Installation Guide for 10/100BaseT Active Response Regeneration Tap™

Models RGN-CU-AR-IL2, RGN-CU-AR-IL4, RGN-CU-AR-IL8

Doc. PUBRGNCUARILU Rev. 1, 06/06

Contents

PLEASE READ THESE LEGAL NOTICES CAREFULLY.

By using a Net Optics Regeneration Tap you agree to the terms and conditions of usage set forth by Net Optics, Inc.

No licenses, express or implied, are granted with respect to any of the technology described in this manual. Net Optics retains all intellectual property rights associated with the technology described in this manual. This manual is intended to assist with installing Net Optics products into your network.

Trademarks and Copyrights

Additional Information

Net Optics, Inc. reserves the right to make changes in specifications and other information contained in this document without prior notice. Every effort has been made to ensure that the information in this document is accurate. Net Optics is not responsible for typographical errors.

Introduction

Net Optics 10/100 Active Response Regeneration Taps solve the key physical layer challenges of multi-device monitoring and response. Active response capability increases Tap-based monitoring flexibility and efficiency. For a complete picture of network health, these Taps connect up to eight different network management and security devices at any single network location.

One Tap, No Idle Resources

Keep your intrusion detection and prevention systems, protocol analyzers, RMON probes, and other security devices productive with a single Regeneration Tap. Maximize resources and save on access points when multiple devices can monitor link traffic simultaneously through a single Regeneration Tap. Secure, passive access for multiple devices simply means a better return on monitoring investments.

Response Ready

When active responses to network events are required, the last two monitoring ports can be changed to Active Response Ports using a hardware switch. The bi-directional Active Response Port buffers and transmits into the network link any type of Ethernet packet, from a simple TCP reset to ICMP messages. The optional Active Response Port can be easily switched back to passive monitoring via the hardware switch.

The combination of active response capability and passive monitoring in the Tap reduces the number of devices and network ports required for active response functionality.

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

- Enables real-time, simultaneous full-duplex monitoring of a single 10/100 link with two monitoring devices
- Provides complete full-duplex visibility at 10 or 100 Mbps without data stream interference or introducing a point of failure

- Passes all traffic (including errors) from all network layers for comprehensive troubleshooting
- Redundant power ensures monitoring uptime
- Fully IEEE 802.3 compliant
- Fully RoHS compliant

Enhanced, Efficient Monitoring

- Active response capability increases Tap-based monitoring flexibility and efficiency
- Hardware switch provides a secure transition between passive mode (transmit only) and active mode (transmit/receive) for the Active Response Port

Ease of Use

- LED indicators show redundant power, speed, link, and activity status.
- DIP switches select auto-negotiation or fixed speed and duplexing settings for the Tap
- Front-mounted connectors support easy installation and operation
- Silk-screened application diagram illustrates all connections for easy deployment
- Tested and compatible with all major manufacturers' monitoring devices, including protocol analyzers, probes, and intrusion detection/prevention systems

Support

- Net Optics offers free technical 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. FAQs are also available on Net Optics website at www.netoptics.com.

About This Guide

Please read the guide before attempting to install 10/100BaseT Active Response Regeneration Tap. This guide covers the following models:

Part Number	Description
RGN-CU-AR-IL2	2x1 10/100 Active Response Regeneration Tap
RGN-CU-AR-IL4	4x1 10/100 Active Response Regeneration Tap
RGN-CU-AR-IL8	8x1 10/100 Active Response Regeneration Tap

Unpacking and Inspection

Carefully unpack the 10/100 Active Response Regeneration Tap and check for damaged or missing parts. The Tap ships with the following:

- 10/100 Active Response Regeneration Tap
- Two power cords
- Installation Guide
- Fasteners for rack mounting

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.

Product Diagrams

Figure 1: RGN-CU-AR-IL2 Front Panel

Figure 2: RGN-CU-AR-IL4 Front Panel

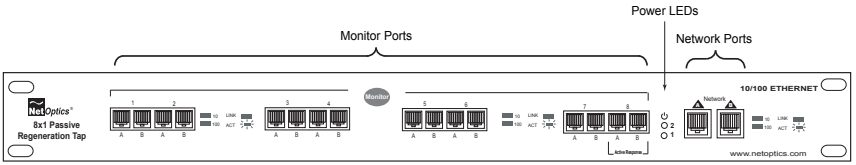


Figure 3: RGN-CU-AR-IL8 Front Panel

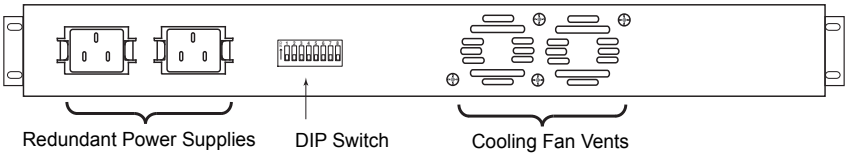


Figure 4: Back Panel (all models)

LED Indicators

- **Link Indicators:** Located on the right corner of each RJ45. If a good link is established, the LED illuminates a steady green.

- **10/100 Indicators:** Located on the left corner of each RJ45. If the Port is set to 10 Mbps, the LED illuminates yellow. If the Port is set to 100 Mbps, the LED will illuminate green.

- **PWR 1/ PWR 2:** Main and Redundant Power. If the Tap is deployed with both power supplies, both LEDs illuminate white when the Tap is connected to power. An off power LED indicates that the corresponding power supply is not functioning or not connected.

Cabling Guidelines

- If connecting to Switches or Hubs, use CAT5 RJ45 cross-over cabling.
- If connecting to Routers or NICs, use CAT5 RJ45 straight-through cabling.

Connecting to the Network

1. Connect Network Port A to the appropriate switch Network port using a CAT5 RJ45 cable.

2. Connect Network Port B to the appropriate switch Network port using a CAT5 RJ45 cable.

3. Check the RJ45 connector LEDs to verify that the Regeneration Tap is receiving traffic from the in-line ports.

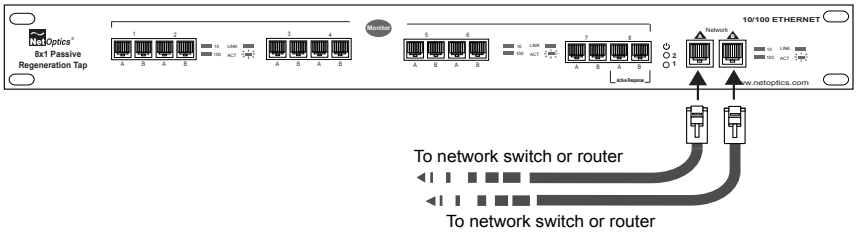


Figure 5: Connecting to the Network

Note:

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.

Connecting to the Monitoring Devices

1. Supply power to the Tap using the power supplies included with the unit. Two power supplies are included. The use of the second redundant power supply is optional.

2. Verify that the Power LEDs illuminate. PWR 1 illuminates when the first power supply is in use, and PWR 2 illuminates when the second power supply is in use. Both power supplies can be plugged into the Tap at the same time.

3. Connect the Active Response Port A and B (Monitoring Port 8A or 8B) to the appropriate port on the monitoring device using a CAT5 RJ45 straight-through cable.

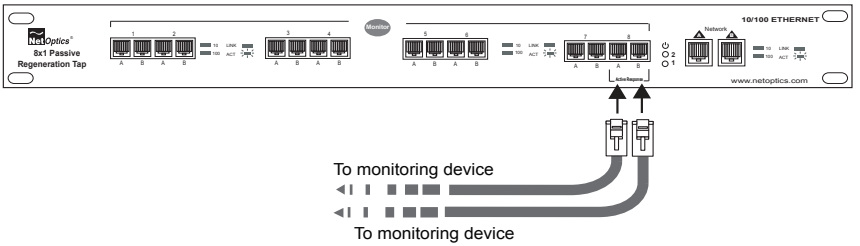


Figure 6: Connecting to Monitoring Devices through Active Response Ports

4. Connect Monitoring Port 1A and 1B to the appropriate port on the monitoring devices using a CAT5 RJ45 straight-through cable.

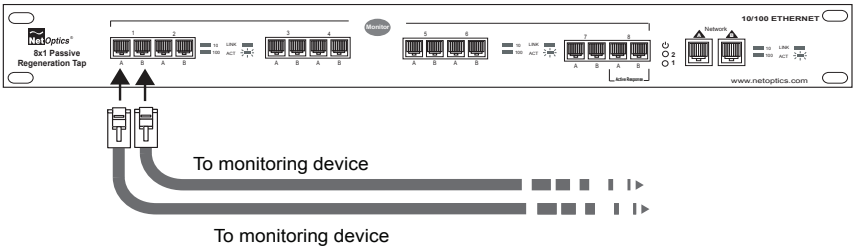


Figure 7: Connecting to Monitoring Devices

5. Repeat Step 4 if your model has a second copper Monitor Port.

Active Response Regeneration Tap FAQs

Q: What types of active responses are supported?

A: With an Active Response Regeneration Tap, an administrator can transmit any type of Ethernet packet back into the original link, supporting all common types of active responses generated by intrusion detection systems, and by intrusion prevention systems deployed in passive mode. The most common response types are TCP resets, and firewall rule changes. While the Tap can support both types of responses, we advocate extreme caution in dynamically updating firewall rules due to the risk of disabling network services. Because most firewalls are managed out-of-band, however, it is unlikely that the Regeneration Tap will be part of a rule change scenario.

Q: How are collisions avoided when active responses are transmitted back into the original link?

A: On each side of the full-duplex link, there is a small buffer for traffic arriving from the network, and another small buffer for active response traffic arriving from the monitoring device. Traffic is released from this buffer pair on a first-in, first-out basis. If both sides of the buffer are empty and a packet originating from the monitoring device and a packet originating from the network arrive at the same time, priority is given to the network packet.

Active Response Regeneration Taps FAQs (Continued)

Q: How much bandwidth is available on the Active Response Port?

A: The average amount of bandwidth for active responses is determined by the average available capacity on the link. For example, on a 100 Mbps full-duplex link, if transmission from device A to device B averages 30 Mbps, and transmission from device B to device A averages at 50 Mbps, then there is an average capacity on the first side for 70 Mbps, and on the second side for up to 50 Mbps of active response traffic.

At any particular point in time, actual capacity is determined by the size of the packets being transmitted and the gap between these packets. On a standard link with 64-byte network and active response traffic, the capacity at any point in time will be very close to the average capacity. (We do not recommend using the Tap on links with jumbo packets as these large – up to 9K – packets can fill the buffer and impact performance.)

As the most common use for the Tap will be to inject TCP resets, which are standard 64-byte packets, it is unlikely that the transmissions from either side of the Active Response Port will exceed 10 Mbps, even if many sessions are terminated in a short time frame. In our internal testing, we have therefore focused on Active Response Port performance at up to 10 Mbps.

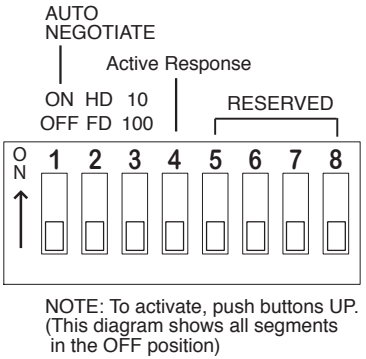
Q: Does Active Response Port require the connected monitoring device to have an IP address?

A: Yes, the connected monitoring device is required to have a MAC and IP address when the Active Response Port is operating in active mode. These are not required when this Port is set to passive mode. The Tap itself never has a MAC or IP address, regardless of how the Active Response Port is set.

DIP Switch Settings

Dual in-line package (DIP) switches are located on the back of the unit, allowing the user to select from multiple monitoring and network settings. When the bottom half of the switch is down, the Port is "Off." When the top half of the switch is down, the Port is "On." You must ensure that both Network Ports A and B match your network devices speed and duplex settings.

Switch	Function	Description
1	Turns Auto-negotiation ON or OFF. Factory default setting is Auto-negotiation.	If turned ON, ports A and B automatically negotiate the links. Positions 2 through 8 are inactive. To manually configure ports A and B, turn switch to the OFF position. Positions 2 and 3 are active.
2	Set Port Duplex	ON for Half-Duplex; turn OFF for Full-Duplex
3	Set Port Speed	ON for 10 Mbps; turn OFF for 100 Mbps
4	Active Response	Turns Active Response ON or OFF
5	Reserved	Leave in the OFF position
6	Reserved	Leave in the OFF position
7	Reserved	Leave in the OFF position
8	Reserved	Leave in the OFF position



NOTE: To activate, push buttons UP.
(This diagram shows all segments in the OFF position)

Figure 8: DIP Switch Settings

Specifications

Environment

Operating Temperature: 0ºC to 55ºC
Storage Temperature: -10ºC to 70ºC
Relative Humidity: 10% min, 95% max, non-condensing

Power

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

Mechanical

Dimensions: 1.75” high x 10.5” deep x 17” wide

Cable Interface

Copper Cable Type: 22-24 AWG unshielded twisted pair cable, CAT5/CAT5e
Link Distance Supported: 100 meters

Connectors

RGN-CU-AR-IL2 model:
(2) RJ45, 8-pin connectors (passive monitor ports)
(2) RJ45, 8-pin connectors (passive monitor/active response ports)
(2) RJ45, 8-pin connectors (network ports)

RGN-CU-AR-IL4 model:
(6) RJ45, 8-pin connectors (passive monitor ports)
(2) RJ45, 8-pin connectors (passive monitor/active response ports)
(2) RJ45, 8-pin connectors (network ports)

RGN-CU-AR-IL8 model:
(14) RJ45, 8-pin connectors (passive monitor ports)
(2) RJ45, 8-pin connectors (passive monitor/active response ports)
(2) RJ45, 8-pin connectors (network ports)

Certifications

Fully RoHS compliant

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 Regeneration 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.

THE WARRANTY AND REMEDIES SET FORTH ABOVE ARE EXCLUSIVE AND IN LIEU OF ALL OTHERS, EXPRESS OR IMPLIED. No Net Optics reseller, agent, or employee is authorized to make any modification, extension, or addition to this warranty.

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

Send correspondence to
Net Optics, Inc.
1130 Mountain View Alviso Road
Sunnyvale, CA 94089-2237 USA
Telephone: +1 (408) 737-7777
Fax: +1 (408) 745-7719
Email: info@netoptics.com
Internet: www.netoptics.com

www.netoptics.com