Thank you for purchasing the GigaFOILv4 – INLINE, the newest generation of the FOIL™ brand of Ethernet filters. Based on patented Fiber Optic Isolation Link ("FOIL") technology, the GigaFOILv4 – INLINE utilizes fiber optics and specially designed circuitry to prevent 99.99999999% of electromagnetic interference (ie "Noise") from passing through the filter. The filter covers a frequency range of below 14kHz to beyond 18GHz and does not require a passband, meaning the only signal passing through the filter is the clean digital Ethernet signal.

Installation

1. Before installing the GigaFOILv4 – INLINE, make sure the filter and the device you are protecting ("Protected Device") are not powered ON.
2. Place the filter as close as you can to the Protected Device. Use as short of an Ethernet cable (CAT 5e or better) as you can to connect the filter output (identified on the filter label as "OUTPUT") to the Protected Device.
3. Connect the filter input (identified on the filter label as "INPUT") to your network.
4. The GigaFOILv4 – INLINE comes with a 5V 1A regulated linear DC power supply. Connect the power supply to the filter and plug the power supply into the AC outlet. The green lights on both the INPUT and OUTPUT connectors should light and the yellow light on the INPUT connector should also light and start blinking.
5. Turn on the Protected Device. The yellow light on the OUTPUT should light and start blinking.
6. Verify the Protected Device has a network connection. You may now use the Protected Device as you normally would.
7. If the Protected Device fails to function normally, refer to the Troubleshooting Guide at the end of this document.

Frequently Asked Questions

Should I use shielded or unshielded Ethernet Cables? Why or why not?

Shielded cables can sometimes improve a problem or they can sometimes act like antennas and make it worse. We recommend starting with unshielded cables and switching to shielded cables if you are encountering noise or humming issues. The most important factor is to use a short cable between the filter and the Protected Device. That gives noise less opportunity to couple onto the cable. The next most important factor is to separate the cable from noise sources (e.g. power lines, signal lines, control lines, radios, etc.).

Will the FOIL Ethernet Filter work on CAT5e / CAT6 / CATX cables?

CAT5/CAT6/CAT7/etc. are cabling standards (ie wire gauge, twists per foot, insulation material, etc.). What matters is what is being transmitted over the cables. If it is Ethernet, then the FOIL Ethernet filters will work. But CAT5/CAT6/CAT7/etc. are sometimes used to carry other things like proprietary data, power, thermostat signals, sound, etc. In those circumstances, the FOIL Ethernet filters will not work and will actually block the signals.

What are the markings on the side of my filter? Is it defective?

No, your filter is not defective. The markings are purely cosmetic and are caused by the high heat required for silver solder.

The linear power supply that came with the filter says 120VAC 60Hz. Will it work in countries with 220VAC 50Hz power?

No. Linear Power Supplies are designed for specific voltages and power frequency. If you need a 220VAC 50Hz power supply, please let us know during the purchase process.

GigaFOILv4 – INLINE Specifications

Filter Performance	Insertion Loss	100dB from 10kHz to 18GHz
	Conducted/Radiated Emissions	Exceeds MIL-STD-461 CE102 Exceeds MIL-STD-461 RE102 Exceeds FCC Part 15 A, B Exceeds EN 55022 Class A, B
Network Performance	Auto MDI/MDI-X	Automatically detects and configures MDI or MDI-X.
	Auto Negotiation	Automatically configure 10Mbps, 100Mbps or 1000Mbps
	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 filter or other links.
	Auto Link Restoration	Automatically re-establishes network link after a link loss.
	Communication Standards	IEEE802.3 10Base-T (Ethernet) IEEE802.3u 100Base-TX (Fast Ethernet) IEEE802.3ab 1000Base-T/TX (Gigabit Ethernet)
Safety and Regulatory	UL File Number	E362686
	Standards	UL 60950-1 CSA C22.2 No. 60950-1 RoHS 2011/65/EU RoHS 2015/863 REACH 1907/2006 Article 33 POP 850/2004 EN 55024:2010 EN 55032:2012 + AC:2013 EN 61000-3-2:2014 EN 61000-3-3:2013 FCC 47 CFR Part 15B ICES-003 Issue 6
Environmental	Operating Temperature	-40ºC - 70ºC (-40ºF - 158ºF) Continuous -40ºC - 85ºC (-40ºF - 185ºF) <72 Hours
	Humidity	5% - 90% (non condensing)
Construction	Filter Housing	20 ga zinc plated cold rolled steel
	Power Requirements	+5VDC max / 1A min Power Supply Input: 100-240VAC; 50/60Hz
	Dimensions	5.50" x 2.45" x 2.50"

The FOIL Ethernet filters do not require any special treatment. Connect the filter to a computing device and a network (or second computing device) and the filter will autonegotiate the connection between the two and should work seamlessly and invisibly. However, occasionally there is a communication problem or network/software hiccup that interferes with network connectivity. And less frequently, there is a hardware failure.

In the event that your FOIL Ethernet filter fails to work or stops working, follow these instructions:

NOTE: FOIL Ethernet filters pass Ethernet packets ONLY. They will NOT pass other signals such as the tones or pulses used by network cable testers or digital phone signals that are not based on Ethernet (TCP/IP). The ONLY way to test a FOIL Ethernet filter is to connect the filter to a computing device and a network (or other computing device) and verify connectivity.

Step 1. Verify the filter is plugged in and the power supply is functioning. The power supply should be able to provide 5VDC and at least 1 amp to the filter. If necessary, use a multimeter to check that the power supply output is 5VDC or slightly higher.

Step 2. Check the input connector and make sure the pins are not bent and are properly aligned so they will come in contact with the cable connector pins.

Step 3. Do the same for the output connector and make sure the pins are not bent and are properly aligned so they will come in contact with the cable connector pins.

Step 4. Reset the computing device, network device and the filter at the same time, allow ample time for everything to come back up and check for network connectivity. The filter can be reset by unplugging the power supply for 5 seconds and then plugging it back in.

Step 5. If there is still no connectivity, try "repairing" the network connection on the computing device or force the computing device to release its IP address and renegotiate with the network for a new IP address.

Step 6. If you are connected to a managed switch (eg Cisco switch), it is possible that the switch is turning off the network connection because it sees the FOIL Ethernet Filter as an unauthorized network (the filter acts like its own switch to minimize traffic through the fiber connection). You will need to check with your IT department to see if they use Bridge Protocol Data Unit (BPDU) Guard or similar security feature. Alternatively, you can test the filter by disconnecting from the managed switch and using two computers or network devices through the filter instead.

Step 7. Finally, verify that your computing device, cables and network are functioning properly by directly connecting the computing device to the network. You MUST use the same computing device, cables and network connection to positively remove these variables as possible causes of the problem. For the cables, you should either use an RJ-45 coupler to connect the cables together, or test each cable separately.

Step 8. If there is still no connectivity, then the filter may be faulty. It will be necessary for you to contact us and arrange for an RMA number.

All FOIL Ethernet filters have a two year warranty from date of first sale.

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