DJM electronics

EMI Filters and RF Shielding Products
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Ethernet EMI Filters

The DJM Electronics FOIL™ brand Ethernet filters utilize Patent Pending technology and are the only EMI/RFI filters for Ethernet on the market that offer 100dB performance from 10kHz to 10GHz and higher. Housed in a single, convenient filter package, FOIL™ Ethernet Filters are the easiest and most reliable solution for bringing 10/100 and Gigabit Ethernet access to all varieties of shielded rooms and enclosures.

Standard signal line filters rely on capacitors and inductors to eliminate unwanted RF signals. However, these types of filters often eliminate the high frequencies that make up the sharp edges of high speed digital square wave signals thereby degrading the integrity of the signal. In order to avoid this side effect, it is necessary for standard signal line filters to have extended passbands that allow the higher frequencies to pass unimpeded. Even the best standard signal line filters offer only 70dB from 50MHz to 10GHz and will only work with 10Base-T. There are no Fast Ethernet (100Base-TX) or Gigabit Ethernet (1000Base-T) standard signal line filters available on the market. Also, it is important to note that standard signal line filters do not differentiate between Ethernet signals and undesirable signals. They act like a "hole" in the shielded enclosure to all signals - good and bad - within the passband.

Unlike standard signal line filters, FOIL™ Ethernet Filters utilize a fiber optic isolation link (FOIL) to maintain 100dB shielding integrity. The filter converts ONLY Ethernet packets, so there is no passband and no transmission of unwanted signals.

FOIL™ Ethernet Filters come in four models:
- *FOIL 10/100v3*
- *FOIL 10/100v3 - POE* (Power Over Ethernet compatible)
- *GigaFOILv3*
- *GigaFOILv3 - POE* (Power Over Ethernet compatible)

We guarantee that FOIL™ Ethernet Filters will not interfere with your network, increase hop counts or degrade network performance - a common problem with standard signal line filters.

Customization

FOIL 10/100v3 with modified penetration and bayonet power connector

FOIL™ brand Ethernet filters can be modified to meet specific customer requirements. If you need an Ethernet filter for a military or harsh environment or require customized housings or functions, please [contact us](#) to discuss your application.

Typical Performance
(all models)

Shielding Effectiveness
100dB from 10kHz to 10GHz

Insertion Loss*
100dB from 10kHz to 10GHz

Radiated Emissions*
FOIL™ Ethernet filters are active filters and produce a limited amount of radiated emissions inside the shielded enclosure. Please [contact DJM Electronics](#) for information regarding your particular application.

Environmental
Operating Temperature: 0°C - 60°C (32°F - 140°F)
Humidity: 5% - 90% (non condensing)

*Note
Insertion Loss performance is extrapolated from tests performed using a method as close to MIL-STD-220B as possible. The nature of twisted pair cabling and RJ-45 connectors makes testing to this standard extremely difficult.

Radiated emissions tests were performed using a method as close to CISPR22 and FCC Part 15 as possible. The nature of the filter required it be mounted in a shielded room and tested from 3 meters away instead of on a standard OATS. Actual emissions performance may differ from filter to filter.

Communication and Network Performance
(models as specified)

Auto MDI/MDI-X Configuration
Automatically detects and configures the twisted pair port on the converter to the correct MDI or MDI-X configuration.

Auto Negotiation
Automatically configure 10Mbps or 100Mbps (*FOIL 10/100v3* and *FOIL 10/100v3 - POE*) or 10Mbps, 100Mbps or 1000Mbps (*GigaFOILv3* and *GigaFOILv3 - POE*)

Flow Control
Supports 802.3x Flow Control for Full-Duplex mode and Back Pressure for Half-Duplex mode.

Hot Pluggable
Can be plugged in/out without affecting the filter or other links.

Auto Link Restoration
Automatically re-establishes the network link after a link loss.

Communication Standards
FOIL 10/100v3 and FOIL 10/100v3 - POE
  - IEEE802.3 10Base-T (Ethernet)
  - IEEE802.3u 100Base-TX (Fast Ethernet)

GigaFOILv3 and GigaFOILv3 - POE
  - IEEE802.3 10Base-T (Ethernet)
  - IEEE802.3u 100Base-TX (Fast Ethernet)
  - IEEE802.3ab 1000Base-T/TX (Gigabit Ethernet)

Power Over Ethernet
FOIL 10/100v3 - POE and *GigaFOILv3 - POE* will pass power and not interfere with 802.3af or 802.3at devices utilizing Mode A power configurations (ie power on pairs 2 and 3). Mode B (ie power on pairs 1 and 4) and non-standard POE implementations are available by special order.

Construction

Filter Housing
  - 12 ga zinc plated cold rolled steel
  - 1" NPT threaded penetration w/brass mounting flange nut and mesh gasket

Power Requirements

- Input: 100-240VAC; 50/60Hz
- Output: +5V / 2000 mA maximum
- DC plug type: center positive

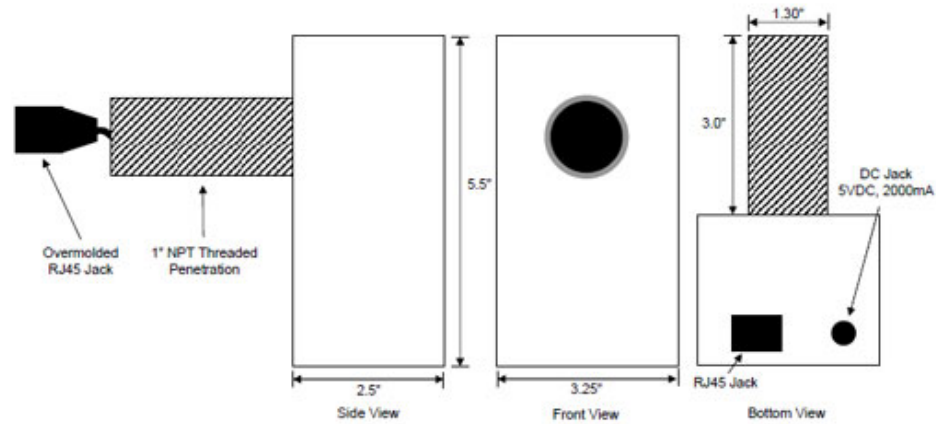## Dimensions

FOIL 10/100v3 and GigaFOILv3
5.50" x 3.25" x 2.50" with 3" threaded penetration (1" NPT)

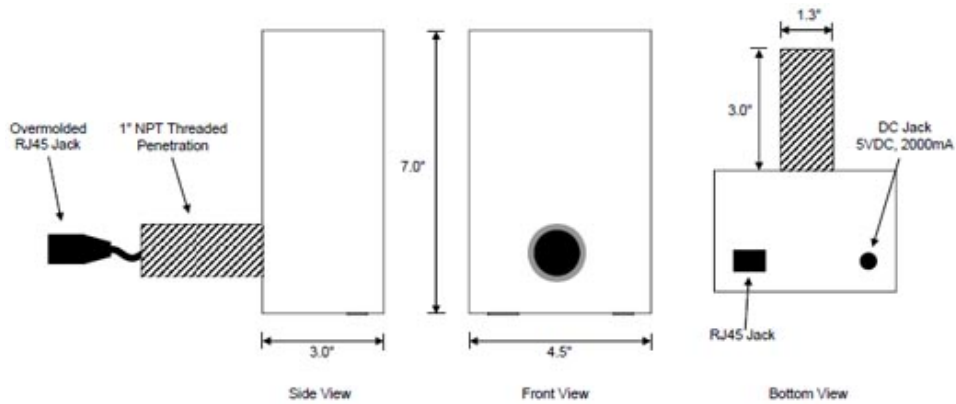### FOIL 10/100v3 - POE and GigaFOILv3 - POE
7.00" x 4.50" x 3.00" with 3" threaded penetration (1" NPT)

Drawings

FOIL 10/100v3 and GigaFOILv3

FOIL 10/100v3 - POE and GigaFOILv3 - POE

**Click here to request a quote
or more information on FOIL™ Ethernet Filters**