ASCENT
Communication Technology

ACT AON1210C Optical Receiver

Quick Reference Guide

Revision G

ACT AON1210C Smart Optical Receiver

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ACT Document Number: ACT AON1210C Smart Optical Receiver QRG

Quick Reference Guide Revision G

This document is produced to assist professional and properly trained personnel with installation and maintenance issues for the product. The capabilities, system requirements and/or compatibility with third-party products described herein are subject to change without notice.

For more information, contact ACT: support@ascentcomtec.com

Revision History

Revision	Date	Reason for Change
A	09/03/2018	Initial release
B	09/12/2019	Minor updates
C	02/28/2021	Updated section 8
D	10/20/2021	Minor updates
E	04/13/2025	Add Ordering Information Chapter
F	05/15/2025	Update section 5
G	08/04/2025	Update section 1, 2, 3, 4, 5 ,6, 9

Contents

1 Product Summary

AON1210C series one way optical receiver is part of ACT Deep Fiber solution, which has been designed to deliver high quality CATV and other advanced services. The cost-effective receiver platform helps operators expand bandwidth of their existing HFC network while minimizing capital investment. The AON1210C compact receiver has smart LED, SNMP and Web GUI for convenient management and is suitable for MDU, FTTB or FTTC applications with high output up to 116 dBμV.

The AON1210C deep fiber receiver is equipment with Automatic Gain Control circuit to maintain constant output power with optical input from -9 to +2dBm. Combined with ACT's converged headend AH1000 optical platform, AON1210C series deep fiber optical receiver is an ideal product to provide MSOs with an economical, flexible HFC access solution.

AON1210C receiver provides the web management interface to support the remote monitoring capability in advanced network management system. With wide range receiving optical power, high output level, low power consumption and compact structure, easy to install. It is the ideal equipment to build the high-performance NGB network.

2 Performance Characteristics

- Adopt advanced optical AGC technique, optical AGC control range: +2dBm to -9/-8/-7dBm adjustable
- Forward working frequency extended to 1GHz, RF amplifier part adopts the high-performance low power consumption GaAs chip, the maximum output level up to 116 dBμV
- EQ and ATT both use the professional electric control circuit, make the control more accurate, operation more convenient
- Built-in the Ethernet transponder, support remote network management (optional)
- The optical output port and network management interface are external or internal (optional)
- Built-in high reliability low power consumption power supply

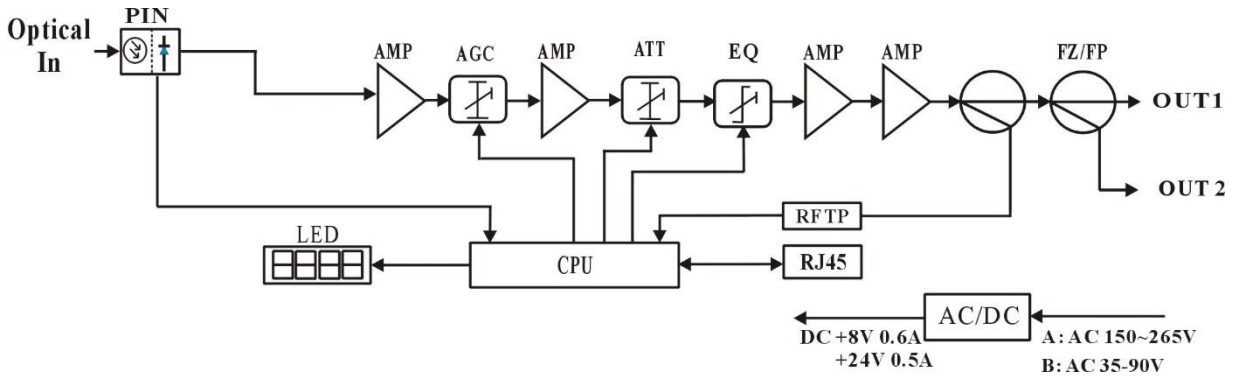
3 Technical Specifications

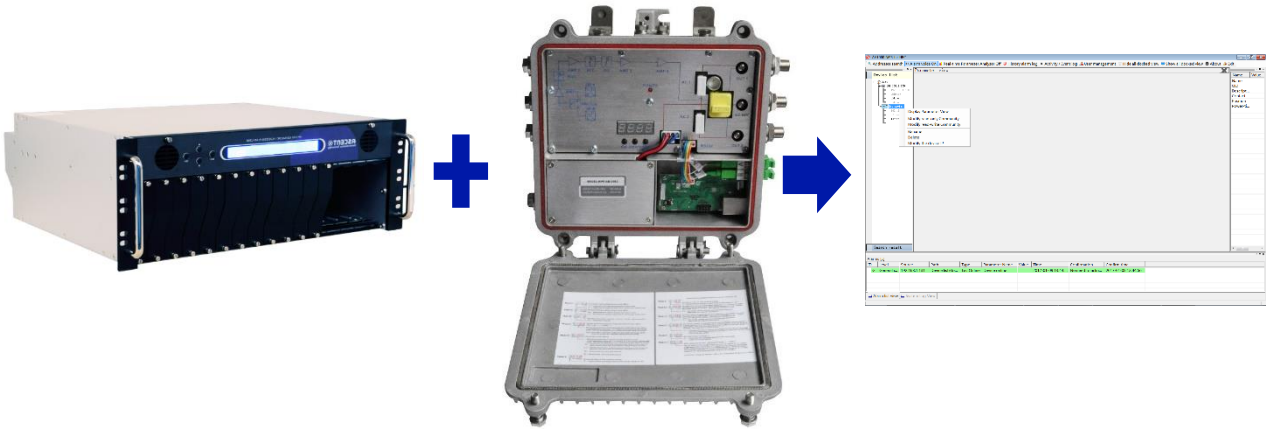
Item	Unit	Technical Parameters	
Optical Parameters			
Receiving Optical Power	dBm	-9 to +2	
Optical Return Loss	dB	>45	
Optical Receiving Wavelength	nm	1100 to 1600	
Optical Connector Type		SC/APC or specified by the user	
Fiber Type		Single mode	
Link Performance			
C/N	dB	≥ 51	EQ 6dB, Output level 108 dBμV (FZ110) 42-channel signal source input, -2dBm optical power received
C/CTB	dB	≥ 67	
C/CSO	dB	≥ 62	

Item	Unit	Technical Parameters
RF Parameters		
Frequency Range	MHz	45 to 1003
Flatness in Band	dB	±0.75
Rated Output Level	dBμV	≥108
Max Output Level	dBμV	≥112 (-9 to +2dBm Optical power receiving)
		≥116 (-7 to +2dBm Optical power receiving)
Output Return Loss	dB	≥16
Output Impedance	Ω	75
Optical AGC Range	dBm	(-9/-8/-7) to (+2) adjustable
Electrical Control EQ Range	dB	0 to 15
Electrical Control ATT Range	dB	0 to 15
General Characteristics		
Power Voltage	V	A: AC (90 to 250)V B: AC (35 to 90)V
Operating Temperature	°C	-40 to 60
Consumption	VA	≤18
Dimension	mm	220(L) * 205(W) * 65(H)

Notes: The forward RF indexes above are tested when adopt NEC module. Use other module, the indexes will be a little different.

4 Block Diagram





End to End Element Management System with Local LED, Web GUI and SNMP

5 Ordering Information

AON1200C Series Optical Receiver Ordering Information

AON12	XXC-	X-	00-	X-	X-	X	X

	Bandwidth
08C	862MHz
10C	1003MHz

	Optical RX
0	Redundant Optical RXs
S	Single Optical RX

	Optical Connector
AS	SC/APC
AF	FC/APC

	Power Supply
1	35 to 90 VAC
2	150 to 265 VAC

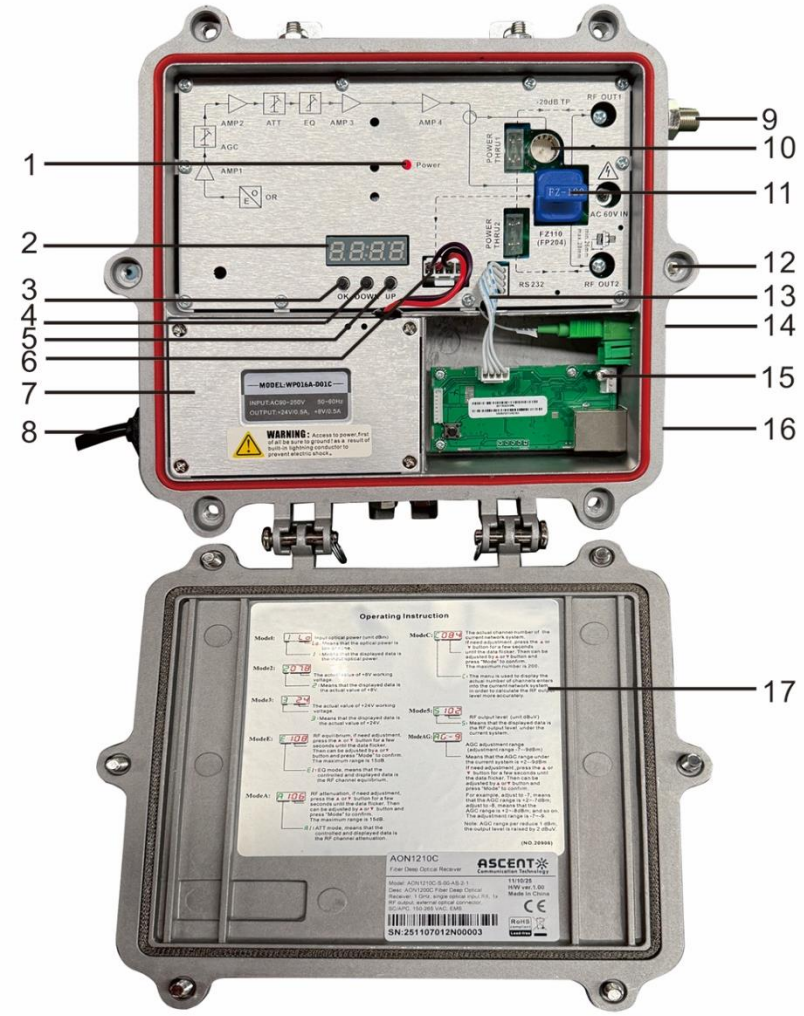
	EMS
0	No EMS
1	With EMS

	Optical Connector & EMS RJ45 Position
1	Internal
2	External

Example:

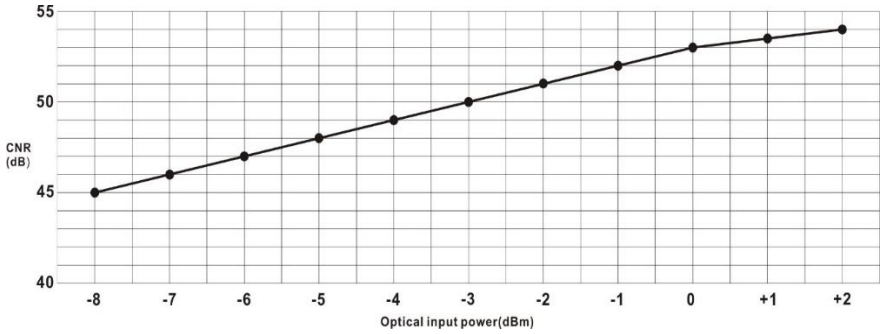
Product Name	Product Description
AON1210C-0-00-AS-2-1-2	AON1210C Outdoor 1 GHz dual inputs redundant optical receiver, Single RF Output, SC/APC connector, External optical conn, 220V AC, Web GUI and SNMP
AON1210C-S-00-AS-1-0-1	AON1210C Fiber Deep Optical Receiver, 1GHz, single Optical input RX, 1x RF Output, Internal optical conn, SC/APC, 35-90VAC, no EMS

6 Structure Description



1. Power Working Indicator
2. LED Digital Display Tube
3. Enter Key
4. Down Key
5. Up Key
6. Power Interface
7. Switching Power Supply
8. AC220V Input Port(when AC220V power supply)
9. OUT1
10. -20dB Test Port
11. FZ120 or FZ110 or FP204
12. OUT2
13. Transponder Connecting Wire
14. Optical Receiving Port(external)
15. Photoresistor(Detect Cover Open or Close)
16. RJ45 Interface(external)
17. Operating Instruction

7 Relation Table of Input Optical Power and CNR



8 Function Display and Operating Instruction

Mode: Mode selection button, total twelve modes, press the mode selection button to enter the corresponding status display, twelve modes to cycle. The following is the detailed instructions:

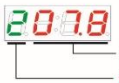
Mode1:

Input optical power (unit dBm)

Lo : Means that the optical power is low or none

1 : Means that the displayed data is the input optical power

Mode2:



The actual value of +8V working voltage

2:Means that the displayed data is the actual voltage of +8V

Mode3:

The actual value of +24V working voltage

3:Means that the displayed data is the actual voltage of +24V

ModeE:

RF equilibrium, if need adjustment, press the ▲ or ▼ button for a few seconds until the data flicker. Then can be adjusted by ▲ or ▼ button and press "Mode" to confirm. The maximum range is 15dB.

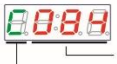
E1:EQ mode, means that the controlled and displayed data is the RF channel equilibrium.

ModeA:

RF attenuation, if need adjustment, press the ▲ or ▼ button for a few secondsuntil the data flicker. Then can be adjusted by ▲ or ▼ button and press "Mode" to confirm. The maximum range is 15dB.

A1:ATT mode, means that the controlled and displayed data is the RF channel attenuation.

Mode C:



The actual number of channels enter into the current network system. If need adjustment, press the ▲ or ▼ button for a few seconds until the data flicker. Then can be adjusted by ▲ or ▼ button and press "Mode" to confirm. The maximum number is 200.

C: The menu is used to display the actual number of channels enter into the current network system, in order to calculate the RF output level more accurately.

Mode5:

RF output level (unit dBuV)

5:Means that the displayed data is the RF output level under the current system.

ModeAG:

AGC range adjustment (adjustment range -7~-9dBm)

Means that the AGC range under the current system is +2~-9dBm

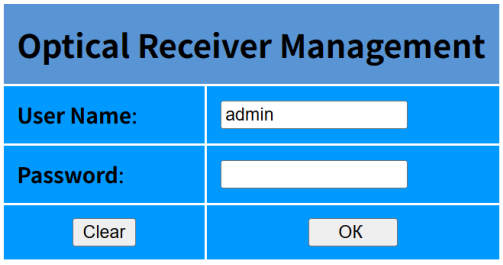
If need adjustment ,press the ▲ or ▼ button for a few seconds until the data flicker. Then can be adjusted by ▲ or ▼ button and press "Mode" to confirm.

For example, adjust to -7, means that the AGC range is +2~-7 dBm;
adjust to -8, means that the AGC range is +2~-8 dBm;

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

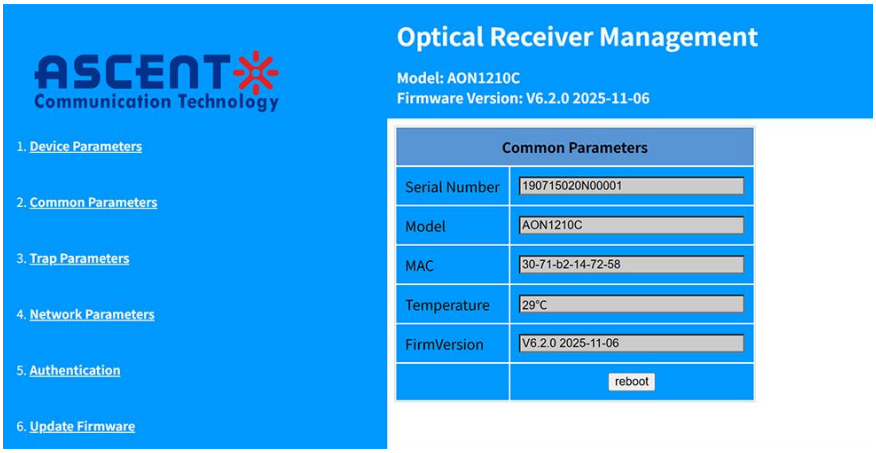
9 WEB Network Management

Opening the IE browser and entering the equipment IP address leads to the following interface.

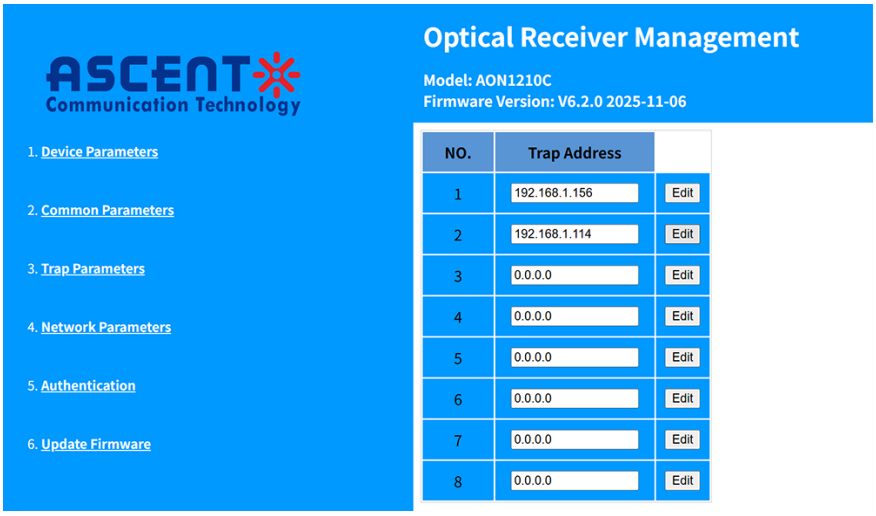


Enter the user name **admin** and password **ascent** (factory default), to show the following interface:

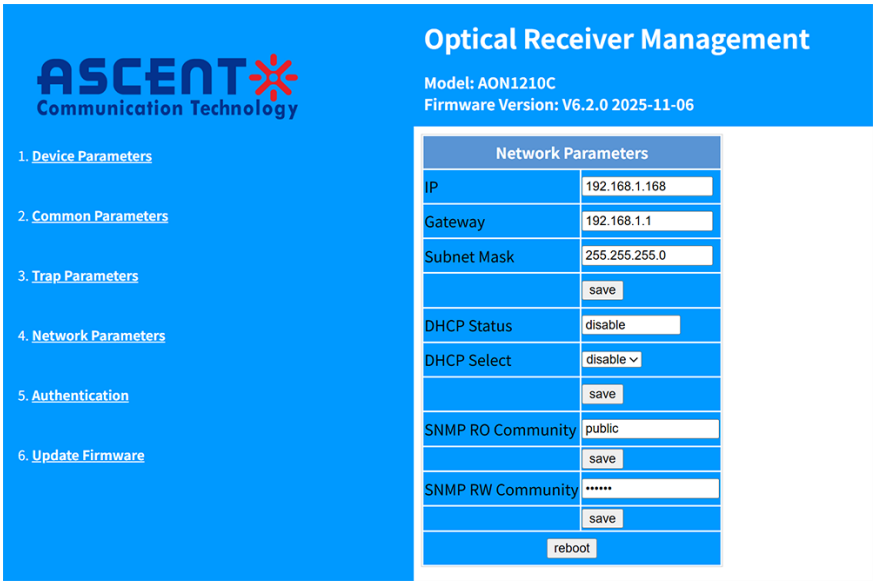
Click **Common Parameters** to learn the common information in this interface.



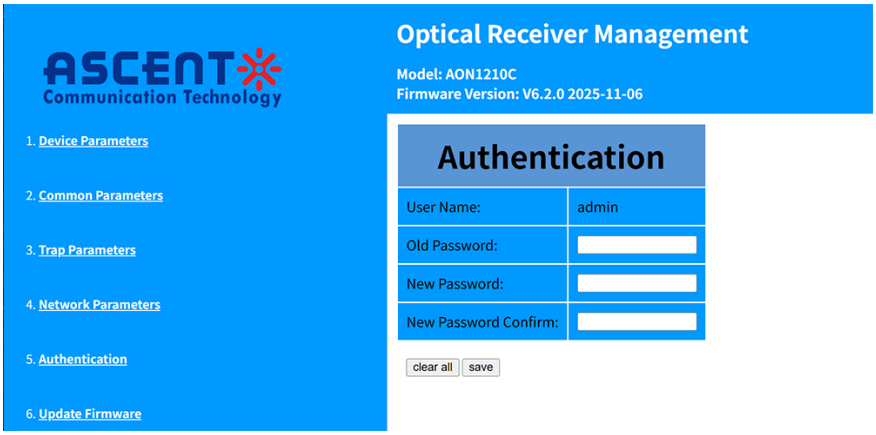
Click **Trap Parameters** to set the trap address in this interface.



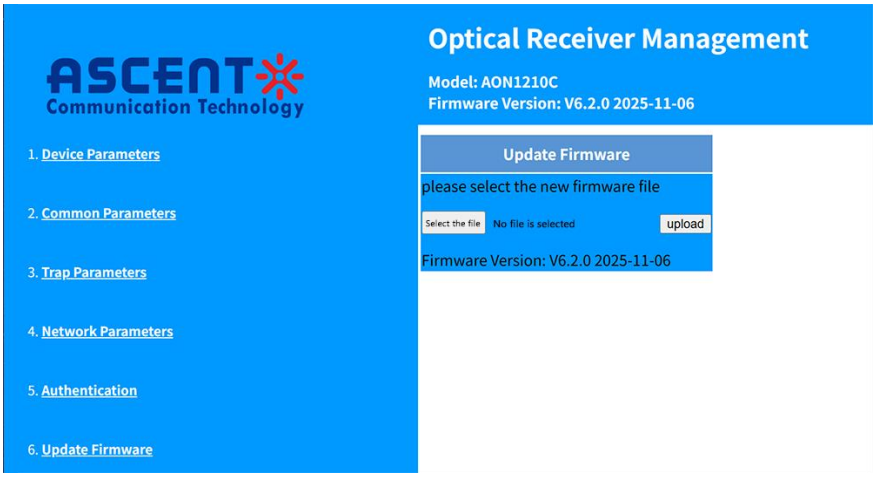
Click **Network Parameters** to set the related network parameters in this interface.



If you want to modify the password, please click **Authentication** to set the new password in this interface.



Click **Update Firmware** to update the firmware of the device in this interface.



10 Common Failure Analysis and Troubleshooting

Failure Phenomenon	Failure Cause	Solution
After connecting the network, the image of the optical contact point has obvious netlike curve or large particles highlights but the image background is clean.	1. The optical input power of the optical receiver is too high, make the output level of the optical receiver module too high and RF signal index deteriorate. 2. The RF signal (input the optical transmitter) index is poor.	1. Check the optical input power and make appropriate adjustments to make it in the specified range; or adjust the attenuation of optical receiver to reduce the output level and improve index. 2. Check the front end machine room optical transmitter RF signal index and make appropriate adjustments.
After connecting the network, the image of the optical contact point has obvious noises.	1. The optical input power of the optical receiver is not high enough, results in the decrease of C/N. 2. The optical fiber connector or adapter of the optical receiver has been polluted.	1. Check the received optical power of the optical contact point and make appropriate adjustments to make it in the specified range. 2. Improve the optical received power of the optical contact point by cleaning the

Failure Phenomenon	Failure Cause	Solution
	3. The RF input signal level of the optical transmitter is too low, make the modulation degree of the laser is not enough. 4. The C/N index of system link signal is too low.	optical fiber connector or adapter etc methods. Specific operation methods see "Clean and maintenance method of the optical fiber connector". 3. Check the RF input signal level of the optical transmitter and adjust to the required input range. (When the input channels number less than 15, should be higher than the nominal value.) 4. Use a spectrum analyzer to check the system link C/N and make appropriate adjustments. Make sure the system link signal C/N>51dB.
After connecting the network, the images of several optical contact points randomly appear obvious noises or bright traces.	The optical contact point has open circuit signal interference or strong interference signal intrusion.	1. Check if there is a strong interference signal source; change the optical contact point location if possible to avoid the influence of the strong interference signal source. 2. Check the cable lines of the optical contact point, if there is shielding net or situation that the RF connector shielding effect is not good. 3. Tightly closed the equipment enclosure to ensure the shielding effect; if possible add shielding cover to the optical contact point and reliable grounding.
After connecting the network, the images of several optical contact points appear one or two horizontal bright traces.	Power supply AC ripple interference because of the bad earth of equipment or power supply.	Check grounding situation of the equipment, make sure that every equipment in the line has been reliably grounding and the grounding resistance must be<4Ω.
After connecting the network, the received optical power of the optical contact point is unstable and changes continuously. The output RF signal is also unstable. But the detected optical output power of the optical transmitter is normal.	The optical fiber connector types do not match, maybe the APC type connect to PC type. The optical fiber connector or adapter may be polluted seriously or the adapter has been damaged.	1. Check the type of optical fiber connector and adopt the APC type optical fiber connector to ensure the normal transmission of optical signal. 2. Clean the polluted optical fiber connector or adapter. Specific operation methods see "Clean and maintenance method of the optical fiber connector". 3. Replace the damaged adapter.

11 Optical Fiber Active Connector Cleaning and Maintenance

In many times, we consider the decline of the optical power as the equipment faults, but actually it may be caused by that the optical fiber connector was polluted by dust or dirt. Inspect the fiber connector, component, or bulkhead with a fiberscope. If the connector is dirty, clean it with a cleaning technique following these steps:

1. Turn off the device power supply and carefully pull off the optical fiber connector from the adapter.
2. Wash carefully with good quality lens wiping paper and medical absorbent alcohol cotton. If use the medical absorbent alcohol cotton, still need to wait 1 to 2 minutes after wash, let the connector surface dry in the air.
3. Cleaned optical connector should be connected to optical power meter to measure output optical power to affirm whether it has been cleaned up.
4. When connect the cleaned optical connector back to adapter, should notice to make force appropriate to avoid china tube in the adapter crack.
5. The optical fiber connector should be cleaned in pairs. If optical power is on the low side after clean, the adapter may be polluted, clean it. (Note: Adapter should be carefully operated, so as to avoid hurting inside fiber.
6. Use compressed air or degrease alcohol cotton to wash the adapter carefully. When use compressed air, the muzzle aims at china tube of the adapter, clean the china tube with compressed air. When use degrease alcohol cotton, insert directions need be consistent, otherwise can’t reach a good clean effect.

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