>5A</td>
<td>1.5mA</td>
<td>1</td>
<td>A</td>
<td>30°C</td>
</tr>
<tr>
<td>13-PWL-005-12-C</td>
<td></td>
<td>10A</td>
<td></td>
<td></td>
<td>B</td>
<td></td>
</tr>
<tr>
<td>13-PWF-010-12-H</td>
<td></td>
<td>15A</td>
<td></td>
<td></td>
<td>A</td>
<td></td>
</tr>
<tr>
<td>13-PWL-010-12-C</td>
<td></td>
<td>20A</td>
<td></td>
<td></td>
<td>B</td>
<td></td>
</tr>
<tr>
<td>13-PWB-010-12-D</td>
<td></td>
<td>25A</td>
<td></td>
<td></td>
<td>C</td>
<td></td>
</tr>
<tr>
<td>13-PWB-020-12-D</td>
<td></td>
<td>30A</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: Test Voltage 1500VAC one minute, line to ground.
Insulation Resistance: 300 MΩ min. at 500VDC.
Voltage Drop: 1V max. at rated current.
Power Line Filters
Three Phase

13-PWF/PWL/PWB Series

Figure A

Dimensions in inches (mm)

Common Mode

Normal Mode

API TECHNOLOGIES • 8061 Avonia Rd. • Fairview, PA 16415 • Ph: 814-474-1571 • Fax: 814-474-3110 • eis.api-tech.com
API TECHNOLOGIES’ SPECTRUM CONTROL GmbH • Hansastrasse 6 • 91126 Schwabach, Germany • Phone: (49)-9122-795-0 • Fax: (49)-9122-795-58
Power Line Filters
Three Phase
High Performance

13-PDF/PDL/PDB Series

Features
- Excellent attenuation for high voltage impulse
- Effective for both balanced and unbalanced three-phase loads
- Metal case provides effective EMI shielding
- Epoxy molded for internal component reliability
- Compact and economical
- Excellent filtering characteristics for both normal and common mode
- Operating temperature: -40°C to +85°C
- Designed for 3-phase, 3-Delta connection system

Applications
- Digital equipment
- Industrial equipment (UPS, inverters and converters)
- Automation equipment
- Switching power supplies

Specifications

<table>
<thead>
<tr>
<th>Model</th>
<th>Rated Voltage (@ 50/60Hz)</th>
<th>Rated Current</th>
<th>Leakage Current (Max.)</th>
<th>Circuit Diagram</th>
<th>Figure</th>
<th>Temperature Rise (Max.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>13-PDF-005-11-J</td>
<td>440/250VAC</td>
<td>5A</td>
<td>1.5mA</td>
<td>1</td>
<td>A</td>
<td>30°C</td>
</tr>
<tr>
<td>13-PDL-005-11-D</td>
<td></td>
<td>10A</td>
<td></td>
<td></td>
<td>B</td>
<td></td>
</tr>
<tr>
<td>13-PDF-010-11-J</td>
<td></td>
<td>15A</td>
<td></td>
<td></td>
<td>A</td>
<td></td>
</tr>
<tr>
<td>13-PDL-010-11-D</td>
<td></td>
<td>20A</td>
<td></td>
<td></td>
<td>B</td>
<td></td>
</tr>
<tr>
<td>13-PDB-015-11-D</td>
<td></td>
<td>25A</td>
<td></td>
<td></td>
<td>A</td>
<td></td>
</tr>
<tr>
<td>13-PDB-020-11-D</td>
<td></td>
<td>30A</td>
<td></td>
<td></td>
<td>B</td>
<td></td>
</tr>
<tr>
<td>13-PDB-025-11-D</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>A</td>
<td></td>
</tr>
<tr>
<td>13-PDB-030-11-D</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>B</td>
<td></td>
</tr>
</tbody>
</table>

Note: Test Voltage 1500VAC one minute, line to ground.
Insulation Resistance: 300 MΩ min. at 500VDC.
Voltage Drop: 1V max. at rated current.
Power Line Filters
Three Phase
High Performance

13-PDF/PDL/PDB Series

Figure A

Dimensions in inches (mm)

Common Mode

13-PDF-005:-010; PDL-005:-010 PDB-010

Insertion Loss (dB)

Frequency (MHz)

Normal Mode

13-PDF-005:-010; PDL-005:-010 PDB-010

Insertion Loss (dB)

Frequency (MHz)
13-PWB Series

Features
- Excellent attenuation for high voltage impulse
- Metal case provides effective EMI shielding
- Epoxy molded for internal component reliability
- Excellent filtering characteristics for both normal and common mode
- Various current ratings available: from 5 to 150 Amps
- Operating temperature: -40°C to +85°C
- Designed for 3-phase, 4-line power systems

Applications
- Power supplies for data systems
- Industrial equipment (UPS, inverters and converters)
- Automation equipment
- Telecommunications systems and equipment

Specifications

<table>
<thead>
<tr>
<th>Model</th>
<th>Rated Voltage (@ 50/60Hz)</th>
<th>Rated Current</th>
<th>Leakage Current (Max.)</th>
<th>Circuit Diagram</th>
<th>Temperature Rise (Max.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>13-PWB-005-12-A</td>
<td>480/277VAC</td>
<td>5A</td>
<td>4.5mA</td>
<td>1</td>
<td>30°C</td>
</tr>
<tr>
<td>13-PWB-010-12-B</td>
<td></td>
<td>10A</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13-PWB-020-12-B</td>
<td></td>
<td>20A</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13-PWB-035-12-C</td>
<td></td>
<td>35A</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13-PWB-050-13-C</td>
<td></td>
<td>50A</td>
<td>9.0mA</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>13-PWB-080-14-D</td>
<td></td>
<td>80A</td>
<td>20mA</td>
<td></td>
<td></td>
</tr>
<tr>
<td>13-PWB-100-14-D</td>
<td></td>
<td>100A</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13-PWB-150-14-E</td>
<td></td>
<td>150A</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: Test Voltage 1500VAC one minute, line to ground.
Insulation Resistance: 300 MΩ min. at 500VDC.
Voltage Drop: 1V max. at rated current.
# Three Phase High Performance Power Line Filters

**13-PWB Series**

## Dimensions

| Model          | A    | B    | C    | D    | E    | F    | G    | H    | I    | J    | K    | M    | N    | P    | L    |
|----------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| 13-PWB-005-12-A | 7.2  | 6.3  | 7.9  | 2.4  | 1.7  | 3.5  | .70  | 2.3  | 1.5  | -    | -    | -    | -    | M4  | -    | -    |
| 13-PWB-010-12-B | 9.6  | 8.7  | 10.3 | 3.1  | 3.8  | 4.9  | .98  | -    | 3.5  | -    | -    | -    | -    | M6  | -    | -    |
| 13-PWB-020-12-B | 3.9  | 13.9 | 12.6 | 6.1  | 7.3  | 1.2  | -    | 2.4  | 3.4  | 2.2  | -    | -    | -    | M6  | -    | -    |
| 13-PWB-035-12-A | 7.5  | 8.7  | 15.1 | 7.5  | 8.7  | 1.4  | 3.9  | 2.5  | 3.4  | 2.2  | -    | -    | -    | 1.7  | -    | -    |
| 13-PWB-050-13-C | 15.5 | 13.9 | 12.6 | 15.5 | 13.9 | 12.6 | 15.5 | 13.9 | 12.6 | 15.5 | 13.9 | 12.6 | 15.5 | 13.9 | 12.6 | 15.5 |

### Common Mode

- Oscillator
- Filter 1
- Filter 2
- 50Ω Level Meter

### Normal Mode

- Oscillator
- Filter 1
- Filter 2
- 50Ω Level Meter
Power Line Filters
Three Phase
High Performance

13-PDB Series

Features
- Excellent attenuation for high voltage impulse
- Metal case provides effective EMI shielding
- Epoxy molded for internal component reliability
- Excellent filtering characteristics for both normal and common mode
- Various current ratings available: from 5 to 200 Amps
- Operating temperature: -40°C to +85°C
- Designed for 3-phase, 3-line connection systems

Applications
- Digital equipment
- Industrial equipment (UPS, inverters and converters)

Circuit Diagram

Specifications

<table>
<thead>
<tr>
<th>Model</th>
<th>Rated Voltage (@ 50/60Hz)</th>
<th>Rated Current</th>
<th>Leakage Current (Max.)</th>
<th>Circuit Diagram</th>
<th>Temperature Rise (Max.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>13-PDB-005-12-A</td>
<td>480/277VAC</td>
<td>5A</td>
<td>4.5mA</td>
<td>1</td>
<td>30°C</td>
</tr>
<tr>
<td>13-PDB-010-12-A</td>
<td></td>
<td>10A</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13-PDB-020-12-B</td>
<td></td>
<td>20A</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13-PDB-035-12-B</td>
<td></td>
<td>35A</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13-PDB-050-12-B</td>
<td></td>
<td>50A</td>
<td>9.0mA</td>
<td></td>
<td></td>
</tr>
<tr>
<td>13-PDB-080-13-C</td>
<td></td>
<td>80A</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13-PDB-100-14-C</td>
<td></td>
<td>100A</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13-PDB-150-14-C</td>
<td></td>
<td>150A</td>
<td>20mA</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>13-PDB-200-14-D</td>
<td></td>
<td>200A</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: Test Voltage 2250VDC one minute, line to ground.
Insulation Resistance: 500MΩ.
Hansastrasse 6
Dimensions

<table>
<thead>
<tr>
<th>Model</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>G</th>
<th>H</th>
<th>I</th>
<th>J</th>
<th>K</th>
<th>M</th>
<th>N</th>
<th>P</th>
<th>L</th>
</tr>
</thead>
<tbody>
<tr>
<td>13-PDB-005-12-A</td>
<td>7.2</td>
<td>6.3</td>
<td>7.9</td>
<td>1.6</td>
<td>2.4</td>
<td>3.3</td>
<td>.70</td>
<td>2.3</td>
<td>1.5</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>M4</td>
<td>.25 x .37 (6.4 x 9.4)</td>
</tr>
<tr>
<td>13-PDB-010-12-A</td>
<td>9.6</td>
<td>8.7</td>
<td>10.3</td>
<td>2.3</td>
<td>3.9</td>
<td>.98</td>
<td>.98</td>
<td>2.3</td>
<td>.98</td>
<td>.98</td>
<td>.98</td>
<td>.98</td>
<td>.98</td>
<td>.98</td>
<td>M6</td>
</tr>
<tr>
<td>13-PDB-020-12-B</td>
<td>13.9</td>
<td>12.6</td>
<td>15.1</td>
<td>2.5</td>
<td>6.1</td>
<td>7.3</td>
<td>1.2</td>
<td>4.8</td>
<td>2.4</td>
<td>3.3</td>
<td>7.5 (190)</td>
<td>2.6 (220)</td>
<td>1.4 (35)</td>
<td>3.9 (100)</td>
<td>M8</td>
</tr>
</tbody>
</table>

Common Mode

<table>
<thead>
<tr>
<th>Model</th>
<th>Frequency (MHz)</th>
<th>Insertion Loss (dB)</th>
</tr>
</thead>
<tbody>
<tr>
<td>13-PDB-005-010-020-035</td>
<td>0.025</td>
<td>120</td>
</tr>
</tbody>
</table>

Normal Mode

<table>
<thead>
<tr>
<th>Model</th>
<th>Frequency (MHz)</th>
<th>Insertion Loss (dB)</th>
</tr>
</thead>
<tbody>
<tr>
<td>13-PDB-005-010-020-035</td>
<td>0.025</td>
<td>120</td>
</tr>
</tbody>
</table>
API Technologies’ Spectrum Control brand now offers COTS single line feed-through EMI filters that are the commercial equivalent to M15733-PRF/72, M15733-PRF/73 and M15733-PRF/74. These reliable AC and DC high performance filters provide an excellent source of filtering in a compact package and are well suited for the military and aerospace industries. They filter up to 500 A with an attenuation of 40 to 90 dB from 1 MHz to 1 GHz and voltage rating of 130 VDC to 250 VAC. Please reference API mechanical drawing.

Options are available with or without discharge light “L” at the end of the part (52-1490-1x5L). Custom configurations are available. Consult factory.

<table>
<thead>
<tr>
<th>Commercial-Off-The-Shelf (COTS) Filters</th>
</tr>
</thead>
</table>

Shielded Filters
API has developed a new MRI filter product line which provides MRI/RF shielding solutions for medical, commercial and government applications. Offers 100 dB insertion loss per MIL-STD 220 from 14 KHz to 10 GHZ.

<table>
<thead>
<tr>
<th>Shielded Room Filters</th>
</tr>
</thead>
<tbody>
<tr>
<td>P/N Series</td>
</tr>
<tr>
<td>52-1490</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
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</tr>
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<td></td>
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<tr>
<td></td>
</tr>
</tbody>
</table>

* Add to P/N series (eg. 52-1490-1x5)

Options are available with or without discharge light “L” at the end of the part (52-1490-1x5L). Custom configurations are available. Consult factory.
Military/Aerospace Multisection Filters

API Technologies’ Spectrum Control brand will address virtually any requirement for a military/custom power product. Our engineering expertise and vertical integrations reduce your speed to market as well as saves you money. Our electromagnetic compatibility expertise in the tempest arena can help you meet MIL-F-15733 and MIL-STD 461 standard requirements.

Features
- High common and differential mode attenuation
- Standard designs up to 400 Amps
- Excellent insertion loss characteristics up to 10 GHz
- Voltage rating 115-250VAC and 400VDC up to 400 Hz
- Available to meet TEMPEST and FCC requirements
- Custom designs for application-specific requirements

Applications
- Military
- Commercial and military/aerospace
- Secured communications
- Switching power supplies
- Data processing equipment
- Ruggedized computers
- Radar
- Electronic warfare
- Ground/air weapon systems
- Satellites
- Ship board systems
- Land based vehicles
- Fixed and mobile control stations

Test Specifications
The high performance power line filters shown on pages 59 and 60 are designed to meet the following criteria.

The information shown can be used as a basis for filter specifications. (Contact factory for additional details).

<table>
<thead>
<tr>
<th>Test Group</th>
<th>Order of Test</th>
<th>Examination or Test</th>
<th>Test Method (Per MIL-STD-202)</th>
<th>Post Test Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>IIA</td>
<td>1</td>
<td>Voltage Drop</td>
<td>Paragraph 4.6.8 of MIL-F-15733</td>
<td>Three percent of rated voltage max.</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>Leakage Current</td>
<td>UL 1283</td>
<td>Per applicable specification</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>Temperature Rise</td>
<td>MIL-F-15733 Paragraph 4.6.4</td>
<td>25°C max.</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>Terminal Strength</td>
<td>Method 211, Condition A</td>
<td>No evidence of loosening or rupture. 5 lb. applied force. Line Cords: 35 Lbs.</td>
</tr>
<tr>
<td>IIB</td>
<td>1</td>
<td>Shock, Medium Impact</td>
<td>Method 213, Condition G</td>
<td>Must pass DWV and Insertion Loss</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>Vibration, High Frequency</td>
<td>Method 204, Condition A</td>
<td>Monitor for shorts or open</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>Thermal Shock</td>
<td>Method 107, Test Condition A</td>
<td>Pass 90% DWV IR to be 30% of initial</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>Humidity</td>
<td>Method 107, Condition B, except temperature equals 25°C</td>
<td>Pass 90% DWV IR to be 30% of initial</td>
</tr>
<tr>
<td>III</td>
<td>1</td>
<td>Life</td>
<td>Method 108, Condition D 1.2 x Rated AC voltage at max. operating temp. or 1.4 x DC voltage</td>
<td>Pass 90% DWV insulation resistance to be 30% of initial.</td>
</tr>
</tbody>
</table>
Military/Aerospace
Multisection Filters

**Insertion Loss**

### 52-600-001

- **Frequency (MHz):** 0.01 to 1000
- **Common mode:**
  - 0 dB
- **Differential mode:**
  - 0 dB

### 52-600-002

- **Frequency (MHz):** 0.01 to 1000
- **Common mode:**
  - 0 dB
- **Differential mode:**
  - 0 dB

---

**Circuit Schematic**

---

**Dimensions**

**52-600-001**

- **Width:** 2.50 in (63.5 mm)
- **Height:** 2.12 in (53.8 mm)
- **Chassis Mounting Hole:** 2.50 in (63.5 mm)

**52-600-002**

- **Width:** 2.50 in (63.5 mm)
- **Height:** 2.50 in (63.5 mm)
- **Chassis Mounting Hole:** 2.50 in (63.5 mm)

---

**Minimum Insertion Loss (db) Per MIL-STD-220**

<table>
<thead>
<tr>
<th>Model</th>
<th>Current Rating</th>
<th>Voltage Rating</th>
<th>Temperature Rating</th>
<th>DCR. max. (ohms)</th>
<th>Leakage Current (max.)</th>
<th>Mode</th>
<th>Minimum Insertion Loss (db)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>50K 150K 300K 1M 10M 100M 1G</td>
</tr>
<tr>
<td>52-600-001</td>
<td>5A</td>
<td>120/240VAC</td>
<td>-40°C to +65°C</td>
<td>.20</td>
<td>1 mA</td>
<td>COMM DIFF</td>
<td>33 65 80 80 80 80 60</td>
</tr>
<tr>
<td></td>
<td></td>
<td>60 Hz</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>37 65 80 80 80 80 60</td>
</tr>
<tr>
<td>52-600-002</td>
<td>10A</td>
<td>120/240VAC</td>
<td>-40°C to +65°C</td>
<td>.10</td>
<td>1 mA</td>
<td>COMM DIFF</td>
<td>– 50 70 80 80 70 60</td>
</tr>
<tr>
<td></td>
<td></td>
<td>60 Hz</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>25 50 75 80 80 80 60</td>
</tr>
</tbody>
</table>

Consult factory for UL/CSA approval availability.
### Military/Aerospace Multisection Filters

#### Insertion Loss

**52-523-002**

![Insertion Loss Graph]

#### Circuit Schematic

**52-523-002**

![Circuit Schematic Diagram]

#### Dimensions

**52-523-002**

![Dimensions Diagram]

#### Table: Minimum Insertion Loss (db) Per MIL-STD-220

<table>
<thead>
<tr>
<th>Model</th>
<th>Current Rating</th>
<th>Voltage Rating</th>
<th>Temperature Rating</th>
<th>DCR max. (ohms)</th>
<th>Leakage Current (max.)</th>
<th>Mode (max.)</th>
<th>Minimum Insertion Loss (db)</th>
</tr>
</thead>
<tbody>
<tr>
<td>52-523-002</td>
<td>5A</td>
<td>120/240VAC</td>
<td>-40°C to +65°C</td>
<td>0.25</td>
<td>1 mA</td>
<td>COMM</td>
<td>50K</td>
</tr>
<tr>
<td></td>
<td></td>
<td>60 Hz</td>
<td></td>
<td></td>
<td></td>
<td>DIFF</td>
<td>–</td>
</tr>
</tbody>
</table>

Consult factory for UL/CSA approval availability.
### Military/Aerospace Multisection Filters

**Insertion Loss**

**1212-0502**

![Insertion Loss Chart]

**Dimensions**

**1212-0502**

![Dimensions Diagram]

<table>
<thead>
<tr>
<th>Model</th>
<th>Current Rating</th>
<th>Voltage Rating</th>
<th>Temperature Rating</th>
<th>DCR max. (ohms)</th>
<th>Leakage Current (max.)</th>
<th>Cx Value</th>
<th>Minimum Insertion Loss (db) Per MIL-STD-220</th>
</tr>
</thead>
<tbody>
<tr>
<td>1212-0502</td>
<td>10A</td>
<td>350VDC 240VAC 60 Hz</td>
<td>-55°C to +125°C</td>
<td>.01</td>
<td>1 mA</td>
<td>5000pF</td>
<td>20 65 70 70</td>
</tr>
</tbody>
</table>

Consult factory for UL/CSA approval availability.
Military/Aerospace Multisection Filters

Secure Communications

API's electromagnetic compatibility expertise in the secure communication or "TEMPEST" arena is represented by this group of high performance filters. These units are especially well suited for use in MIL-STD-461 applications to reduce conducted emissions. The filters are manufactured with glass sealed terminals and connectors.

Features
- Excellent insertion loss profile
- Available for DC & AC applications up to 400 Hz
- Available for 3-14 Amp applications
- Custom systems can be designed to your specific needs

Dimensions

<table>
<thead>
<tr>
<th>Model</th>
<th>Current Rating</th>
<th>Voltage Rating</th>
<th>Temperature Range</th>
<th>DCR max. (ohms)</th>
<th>Leakage Current (max.)</th>
<th>Schematic</th>
<th>Minimum Insertion Loss (dB)</th>
</tr>
</thead>
<tbody>
<tr>
<td>52-378-001</td>
<td>3 Amps</td>
<td>240VAC 60 Hz Line to Line</td>
<td>-55°C to 85°C</td>
<td>.3</td>
<td>50 mA</td>
<td>A</td>
<td>30 60 70 80 80 70 70</td>
</tr>
<tr>
<td>52-378-002</td>
<td>5 Amps</td>
<td>240VAC 60 Hz Line to Line</td>
<td>-55°C to 85°C</td>
<td>.2</td>
<td>50 mA</td>
<td>B</td>
<td>24 64 70 80 80 70 70</td>
</tr>
<tr>
<td>52-378-004</td>
<td>5 Amps</td>
<td>240VAC 60 Hz Line to Line</td>
<td>-55°C to 85°C</td>
<td>.2</td>
<td>50 mA</td>
<td>A</td>
<td>34 64 70 80 80 70 70</td>
</tr>
<tr>
<td>52-378-005</td>
<td>3 Amps</td>
<td>240VAC 60 Hz Line to Line</td>
<td>-55°C to 85°C</td>
<td>.3</td>
<td>50 mA</td>
<td>B</td>
<td>40 70 80 80 80 70 60</td>
</tr>
</tbody>
</table>

API TECHNOLOGIES • 8061 Avonia Rd. • Fairview, PA 16415 • Ph: 814-474-1571 • Fax: 814-474-3110 • eis.apitech.com
API TECHNOLOGIES’ SPECTRUM CONTROL GmbH • Hansastrasse 6 • 91126 Schwabach, Germany • Phone: (49)-9122-795-0 • Fax: (49)-9122-795-58
### Military/Aerospace Multisection Filters

#### Insertion Loss

![Insertion Loss Chart](chart.png)

3 Phase and 400 Hz models available. Please consult the factory.

#### Dimensions

<table>
<thead>
<tr>
<th>Model</th>
<th>Fig.</th>
<th>Current Rating</th>
<th>Voltage Rating</th>
<th>Temperature Range</th>
<th>DCR max. (ohms)</th>
<th>Leakage Current (max.)</th>
<th>Sch.</th>
<th>Mode</th>
<th>Minimum Insertion Loss (dB)</th>
</tr>
</thead>
<tbody>
<tr>
<td>52-387-010</td>
<td>1</td>
<td>10 Amps</td>
<td>240VAC 60 Hz Line to Line</td>
<td>-55°C to 85°C</td>
<td>.2</td>
<td>50 mA</td>
<td>C</td>
<td>common</td>
<td>24 60 70 80 80 70</td>
</tr>
<tr>
<td>52-387-012</td>
<td>1</td>
<td>5 Amps</td>
<td>240VAC 400 Hz Line to Line</td>
<td>-55°C to 85°C</td>
<td>.2</td>
<td>5 mA</td>
<td>D</td>
<td>common</td>
<td>34 64 70 80 80 70</td>
</tr>
<tr>
<td>52-409-001</td>
<td>2</td>
<td>14 Amps</td>
<td>240VAC 60 Hz Line to Line</td>
<td>-55°C to 85°C</td>
<td>.04</td>
<td>50 mA</td>
<td>E</td>
<td>common</td>
<td>14 30 45 80 80 70</td>
</tr>
</tbody>
</table>
Secure Communications

Features
- Meets applicable sections of MIL-F-15733
- Excellent performance
- Integral IEC connector
- Available with integral fused IEC connector and two pole switch
- Current ratings to 15 Amps
- Custom designs available

Electrical Specifications

 Rated current ranges .................. 3, 6, 10, 15 Amps
 Rated voltage........................... 115-250VAC
 Operating frequency............... 50-60 Hz
 Maximum leakage current
   @115VAC 60 Hz ........... 1.2 mA
   @250VAC 50 Hz ........... 2.5 mA
 Test voltage
   Line-to-Line ..................... 1450VDC
   Line-to-Ground ................. 2250VDC

Insertion Loss

Common Mode (CM) is tested in a 50 ohm system with all lines tied together on the line and load sides of the filter. Differential Mode (DM) is tested in a 50 ohm system using a 180° phase splitter on both sides of the filter.
### Military/Aerospace Multisection Filters

#### Dimensions - 760 Series

<table>
<thead>
<tr>
<th>Series</th>
<th>Current Rating (Amps)</th>
<th>Filter Dimensions</th>
</tr>
</thead>
<tbody>
<tr>
<td>760</td>
<td>3, 6</td>
<td>A: 2.25 (57.15)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>B: 3.00 (76.20)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>C: 1.88 (47.75)</td>
</tr>
<tr>
<td></td>
<td>10, 15</td>
<td>A: 5.50 (139.70)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>B: 3.15 (88.01)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>C: 2.10 (53.34)</td>
</tr>
</tbody>
</table>

#### Dimensions - 761, 762 Series

<table>
<thead>
<tr>
<th>Series</th>
<th>Current Rating (Amps)</th>
<th>Filter Dimensions</th>
</tr>
</thead>
<tbody>
<tr>
<td>761, 762</td>
<td>3, 6</td>
<td>A: 2.55 (64.77)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>B: 2.97 (75.43)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>C: 1.88 (47.75)</td>
</tr>
<tr>
<td>761</td>
<td>10, 15</td>
<td>A: 5.50 (139.70)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>B: 3.15 (88.01)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>C: 2.10 (53.34)</td>
</tr>
<tr>
<td>762</td>
<td>10, 15</td>
<td>A: 5.75 (146.05)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>B: 3.15 (88.01)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>C: 2.10 (53.34)</td>
</tr>
</tbody>
</table>
EMI Power Filter Solutions

Military and Aerospace
API Technologies has a long history of partnering with leading suppliers of the defense industry. Our ability to find solutions to suppress or eliminate electromagnetic interference (EMI) allows us to provide the high reliability filters required for military and aerospace applications. API's Spectrum Control brand can design your custom filter with a unique mechanical package for those unusual or tight fitting spaces, higher performance filtering and the voltage rating you need to address all of your AC and DC power issues.

Communications
API's Spectrum line of power filter solutions can create an agency-approved product that will filter and condition the power to your communications infrastructure equipment, as well as eliminate emissions that can contaminate your distributed AC and DC power. Our custom power filters will incorporate all the components and the filtering in one complete package to save you space, time and money. And as a vertically integrated supplier, API offers global low cost manufacturing which allows us to produce fast prototypes and a quicker time to market.

Medical
Our many years of experience in providing EMI/RFI solutions has given us the know-how to design products to meet the specific constraints and requirements of the medical industry. Much of the medical equipment used today requires complete suppression of any and all EMI, as well as low-leakage, nonmagnetic properties to prevent negatively affecting surrounding equipment. We will design and build a high reliability, high performance custom power filter to meet your system and all EN requirements.

Industrial
At API, we do everything from package design and metalworking to EMI filtering to EMC testing, which means a lower cost for you. Our engineers will design and build a custom power filter that will satisfy global EMC regulations, improve speed-to-market times, overcome space constraints and withstand harsh environmental conditions. Our plug-and-play designs cover a range of industrial and instrumentation applications that will address any of your power filtering needs with current ratings as high as 500 Amps.