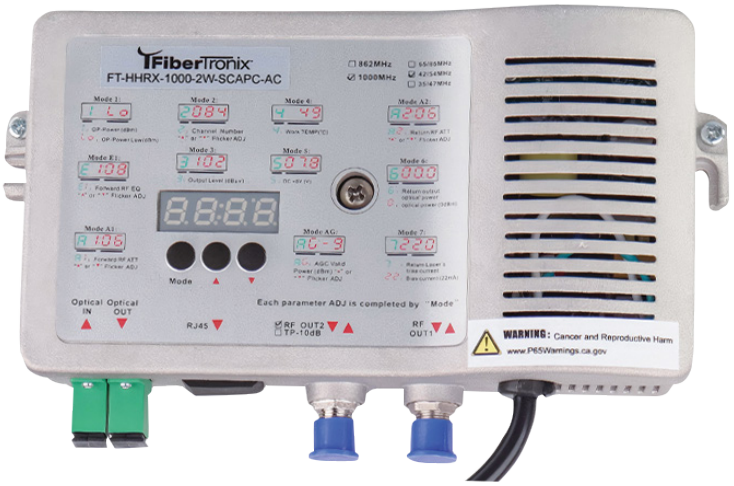
Manual

FiberTronix
Fiber Optic Solutions

FT-HHRX-1000-2W-SCAPC-AC
User Manual



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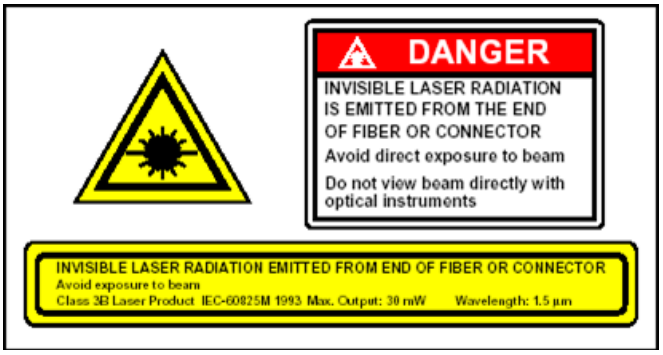
Chapter 1 - Preface

This manual provides comprehensive information on the FT-HHRX-1000-2W-SCAPC-AC CATV Fiber Optic Receiver, including product features, specifications, installation instructions, and important safety information. To ensure safe and effective operation, read this manual in full before installing or operating the unit. Failure to follow the instructions may result in damage to the equipment or personal injury. For additional technical support, please contact North American Cable Equipment.

Important User Information

- **DANGER** – Invisible Laser Radiation
  - Optical output ports emit invisible laser beams capable of causing permanent eye or skin damage.
  - Never look directly into fiber ends or active optical connectors.
  - Only trained personnel should handle optical fiber connections.
- **WARNING – Power and Environmental Requirements**
  - Use a UPS (Uninterruptible Power Supply) to protect against voltage fluctuations and outages.
  - Operate in a stable, air-conditioned environment for optimal long-term performance.



Overview

This compact FTTH optical receiver delivers advanced 1 GHz bidirectional performance for FTTB applications. Designed for high-efficiency networks, it features a wide optical power receiving range, high RF output levels, and low power consumption — making it an ideal solution for building high-performance CATV systems.

Chapter 2 Key Features

- RF Output: Up to +48 dBmV
- Wideband Operation: 45–1,000 MHz
- Split: 42/54 MHz (Bidirectional)
- Connector: SC/APC
- Optical AGC Technology: Adjustable AGC control range from +2 dBm to -9/-8/-7/-6/-5/-4 dBm
- Forward Frequency Range: Extended to 1 GHz
- Amplifier: High-performance, low-power GaAs chip with max output up to 106 dBµV
- Professional electronic control circuits for EQ and ATT provide precise adjustments and simplified operation.
- Built-in Class II network management responder with optional remote network management.
- Compact, easy-to-install design ideal for FTTB CATV networks.
- Integrated high-reliability, low-power power supply for stable performance.

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Chapter 3 Specifications

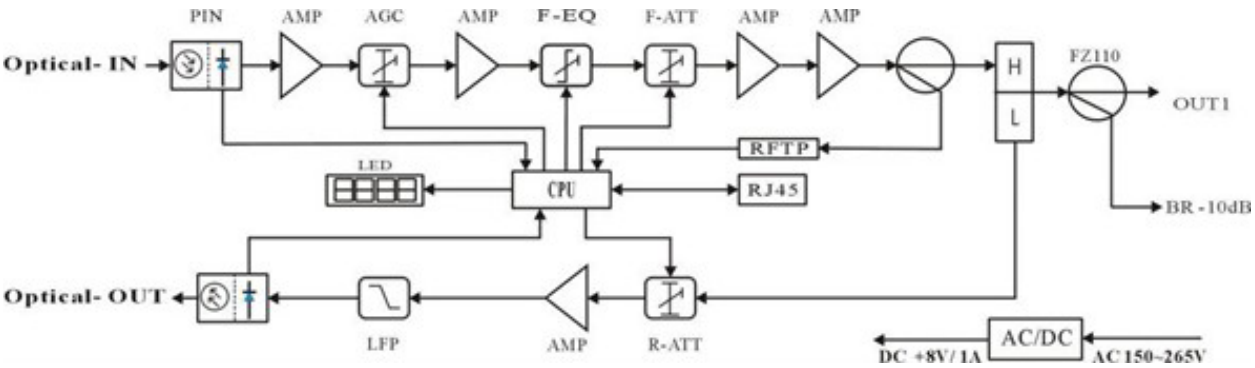
Forward Optical Receiver	
Optical Parameters	
Receiving Optical Power	-9 - +2 dBm
Optical AGC Range	+2 - -9/-8/-7/-6/-5/-4 (adjustable) dBm
Optical Return Loss	>45 dB
Optical Receiving Wavelength	1100- 1600
Optical Connector Type	SC/APC or specified by the user
Fiber Type	Single mode
Link Performance	
C/N	≥ 51 dB
C/CTB	≥ 60 dB
C/CSO	≥ 60 dB
RF Parameters	
Frequency Range	54-1000 MHz
Flatness in Band	±0.75 dB
Rated Output Level	+48 dBmV
Max Output Level	+48dBmV (-9 - +2dBm Optical power receiving)
	+52dBmV (-7 -+2dBm Optical power receiving)
Output Return Loss	≥16 dB
Output Impedance	75 Ω
Electrical control EQ range	0 - 15 dB
Electrical control ATT range	0 - 15 dB

Return Optical Parameters	
Optical Parameters	
Optical Emission Wavelength	1310 ± 10, 1550 ± 10 nm
Output Optical Power	1 mW
Optical Connector Type	SC/APC
RF Parameters	
Frequency Range	5 - 42 MHz
Flatness In Band	±1 dB
Input Level	+15 - + 25 dBmV
Output Impedance	75 Ω
NPR dynamic range	≥15 (NPR≥30 dB) Use DFB laser

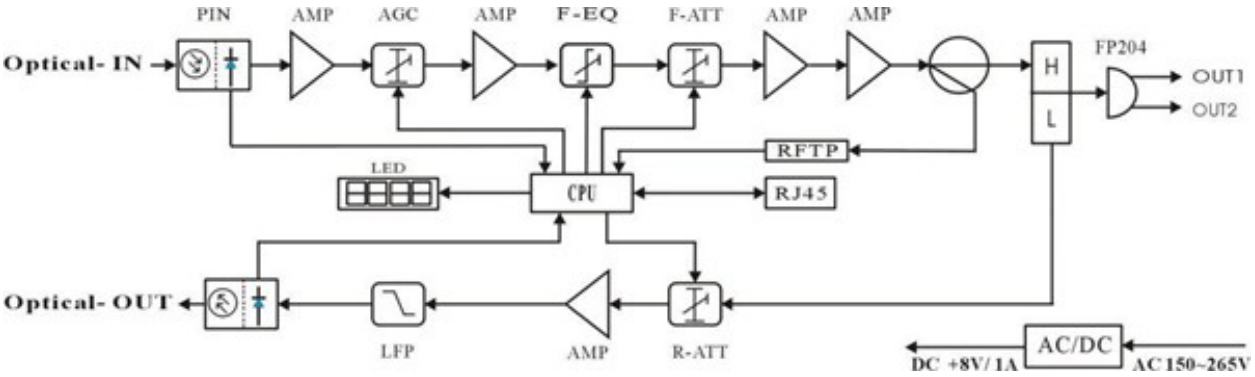
General	
Power Voltage	AC 150 - 265V or DC 12V
Operating Temperature	-22 - 140°F (-30 - 60°C)
Storage Temperature	-40 - 149°F (-40 - 65°C)
Relative Humidity	Max 95% No Condensation
Consumption	≤9 VA
Dimension	7.48 x 4.33 x 2.05"(190 x 110 x 52 mm)
Weight	2.2 lbs (1 kg)
Warranty	1 Year Limited Warranty

Chapter 4 Block Diagram

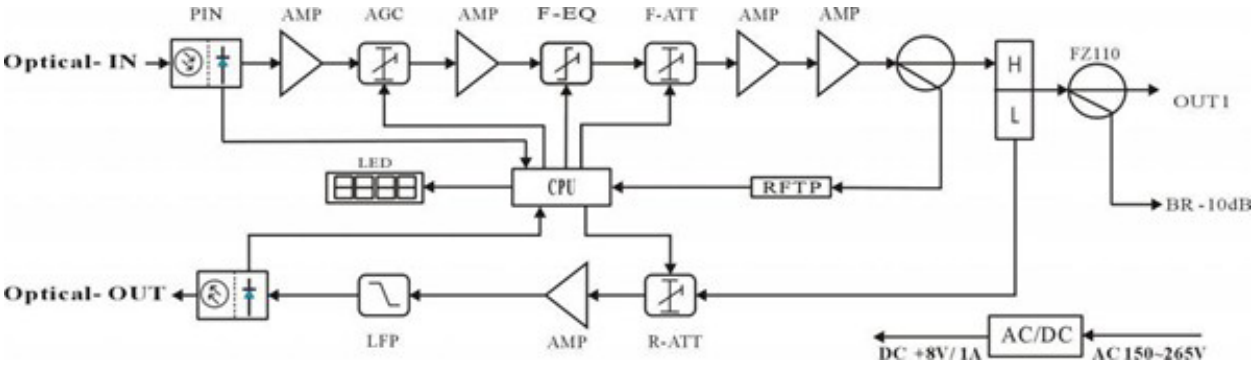
The following diagrams illustrate the internal signal paths for various configurations of the FT-HHRX-1000-2W-SCAPC-AC, including models with and without network management transponders. Refer to the original diagram images for detailed component labeling.



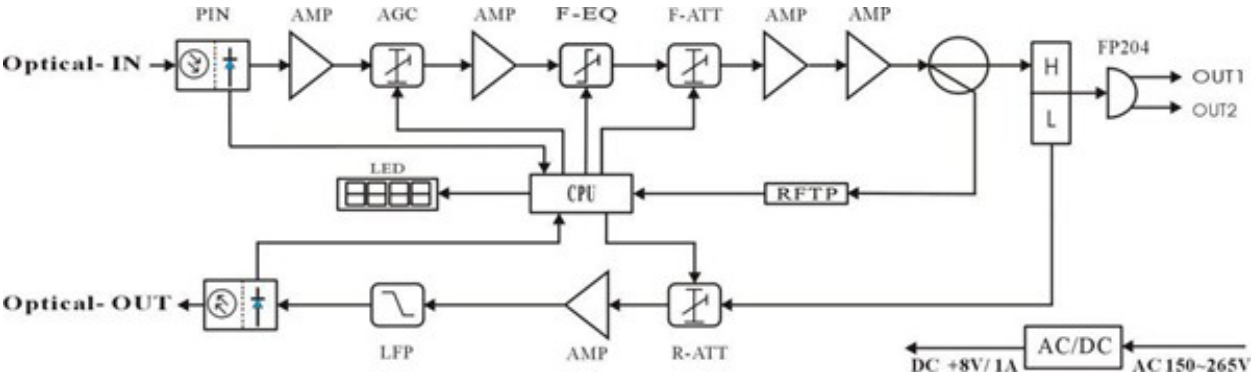
FT-HHRX-1000-2W-SCAPC-AC with II class network management transponder, FP204 (two-way splitter) output block diagram



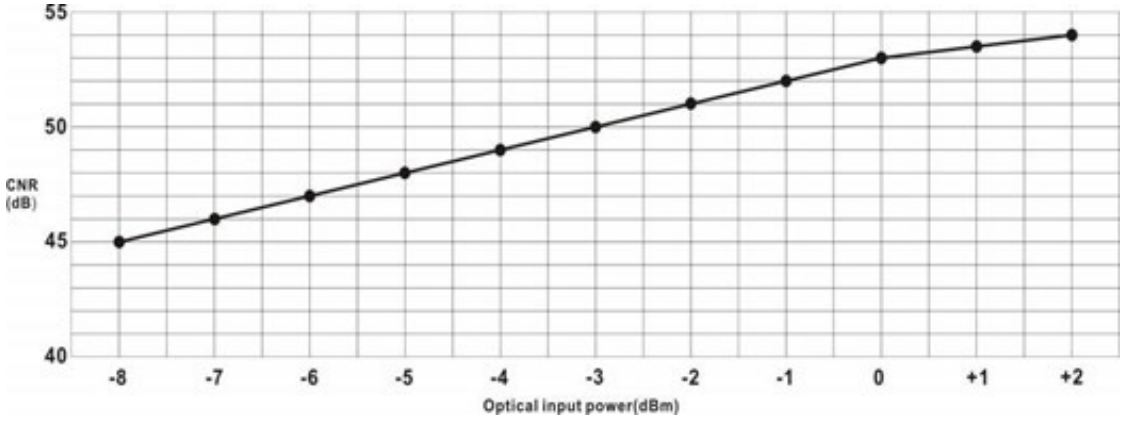
FT-HHRX-1000-2W-SCAPC-AC without network management transponder, FZ110 (tap) output block diagram



FT-HHRX-1000-2W-SCAPC-AC without network management transponder, FP204 (two-way splitter) output block diagram



Relation Table of Input Optical Power and CNR



Chapter 5 Installation & Adjustment

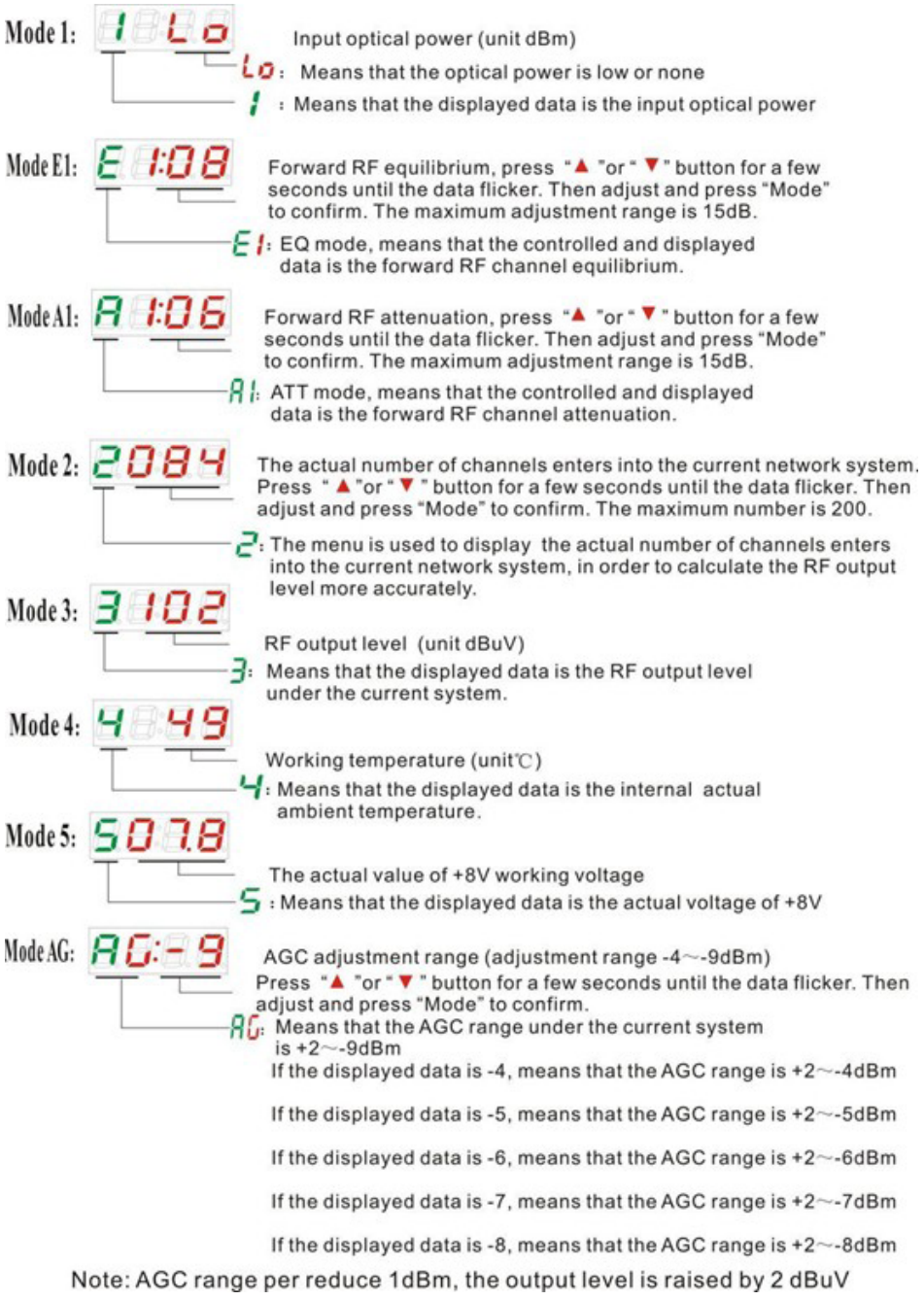
Follow these steps to ensure safe and correct installation of the FT-HHRX-1000-2W-SCAPC-AC:

1. Verify that the installation location meets environmental and power requirements.
2. Mount the unit securely to avoid vibration or movement.
3. Connect the optical input to the SC/APC port using a clean, compatible connector.
4. Connect RF outputs to the distribution system using high-quality coaxial cable.
5. Power the unit using AC 150–265V or DC 12V, as specified.
6. Adjust EQ and ATT controls electronically for optimal signal performance.
7. Confirm all status indicators are functioning as expected.

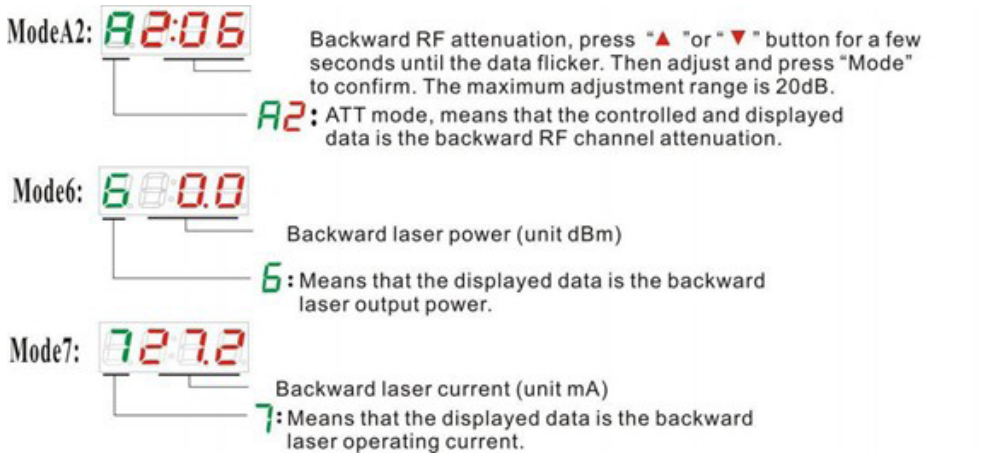
Chapter 6 Function Display and Operating Instruction

Model selection button, total eleven modes. Press the mode selection button to enter the corresponding status display, eleven modes to cycle.

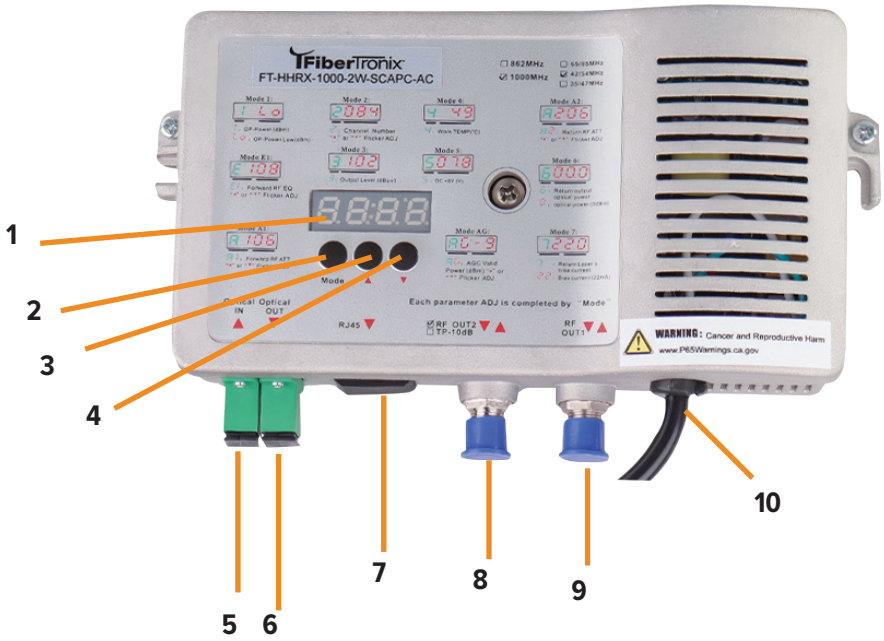
The following is the detailed instructions:



Note: AGC range per reduce 1dBm, the output level is raised by 2 dBuV



Chapter 7 Structure Description



1. Led Digital Display
2. Mode Key
3. Up Key
4. Down Key
5. Optical Receiving Port
6. Optical Receiving Port
7. Network Management RJ45 Interface
8. Rf Output 2
9. Rf Output 1
10. Power Input

Chapter 8 NMS Setup Instructions

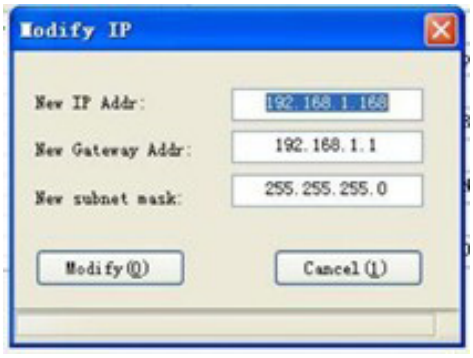
If using the optional network management responder, configure as follows:

Responder IP Setup:

Using Direct Network Configuration:

1. The default settings are:
   - IP Address: 192.168.1.168
   - Gateway: 192.168.1.1
   - Subnet Mask: 255.255.255.0
2. Connect your computer directly to the RJ45 port.
3. Set the computer IP to 192.168.1.xxx (excluding 168).
4. Launch network management software and locate the device.
5. Right-click the device icon and select ‘Modify Device IP’.

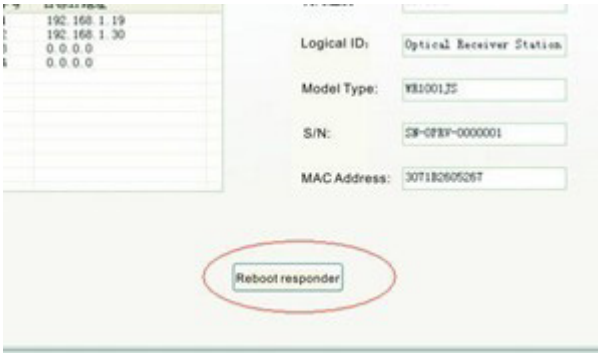
5. Enter new IP, gateway, and subnet mask.



6. Click “Modify,” then exit. The process is complete. The new IP address and gateway will appear in the operational logbook.

Log Number	Log Type	Log Contents	Login time
1752	ChangIPAddress	Modify equipment192.168.1.168 IP address: New IP: 192.168.1.167;New gateway:192.168.1.1	2009-9-9 12:39:03

7. Reboot the responder for the new IP to take effect.
(Click the Reboot button in the network management software or power cycle the device.)



Chapter 9 - Troubleshooting Guide

• Issue: Image distortion or large particles in video
Possible Cause: Input optical power too high or poor RF signal at transmitter
Solution: Adjust optical power to specified range; improve RF signal quality

• Issue: Excessive noise in image
Possible Cause: Low optical power, dirty connectors, low RF input, or poor C/N ratio
Solution: Clean connectors, increase optical power, check RF levels, ensure C/N > 51 dB

• Issue: Random noise or bright traces
Possible Cause: Strong interference or poor shielding
Solution: Eliminate interference source, improve shielding and grounding

• Issue: Horizontal bright lines
Possible Cause: AC ripple due to poor grounding
Solution: Ensure proper grounding (<4 Ω) for all equipment

• Issue: Unstable optical power and RF output
Possible Cause: Mismatched or contaminated connectors, damaged adapter
Solution: Use correct APC connectors, clean or replace damaged components

Chapter 10 Standard Cleaning & Maintenance Procedures for Active Fiber Optic Connectors

1. Disconnect Safely
- Carefully unplug the active fiber optic connector from the adapter.
- Never look directly into the fiber end or point it toward anyone's eyes—serious injury may result.

2. Clean the Connector
- Use high-quality lens cleaning paper or medical-grade, degreased alcohol wipes.
- If using alcohol wipes, allow the connector to air-dry for 1–2 minutes before reconnecting.

3. Test Optical Power
- After cleaning, connect the fiber optic connector to an optical power meter.
- Verify that output power has returned to a normal level, confirming the cleaning was effective.

4. Reconnect with Care
- When reconnecting, apply moderate force only.
- Excessive pressure can crack the ceramic sleeve inside the adapter**.**

5. Clean the Mating Connector or Adapter (if necessary)
- If power remains abnormal after cleaning one side, disconnect and clean the other connector.
- If levels are still low, the adapter itself may be contaminated and require cleaning.

Note: Take care when removing adapters to avoid damaging internal fibers.

6. Adapter Cleaning Methods
- Compressed Air (for optical equipment): Direct the nozzle into the ceramic sleeve to remove dust.
- Alcohol-Dipped Cleaning Swabs: Gently insert the swab into the ceramic sleeve, keeping the motion consistent for effective cleaning.

FIBERTRONIX 1-Year Limited Warranty

FIBERTRONIX. (the “Company”) warrants to the Original Purchaser that the item purchased is free from defects in workmanship or material under normal use. This warranty starts on the date of shipment of the hardware to the Original Purchaser.

During the warranty period, the Company agrees to repair or replace, at its sole option, without charge to Original Purchaser, any defective component. To obtain service, the Original Purchaser must return the item to the Company properly packaged for shipping. All defective products must be returned to the Company within thirty (30) days of failure. Products must be returned with a description of the failure and Return Merchandise Authorization (RMA) number supplied by the Company. To receive a RMA number and a return shipping address on where to deliver the hardware, call 610-429-1821. The shipping, and insurance charges incurred in shipping to the Company will be paid by Original Purchaser, and all risk for the hardware shall remain with the Original Purchaser until such time as Company takes receipt of the hardware. Upon receipt, the Company will promptly repair or replace the defective unit, and then return said unit to Original Purchaser, shipping prepaid. The Company may use reconditioned or like-new parts or units, at its sole option, when repairing any hardware. Repaired products shall carry the same amount of outstanding warranty as from original purchase. Any claim under the warranty must include dated proof of purchase or invoice. In any event, the Company’s liability for defective hardware is limited to repairing or replacing the hardware.

This warranty is contingent upon proper use of the hardware by Original Purchaser and does not cover: if damage is due to Acts of God (including fire, flood, earthquake, storm, hurricane or other natural disaster), accident, unusual physical, electrical, or electromechanical stress, modifications, neglect, misuse, operation with media not approved by the Company, tampering with or altering of the hardware, riot, war, invasion, act of foreign enemies, hostilities (regardless of whether war is declared), civil war, rebellion, revolution, insurrection, military or usurped power or confiscation, terrorist activities, nationalization, government sanction, blockage, embargo, labor dispute, strike, lockout or interruption or failure of electricity, air conditioning, or humidity control, Internet, network, or telephone service.

The warranties given herein, together with any implied warranties covering the hardware, including any warranties of merchantability or fitness for a particular purpose, are limited in duration to one year from the date of shipment to the Original Purchaser. Jurisdictions vary with regard to the enforceability of warranty limitations, and you should check the laws of your local jurisdiction to find out whether the above limitation applies to you.

The Company shall not be liable to your for loss of data, loss of profits, lost savings, special, incidental, consequential, indirect, or other similar damages arising from breach of warranty, breach of contract, negligence, or other legal action even if the Company or its agent has been

advised of the possibility of such damages, or for any claim brought against your by another party. Jurisdictions vary with regard to the enforceability of provisions excluding or limiting liability for incidental or consequential damages. You should check the laws of your local jurisdiction to find out whether the above exclusion applies to you.

This warranty allocates risks of product failure between Original Purchaser and the Company. The Company's hardware pricing reflects this allocation of risk and the limitations of liability contained in this warranty. The warranty set forth above is in lieu of all other express warranties, whether oral or written. The agents, employees, distributors, and dealers of the Company are not authorized to make modification to this warranty, or additional warranties binding on the Company. Accordingly, additional statements such as dealer advertising or presentations, whether oral or written, do not constitute warranties by the Company and should not be relied upon.

This warranty gives you specific legal rights. You may also have other rights which vary from one jurisdiction to another.