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# Installation Guide for In-Line Link Aggregator Tap GigaBit Fiber to GigaBit SFP Monitor Ports







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## **Introduction**

Thank you for choosing the most versatile monitoring Tap available today. Net Optics Link Aggregator Taps are an efficiency breakthrough for passively monitoring multiple full-duplex links. Whether you are a novice or an expert, this installation guide is designed to help answer any questions and to provide a quick set-up reference.

Net Optics Link Aggregator Tap provides superior monitoring coverage while leveraging monitoring resources. Providing traffic from multiple network links, the Link Aggregator Tap combines up to four full-duplex GigaBit Fiber links (eight half-duplex data streams) into one or up to four GigaBit monitor ports.

Installing a monitoring device in each segment of the network is often time consuming and expensive. Restricted by tight budgets, security managers must make compromises that leave portions of the network exposed to attacks. Net Optics' Link Aggregator addresses this challenge by increasing the number of links covered by monitoring devices already installed.

### **No Packets Left Behind**

The Link Aggregator Tap buffers and scans incoming traffic from the network ports on a round-robin basis. Buffer size and scan rate is optimized to ensure that no packets are dropped and there is no bandwidth limitation on incoming data streams. The buffers and the high bandwidth of GigaBit monitor ports guarantee that no data is lost during traffic surges.

### **Security and Visibility**

Without an IP address, monitoring devices are isolated from the network, dramatically reducing their exposure to attacks. However, the monitoring device connected to the Tap still sees all full-duplex traffic as if it were in-line, including Layer 1 and Layer 2 errors.

### **Reliability**

For extra uptime protection, Net Optics Taps offer redundant power connections. Should the primary power source fail, the Tap automatically switches to the backup power source. Power LEDs on the front of the Tap indicate the current power source.

## Key Features

### Passive, Secure Technology

- Supports full-duplex monitoring of four links with a single NIC, increasing monitoring efficiency
- Optional Regeneration Tap technology enables up to four devices to simultaneously monitor all aggregated traffic
- Provides complete full-duplex visibility at 1000 Mbps without data stream interference or introducing a point of failure
- Passes all traffic (including errors) from all layers for comprehensive troubleshooting
- No IP address is needed for the Tap or monitoring device, enhancing monitoring security
- Redundant power ensures monitoring uptime
- Fully RoHS compliant
- Fully IEEE 802.3 compliant

### Ease of Use

- LED indicators show redundant power, speed, link, and activity status
- Front-mounted connectors support easy installation and operation
- Monitoring and network cables included for plug-and-play deployment
- Silk-screened application diagram illustrates all connections for easy deployment
- Small form-factor pluggable (SFP) monitor port connectors increase monitoring options
- Tested and compatible with all major manufacturers' monitoring devices, including protocol analyzers, probes, and intrusion detection/prevention systems

### Support

- Net Optics offers free technical support throughout the lifetime of your purchase. Our technical support team is available from 8 am to 5 pm Pacific Time, Monday through Friday at +1 (408) 737-7777 and via email at [ts-support@netoptics.com](mailto:ts-support@netoptics.com). FAQs are also available on Net Optics website at [www.netoptics.com](http://www.netoptics.com).

## Unpacking and Inspection

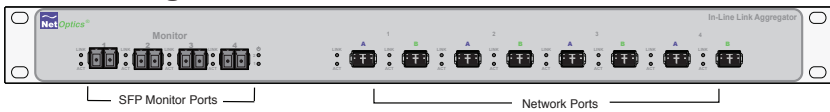
Carefully unpack the 10/100/1000 In-Line Link Aggregator Tap and check for damaged or missing parts. The Link Aggregator Tap ships with the following:

- GigaBit Fiber In-Line Link Aggregator Tap
- Two power cords
- Installation Guide

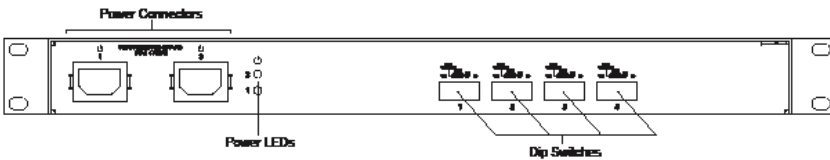
In addition to the Port Aggregator, you should have ordered at least one SFP module. You may have also ordered an extended warranty. Carefully check the packing slip against parts received. If any part is missing or damaged, contact Net Optics' Customer Service immediately.

Part Number	Description
LA-IL4SX/4SFP	Multimode fiber Link Aggregator
LA-IL4LX/4SFP	Singlemode fiber Link Aggregator
LA-IL450SX/4SFP	Multimode 50 $\mu$ m fiber Link Aggregator
LA-IL4SX/4SFP-48V	Multimode fiber Link Aggregator -48V DC
LA-IL4LX/4SFP-48V	Singlemode fiber Link Aggregator -48V DC
LA-IL450SX/4SFP-48V	Multimode 50 $\mu$ m fiber Link Aggregator -48V DC

## Product Diagrams

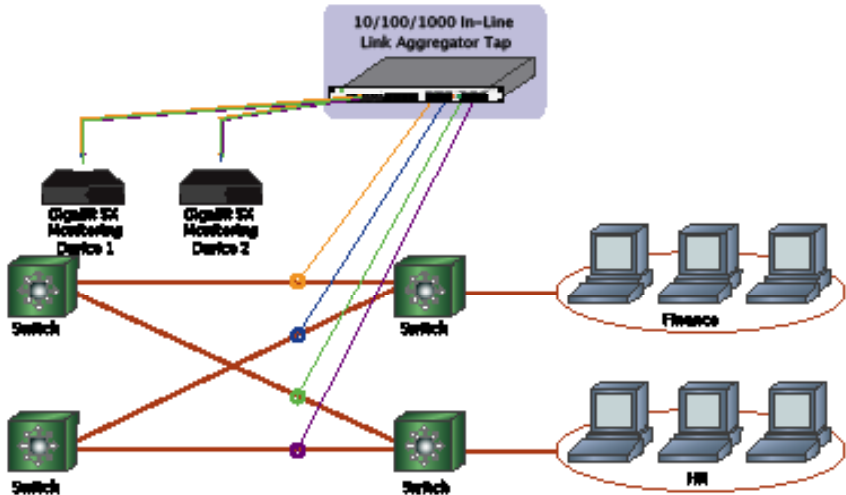


**Figure 1: Front Panel**



**Figure 2: Rear Panel**

## Application Diagram



**Figure 5: Application Diagram**

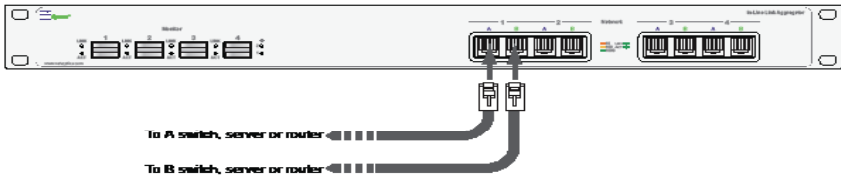
## LED Indicators

- **PWR 1/ PWR 2:** Main and Redundant Power. If the Tap is deployed with both power supplies, both LEDs illuminate when the Tap is plugged in. If an LED is off, this indicates that the corresponding power supply is not connected or not functioning.
- **Activity Indicator:** When there is activity on the link, LED flashes green.
- **Link Indicator:** When a good link is established, the LED is a solid green.

## Connecting to the Network

**To connect to the network:**

1. Connect Network Port 1 to the appropriate switch, server or router device using a LC type fiber cable.
2. Connect Network Port 2 to the appropriate switch, server or router device using a LC type fiber cable.



**Figure 4: Connecting to the Network**

3. Repeat Steps 1 and 2 for the rest of the network ports of the Link Aggregator Tap.
4. Verify that the Link Aggregator Tap Network Ports are cabled in-line between two devices.

**Note:**

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*The second power supply is available to support the flow of traffic to the monitoring device should the first power supply fail. If the first power supply is unavailable, the second power supply supplies all power for the Tap.*

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## Connecting Monitoring Devices

1. Supply power to the Tap using the power supply adapter included with the unit. Verify that the power LED illuminates.
2. Remove the SFP from its protective packaging.
3. Remove the temporary plug from Monitor Port 1.



**Figure 6: Connecting to Monitoring Devices using SFP modular connectors**

4. Insert the SFP in the Monitor 1 Port until you hear it click into place.
5. Connect Monitoring Port 1 to the appropriate port on the monitoring device to monitor the **A** and **B** links.
6. If you are installing multiple SFPs, repeat Steps 1 through 4 for Monitor Port 2.

## Specifications

### Environment

Operating Temperature: 0°C to 40°C

Storage Temperature: -10°C to 70°C

Relative Humidity: 10% min, 95% max, non-condensing

### Power

Power Supply Input: 100-240VAC, 0.5A, 47-63Hz

DC Power Input: -48 VDC typical, -36 VDC min, -75 VDC max

### Mechanical

Dimensions: 1.75" high x 17.125" deep x 17" wide

### Certifications

Fully RoHS compliant

### Copper Interface

Cable Type: 22-24 AWG unshielded twisted pair cable, CAT5/CAT5e

Link Distance Supported: 100 meters

### Optical Interface

Fiber Type: Multimode: Corning 62.5/125 $\mu$ m, wavelength, 850nm

Fiber Type: Singlemode: Corning 8.5/125 $\mu$ m, wavelength, 1310nm

### Connectors

#### **LA-IL4SX/4SFP and LA-IL4SX/4SFP-48V:**

(8) LC, fiber connectors (network ports)

(4) SFP ports for SFP modular connectors

#### **LA-IL4LX/4SFP and LA-IL4LX/4SFP-48V:**

(8) LC, fiber connectors (network ports)

(4) SFP ports for SFP modular connectors

#### **LA-IL450SX/4SFP and LA-IL450SX/4SFP-48V:**

(8) LC, fiber connectors (network ports)

(4) SFP ports for SFP modular connectors

## Accessories

### SFP Conversion Kits

SFPKT-SX Multimode fiber SFP with cable

SFPKT-LX Singlemode fiber SFP with cable

SFPKT-CU3 Triple-speed copper SFP with cable

## **Limitations on Warranty and Liability**

Net Optics offers a limited warranty for all its products. IN NO EVENT SHALL NET OPTICS, INC. BE LIABLE FOR ANY DAMAGES INCURRED BY THE USE OF THE PRODUCTS (INCLUDING BOTH HARDWARE AND SOFTWARE) DESCRIBED IN THIS MANUAL, OR BY ANY DEFECT OR INACCURACY IN THIS MANUAL ITSELF. THIS INCLUDES BUT IS NOT LIMITED TO LOST PROFITS, LOST SAVINGS, AND ANY INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING FROM THE USE OR INABILITY TO USE THIS PRODUCT, even if Net Optics has been advised of the possibility of such damages. Some states do not allow the exclusion or limitation of implied warranties or liability for incidental or consequential damages, so the above limitation or exclusion may not apply to you.

Net Optics, Inc. warrants this Tap to be in good working order for a period of ONE YEAR from the date of purchase from Net Optics or an authorized Net Optics reseller.

Should the unit fail anytime during the said ONE YEAR period, Net Optics will, at its discretion, repair or replace the product. This warranty is limited to defects in workmanship and materials and does not cover damage from accident, disaster, misuse, abuse or unauthorized modifications.

If you have a problem and require service, please call the number listed at the end of this section and speak with our technical service personnel. They may provide you with an RMA number, which must accompany any returned product. Return the product in its original shipping container (or equivalent) insured and with proof of purchase.

### ***Additional Information***

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Net Optics is always open to any comments or suggestions you may have about its products and/or this manual.

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