ASCENT
Communication Technology



ACT AON1110C Optical Receiver

Quick Reference Guide

Revision 2A

ACT AON1110C Optical Receiver

Quick Reference Guide

ACT Document Number: ACT AON1110C Optical Receiver QRG

Quick Reference Guide Revision 2A

Copyright © 2024 Ascent Communication Technology Limited.

All rights reserved. Reproduction in any manner whatsoever without the express written permission of Ascent Communication Technology is strictly forbidden.

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
1A	09/03/2018	Initial release
1B	09/05/2018	Minor updates
1C	09/21/2020	Minor updates
2A	10/12/2024	Update related sections

Contents

1 Product Summary 4

2 Performance Characteristics 4

3 Technical Specifications 5

4 Block Diagram 5

5 Relation Table of Input Optical Power and CNR 6

6 Function Display and Operating Instruction 6

7 WEB Network Management 7

8 Common Failure Analysis and Troubleshooting 9

9 Optical Fiber Active Connector Cleaning and Maintenance 11

1 Product Summary

AON1110C Series Optical Receiver is part of ACT's Deep Fiber solution, which has been designed to deliver high-quality CATV and other advanced services. This cost-effective compact mini receiver helps operators expand the bandwidth of their existing HFC network while minimizing capital investment. The AON1110C compact node has smart LED, SNMP, and Web GUI for convenient management and is suitable for MDU, FTTB or FTTC applications with high output up to 110 dBμV (AGC mode).

The AON1110C deep fiber node is equipment with Automatic Gain Control circuit to maintain constant output power with optical input from -9 dBm to +2 dBm. Combined with ACT's converged headend AH1000 optical platform, AON1110C series deep fiber optical node is an ideal product to provide MSOs with an economical, flexible HFC access solution.

AON1110C node provides the web management interface to support the remote monitoring capability in advanced network management system.

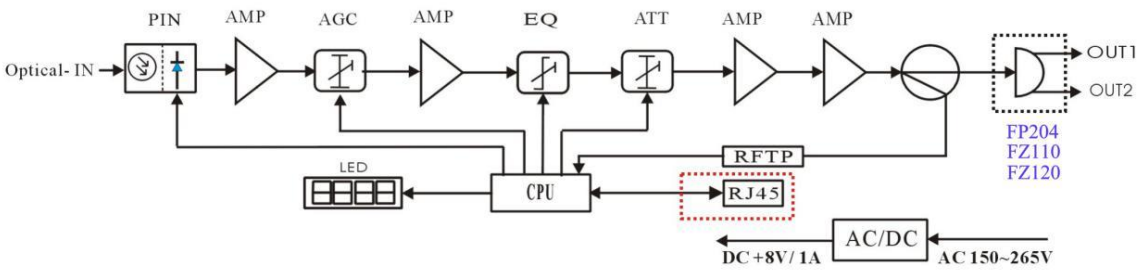
2 Performance Characteristics

- Utilizes advanced optical AGC technique, optical AGC control range: -9 dBm to +2 dBm adjustable
- Optical AGC, can automatically switch according to the pre-set switching threshold, or manually forced switch
- Forward working frequency extended to 1 GHz, RF amplifier part adopts the high-performance low power consumption GaAs chip, maximum output level up to 110 dBμV
- EQ and ATT both use the professional electric control circuit, make the control more accurate, operation more convenient
- Optional PON WDM (Loop-out)
- Built-in Ethernet transponder, support remote network management (optional)

3 Technical Specifications

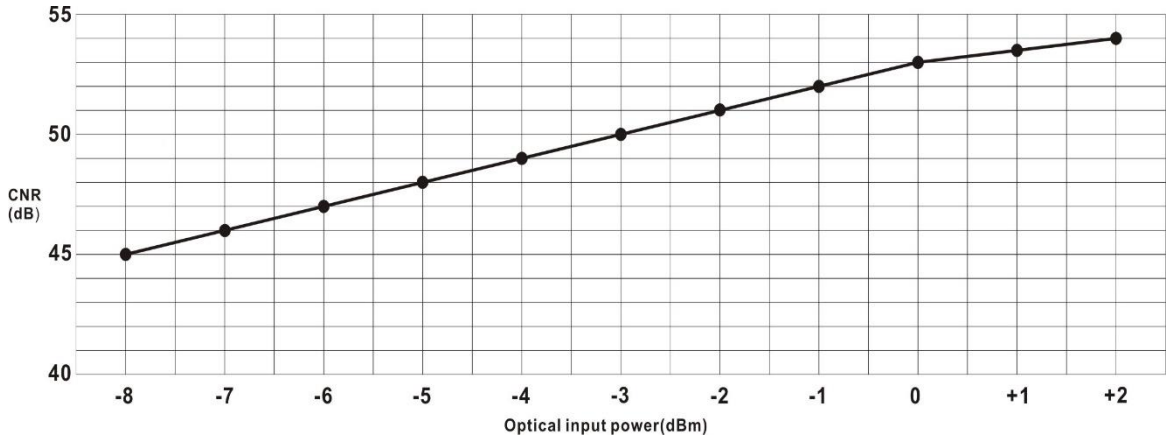
Item	Unit	Technical Parameters	
Optical Parameters			
Receiving Optical Power	dBm	-9 to +2	
Optical AGC Range	dBm	+2 to -9/-8/-7/-6/-5/-4 (adjustable)	
Optical Return Loss	dB	>45	
Optical Receiving Wavelength	nm	1100 to 1600	
Optical Connector Type		SC/APC or SC/PC specified by the user	
Fiber Type		Single mode	
RF Parameters			
Frequency Range	MHz	45 to 860/1003	
Flatness in Band	dB	≤±0.75	
Output Return Loss	dB	≥16	
Output Impedance	Ω	75	
Electrical Control EQ Range	dB	0 to 20 (0.5dB step)	
Electrical Control ATT Range	dB	0 to 20 (0.5dB step)	
Rated Output Level	dBμV	≥ 108	FZ110 output
		≥ 104	FP204 output
Max. Output Level	dBμV	≥ 110	FZ110 output, -9 to +2dBm
C/N	dB	≥51	42ch, OMI=3.0%, Pin=-1dBm, 110dBuV @ FZ110,
C/CTB	dB	≥60	106dBuV@FP204 output， EQ=9dB
C/CSO	dB	≥60	
MER	dB	≥38	112ch digital signal (114 to 1002MHz),
			OMI=3.0%, optical receiving power is in AGC
BER		<1.0E-9	range, output level >104dBuV
			@FP204, >106dBuV@FZ120, EQ=9dB
General Characteristics			
Power Voltage	V	AC （150 to 265） V or DC 12V/1A External power supply	
Operating Temperature	°C	-40 to 60	
Power Consumption	VA	≤ 8	
Dimension	mm	190(L) * 110(W) * 52(H)	

4 Block Diagram



Note: The part in dashed box is optional.

5 Relation Table of Input Optical Power and CNR



6 Function Display and Operating Instruction

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

Mode 1: 

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

Mode E1: 

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.

Mode A1: 

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 2: 

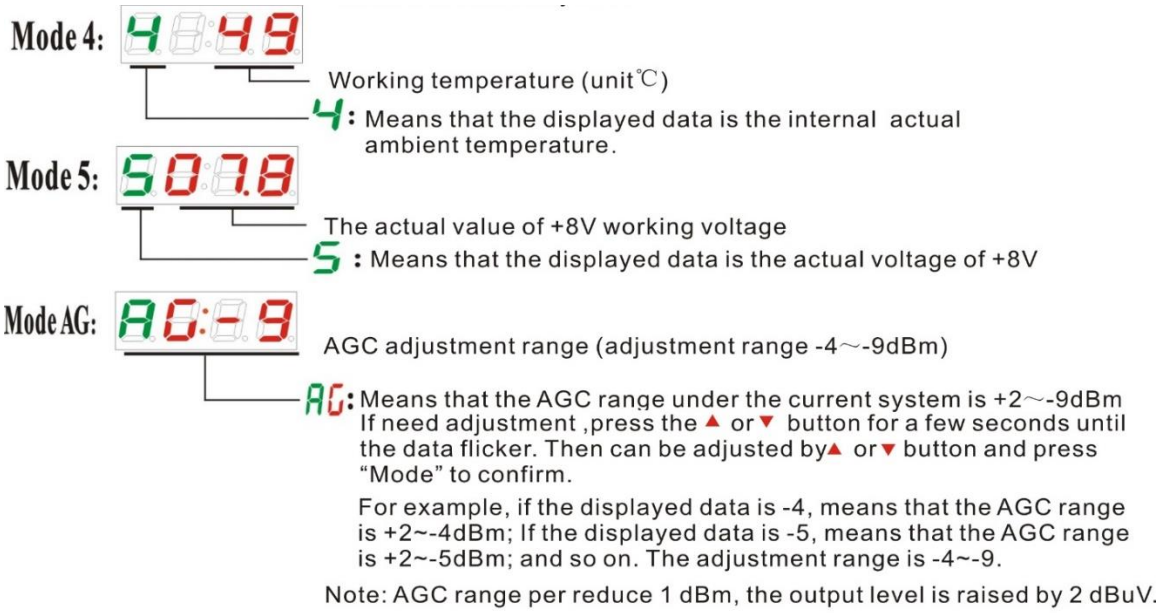
The actual number of channels enters into the current network system. If need adjustment ,press the ▲ or ▼ button for a few seconds until the data flicker. Then can be adjusted by▲ or▼ button and press “Mode” to confirm. The maximum number is 200.

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

Mode 3: 

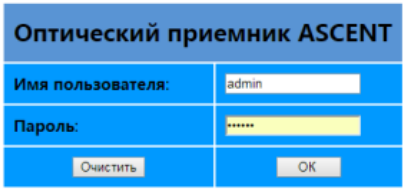
RF output level (unit dBuV)

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

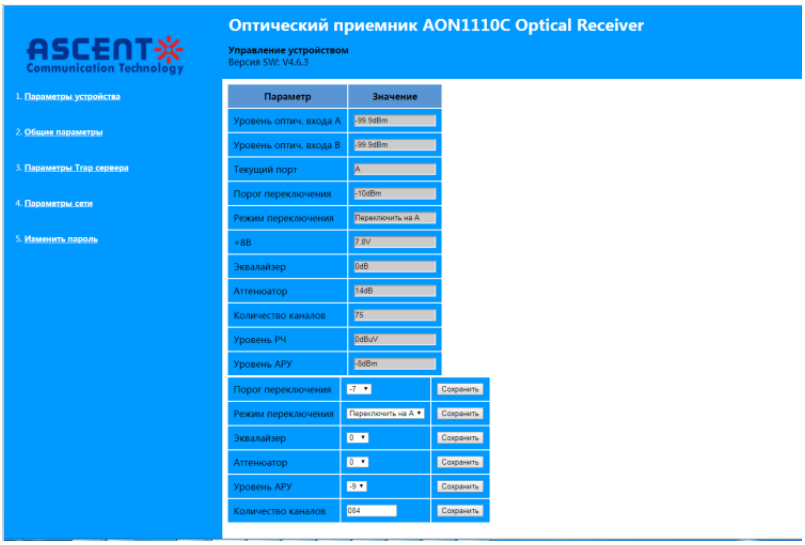


7 WEB Network Management

Opening the IE browser and entering the equipment IP address leads to the following interface: Default IP is 192.168.1.168.



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



There are 5 sub-interfaces:

1. **Device parameter** interface: Describes the device parameter display and configuration menu.

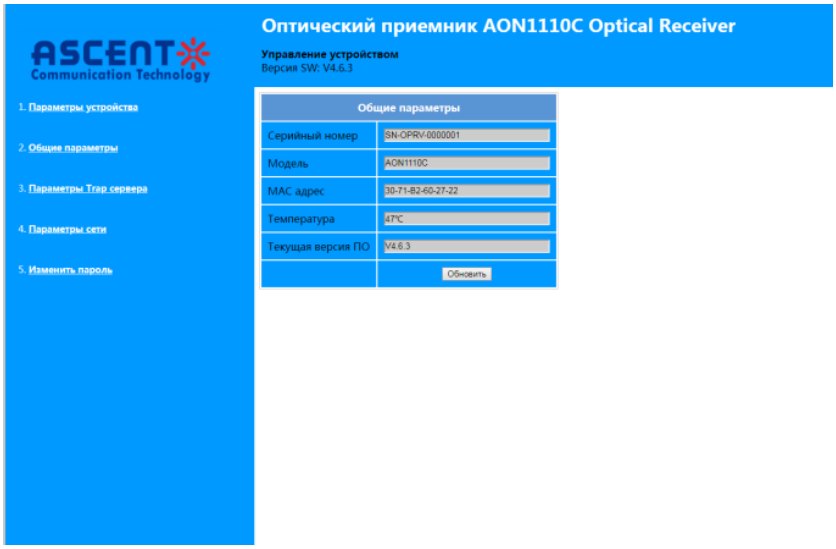
2. **Common Parameter** interface: Describes the common parameters such as S/N, device model, MAC address, temperature and so on.

3. **Trap address** interface: Describes the current alarming parameter.

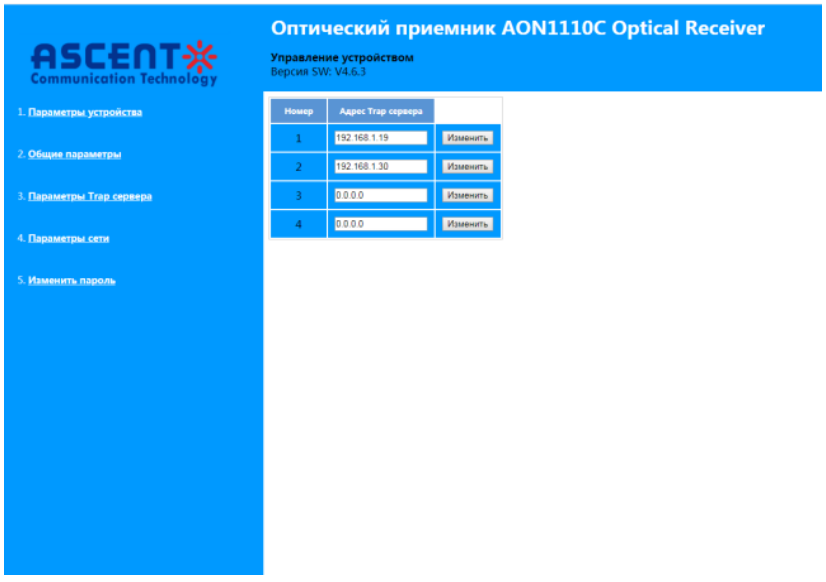
4. **Network parameter** interface: Describes the IP, gateway and subnet mask parameters.

5. **Modify password** interface: Change the login password in this interface.

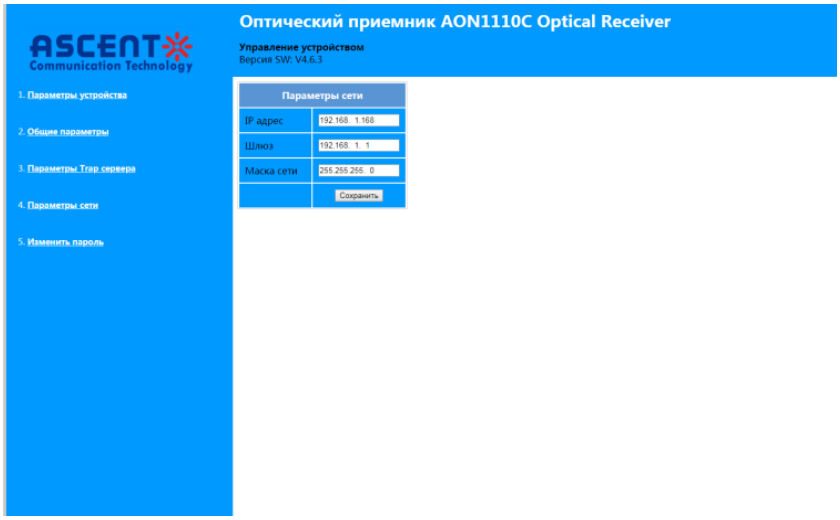
Click **Common Parameter** to open the following interface:



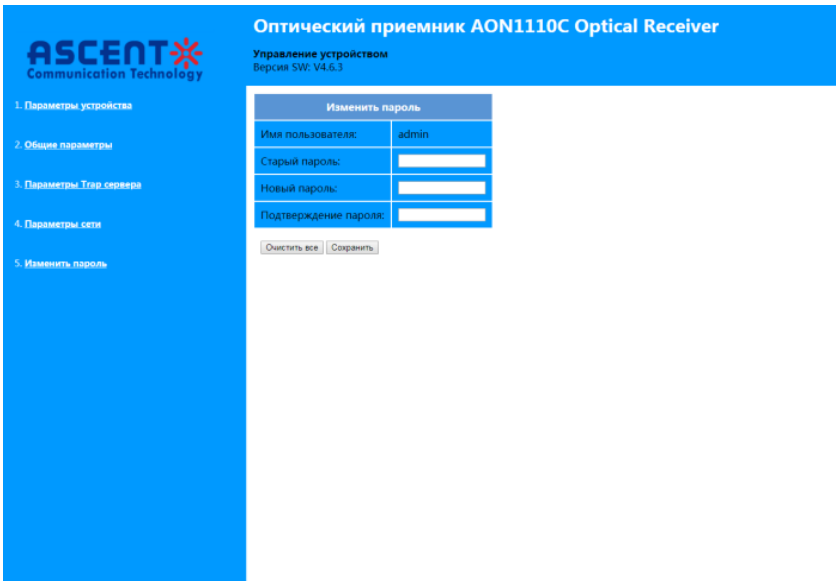
Click **Trap address** to open the following interface:



Click **Network parameter** to open the following interface:



Click **Modify password** to open the following interface:



8 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.

Failure phenomenon	Failure cause	Solution
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. 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.	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 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.

Failure phenomenon	Failure cause	Solution
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.

9 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.

Ascent Communication Technology Ltd

AUSTRALIA
140 William Street, Melbourne
Victoria 3000, AUSTRALIA
Phone: +61-3-8691 2902

Hong Kong SAR
Unit 9, 12th Floor, Wing Tuck Commercial Centre
177 Wing Lok Street, Sheung Wan, Hong Kong SAR
Phone: +852-2851 4722

CHINA
Unit 1933, 600 Luban Road
200023, Shanghai, CHINA
Phone: +86-21-60232616

USA
2710 Thomes Ave
Cheyenne, WY 82001, USA
Phone: +1 203 350 9822

EUROPE
Pfarrer-Bensheimer-Strasse 7a
55129 Mainz, GERMANY
Phone: +49 (0) 6136 926 3246

VIETNAM
11th Floor, Hoa Binh Office Tower
106 Hoang Quoc Viet Street, Nghia Do Ward
Cau Giay District, Hanoi 10649, VIETNAM
Phone: +84-24-37955917

WEB: www.ascentcomtec.com

EMAIL: sales@ascentcomtec.com

Specifications and product availability are subject to change without notice.
Copyright © 2024 Ascent Communication Technology Limited. All rights reserved.
Ver. ACT_AON1110C_Optical_Node_QRG_RU_V2a_Sep_2020