Four-way Return Optical Receiver Manual

OP-OR124RJ

Shenzhen Optostar Optoelectronics Co., Ltd

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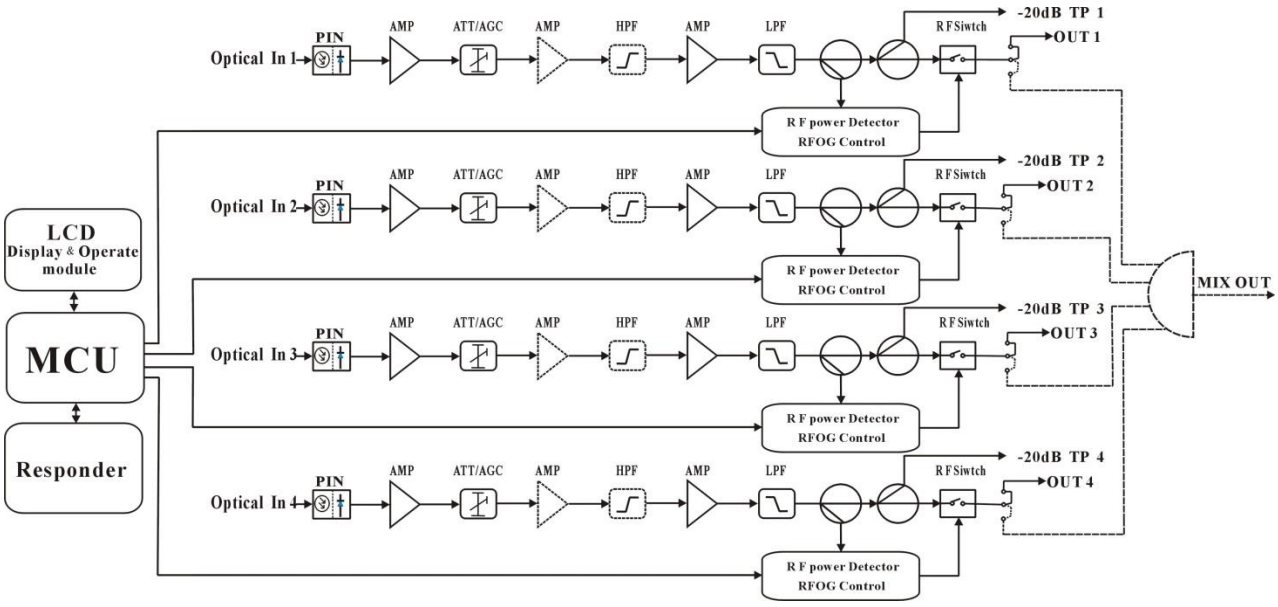
1. Summary

OP-OR124RJ type is the upgrade product of OP-OR124R type. Can automatically set or manually adjust the input signal on/off function (RFOG), greatly curb the overall network noise. Add optical AGC function, keep the output constant when the signal changed in a wide range; and add microcomputer condition monitoring circuit and front panel display screen, support standard class II network management transponder.

2. Features

- Optimized circuit design, SMT process production, optimized signal path, make the photoelectric signal transmission more smooth.
- SCM control working status, LCD displays the parameters, convenience and intuitive operation, and stable performance.
- Excellent AGC characteristic, keep stable output level in the received optical power range -10～0dBm.
- Can switch to burst mode, greatly reduced the link aggregation noise; with single way RF shut off function, the localization diagnosis of ingress noise is easy.
- Support dual power supply hot backup mode and four-way mixed output mode.
- Reserved data communication interface, can connect with class II network management responder, access to network management system.

3. Block Diagram



4. Technique Parameters

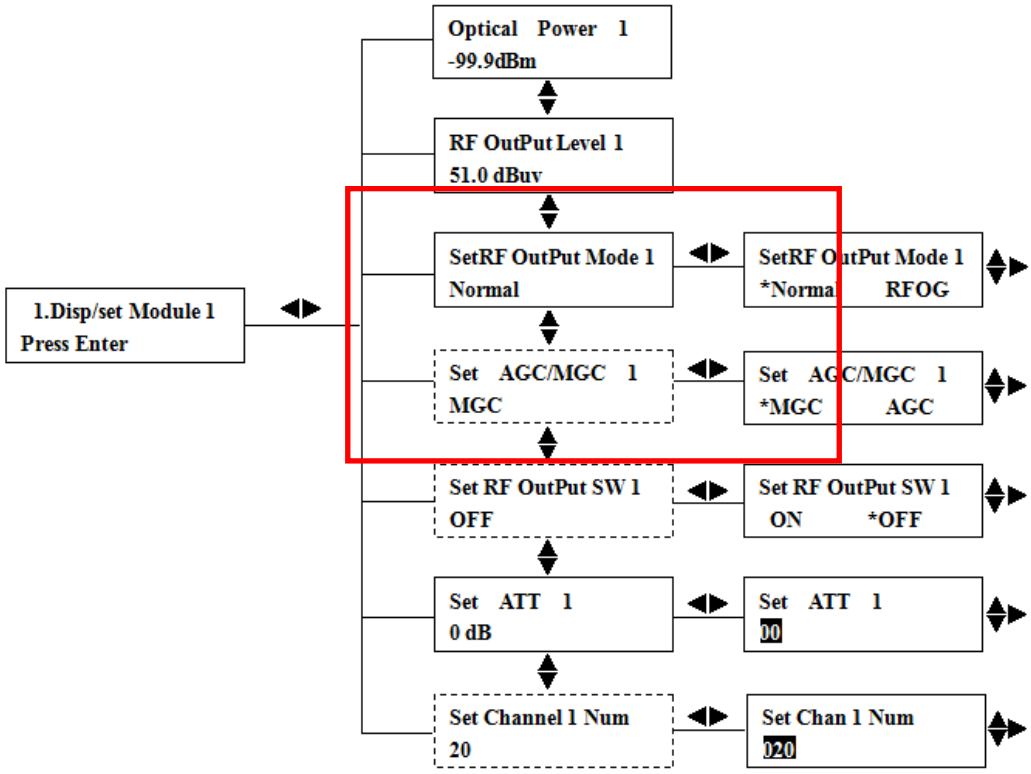
Item	Unit	Technical Parameters	
Receiving Optical Power Range	dBm	-10～0	
Optical AGC Range	dBm	-10～0	
Nominal Optical avelength	nm	1100～1600	
Optical Fiber Connector Type		FC/APC, SC/APC	
Optical Return Loss	dB	>45	
Frequency Range	MHz	5～200	
Output Level	dBμV	≥105	
Flatness in Band	dB	±1	
Return Loss	dB	≥ 16	
Output Impedance	Ω	75	
Adjustment Range of Output Level	dB	10 (Normal mode, turn on the optical AGC function)	
		30 (Normal mode, turn off the optical AGC function, adopt MGC control)	
		30 (RFOG burst mode)	
The Accuracy of RF Test Port	dB	-20±1	
Isolation between channels	dB	＞65	
RF connector type		Female F connector or male F connector	
NPR Dynamic Range	dB	≥15 (NPR≥30 dB) Use DFB laser	≥10 (NPR≥30 dB) Use FP laser
Supply Voltage	V	AC90V-250V/50Hz or DC -48V	
Consumption	W	20	
Operating Temperature	℃	-20~ +45	
Storage Temperature	℃	-20 ~ +65	
Relative Humidity	%	Max 95% no condensation	
Dimension	mm	483 (L) × 365 (W) × 44 (H)	

Note: The non-linear distortion index, link flatness and noise power ratio dynamic range are the indexes of link that is composed of return optical transmitter and return optical receiver.

Burst Mode*		
Laser turn on threshold	dBμV	≥70
Laser turn off threshold	dBμV	≤62
Laser turn on time (t1)	us	0.5≤ t1 ≤1
Laser turn off time (t2)	us	0.5≤ t2 ≤1.5

Note: The part in the virtual frame is the reserved circuit.

5.Normal/RFOG Working Mode Introductions

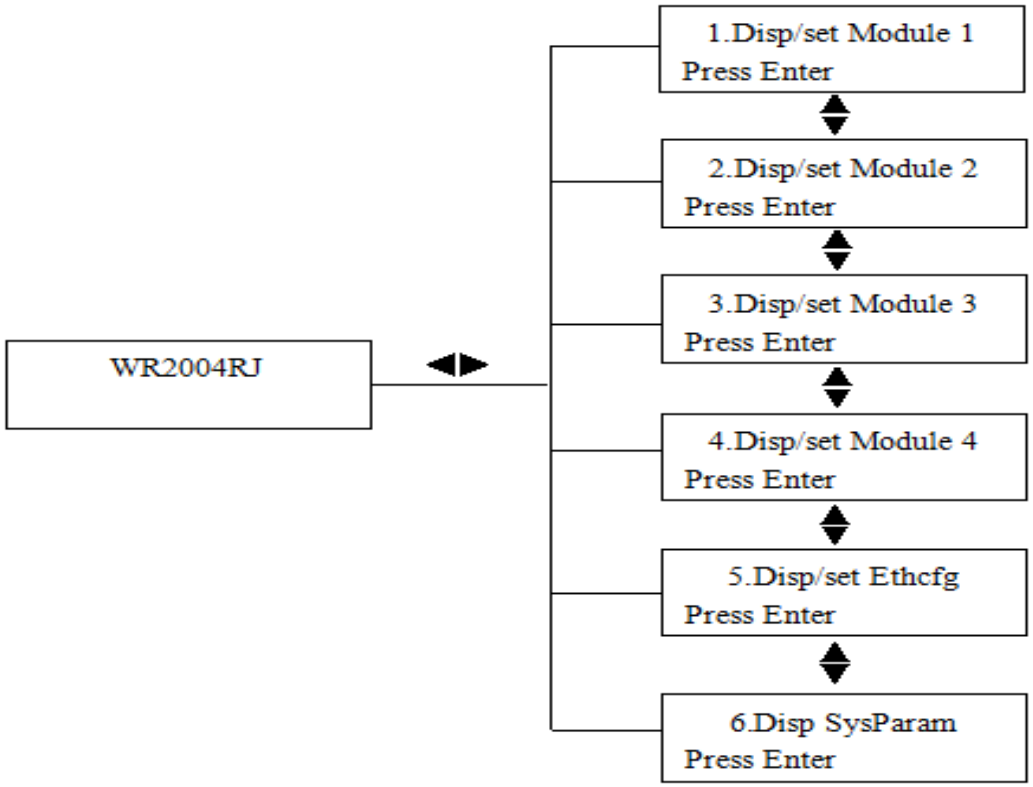


Working Mode	Description
Normal：AGC/MGC	1. Normal is the general working mode. AGC or MGC optional. 2. Select AGC: turn on the optical AGC function, the output level will not vary with the change of received optical power, its adjustable range is 10dB. 3. Select MGC: turn off the optical AGC function, the output level will vary with the change of received optical power, its adjustable range is 30dB.
RF OutPut SWx：ON/OFF	Under the Normal mode, can forcedly shut off the RF signal by **RF OutPut SWx：ON/OFF** menu. There is no this menu under the RFOG mode.
RFOG	1. RFOG is the burst working mode. Automatic turn off the optical AGC function. 2. Under the RFOG mode, there is RF signal output only when input the return optical signal; otherwise, there is no RF signal output.

6. Function Display and Operating Instruction

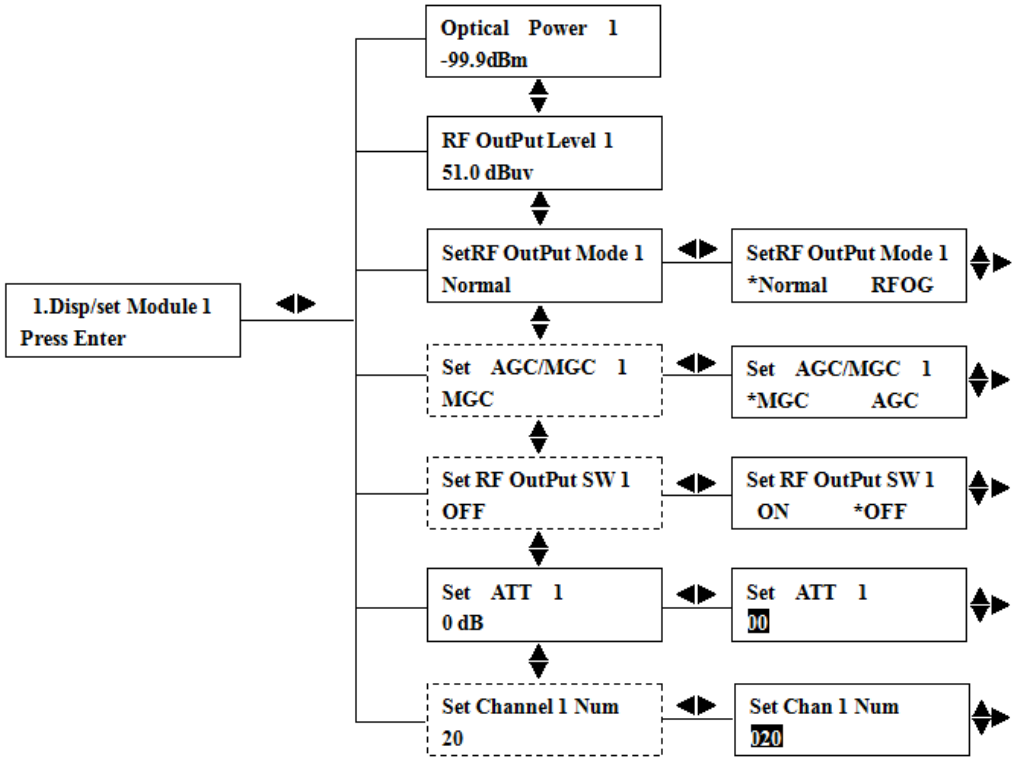
◄ : ESC button
► : Enter button
▲ : up button, increase the parameter value
▼ : down button, decrease the parameter value

6.1 Main menu



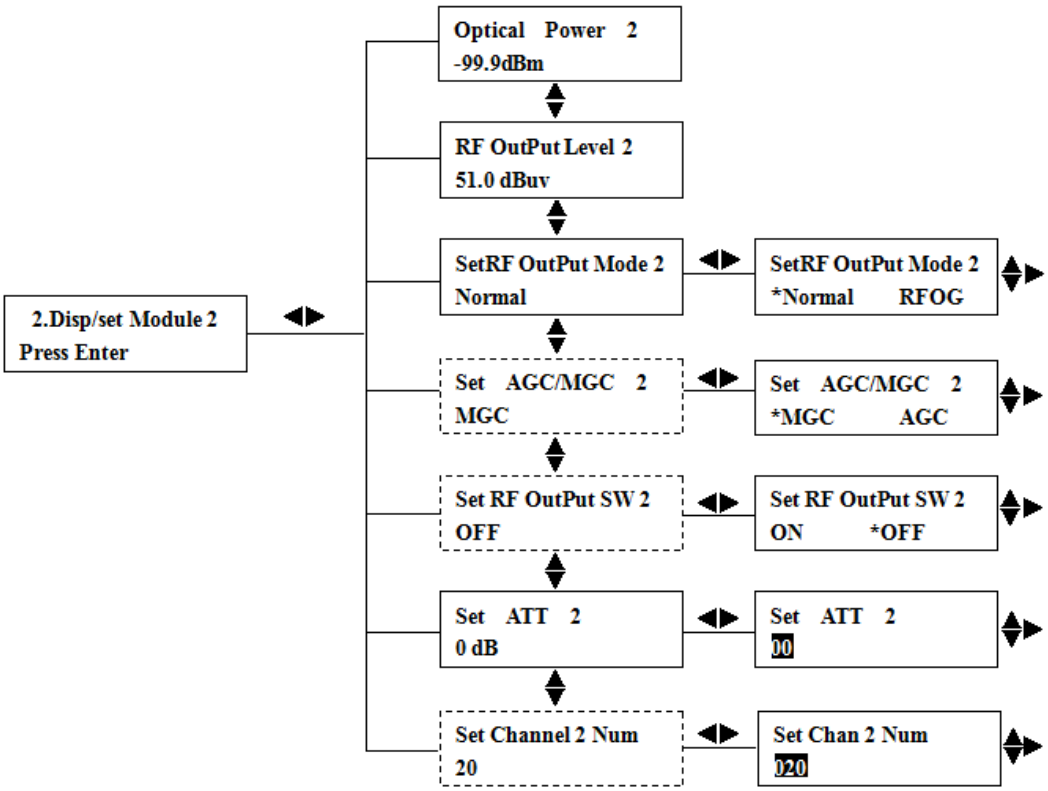
Displayed parameters	Comment
OP-OR124RJ	Boot display: machine model OP-OR124RJ
1.Disp/set Module 1：Press Enter	Menu 1: display/set the first way return module
2.Disp/set Module 2：Press Enter	Menu 2: display/set the second way return module
3.Disp/set Module 3：Press Enter	Menu 3: display/set the third way return module
4.Disp/set Module 4：Press Enter	Menu 4: display/set the fourth way return module
5.Disp/set EthCfg：Press Enter	Menu 5: display/set the Ethernet parameters
6.Disp SysParam：Press Enter	Menu 6: display the internal temperature

6.2 The setting menu of the first way return module



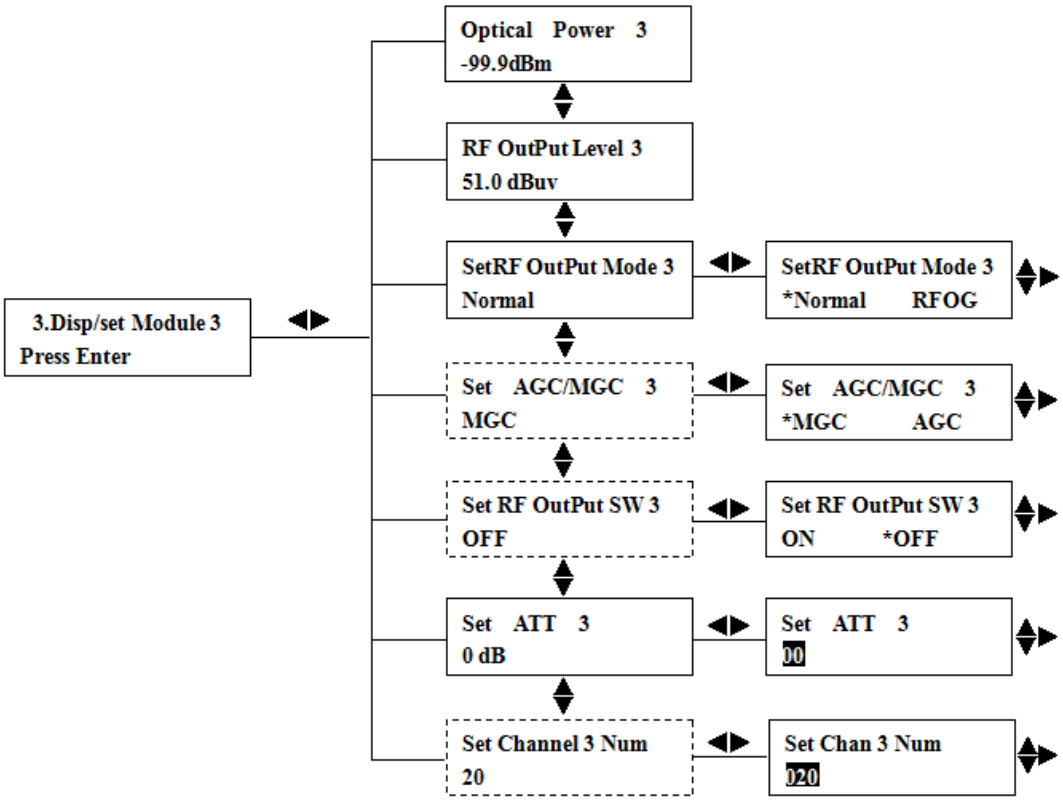
Displayed parameters	Comment	Remark
Optical Power 1 -99.9dBm	The input optical power of the first way return module	
RF OutPut Level 1 51.0 dBuv	The output level of the first way return module	
SetRF OutPut Mode 1 Normal	Set the RF output mode of the first way return module	Two modes optional: Normal: common mode; RFOG: burst mode.
Set AGC/MGC 1 MGC	Set the ATT mode of the first way return module	Two modes optional: AGC: turn on the optical AGC mode; MGC: turn off the optical AGC mode, manual adjustment. This menu is hidden under the RFOG mode.
Set RF OutPut SW 1 OFF	Set the RF output switch of the first way return module	ON: turn on; OFF: turn off This menu is hidden under the RFOG mode.
Set ATT 1 0 dB	Set the ATT value of the first way return module	Normal mode: the maximum adjustable range is MGC--30dB, AGC--10dB; RFOG mode: the default adjustable range is 20dB, the maximum adjustable range is 30dB.
Set Channel 1 Num 20	Set the channel number of the first way return module	The maximum channel number is 200; This menu is hidden under the RFOG mode.

6.3 The setting menu of the second way return module



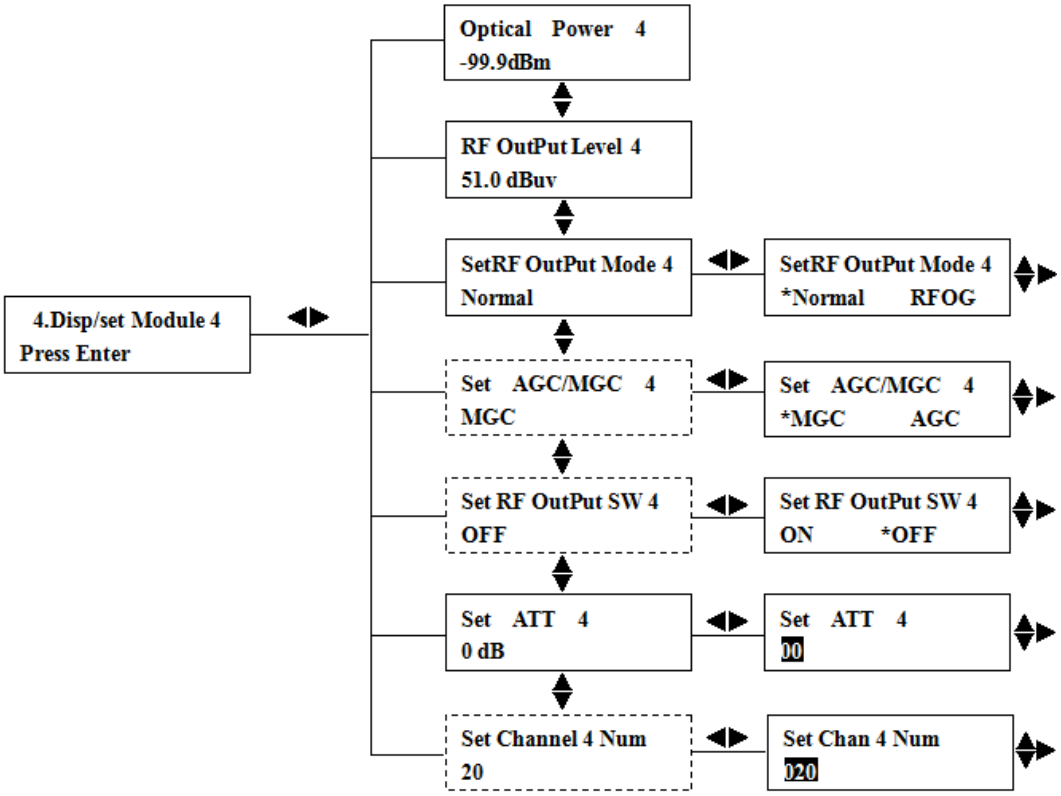
Displayed parameters	Comment	Remark
Optical Power 2 -99.9dBm	The input optical power of the second way return module	
RF OutPut Level 2 51.0 dBuv	The output level of the second way return module	
SetRF OutPut Mode 2 Normal	Set the RF output mode of the second way return module	Two modes optional: Normal: common mode; RFOG: burst mode.
Set AGC/MGC 2 MGC	Set the ATT mode of the second way return module	Two modes optional: AGC: turn on the optical AGC mode; MGC: turn off the optical AGC mode, manual adjustment. This menu is hidden under the RFOG mode.
Set RF OutPut SW 2 OFF	Set the RF output switch of the second way return module	ON: turn on; OFF: turn off This menu is hidden under the RFOG mode.
Set ATT 2 0 dB	Set the ATT value of the second way return module	Normal mode: the maximum adjustable range is MGC--30dB, AGC--10dB; RFOG mode: the default adjustable range is 20dB, the maximum adjustable range is 30dB.
Set Channel 2 Num 20	Set the channel number of the second way return module	The maximum channel number is 200; This menu is hidden under the RFOG mode.

6.4 The setting menu of the third way return module



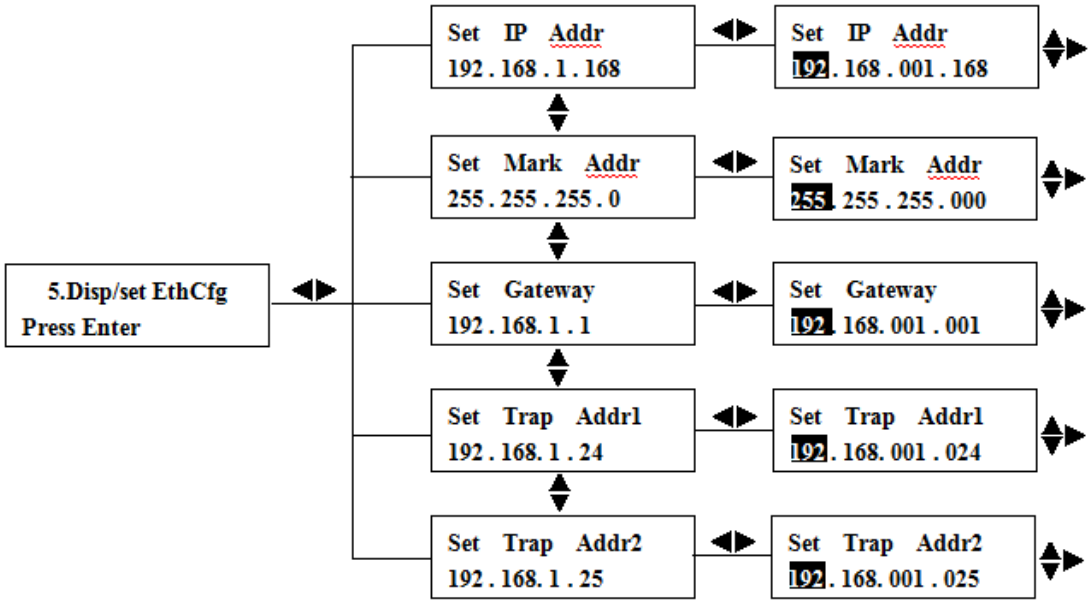
Displayed parameters	Comment	Remark
Optical Power 3 -99.9dBm	The input optical power of the third way return module	
RF OutPut Level 3 51.0 dBuv	The output level of the third way return module	
SetRF OutPut Mode 3 Normal	Set the RF output mode of the third way return module	Two modes optional: Normal: common mode; RFOG: burst mode.
Set AGC/MGC 3 MGC	Set the ATT mode of the third way return module	Two modes optional: AGC: turn on the optical AGC mode; MGC: turn off the optical AGC mode, manual adjustment. This menu is hidden under the RFOG mode.
Set RF OutPut SW 3 OFF	Set the RF output switch of the third way return module	ON: turn on; OFF: turn off This menu is hidden under the RFOG mode.
Set ATT 3 0 dB	Set the ATT value of the third way return module	Normal mode: the maximum adjustable range is MGC--30dB, AGC--10dB; RFOG mode: the default adjustable range is 20dB, the maximum adjustable range is 30dB.
Set Channel 3 Num 20	Set the channel number of the third way return module	The maximum channel number is 200; This menu is hidden under the RFOG mode.

6.5 The setting menu of the fourth way return module



Displayed parameters	Comment	Remark
Optical Power 4 -99.9dBm	The input optical power of the fourth way return module	
RF OutPut Level 4 51.0 dBuv	The output level of the fourth way return module	
SetRF OutPut Mode 4 Normal	Set the RF output mode of the fourth way return module	Two modes optional: Normal: common mode; RFOG: burst mode.
Set AGC/MGC 4 MGC	Set the ATT mode of the fourth way return module	Two modes optional: AGC: turn on the optical AGC mode; MGC: turn off the optical AGC mode, manual adjustment. This menu is hidden under the RFOG mode.
Set RF OutPut SW 4 OFF	Set the RF output switch of the fourth way return module	ON: turn on; OFF: turn off This menu is hidden under the RFOG mode.
Set ATT 4 0 dB	Set the ATT value of the fourth way return module	Normal mode: the maximum adjustable range is MGC--30dB, AGC--10dB; RFOG mode: the default adjustable range is 20dB, the maximum adjustable range is 30dB.
Set Channel 4 Num 20	Set the channel number of the fourth way return module	The maximum channel number is 200; This menu is hidden under the RFOG mode.

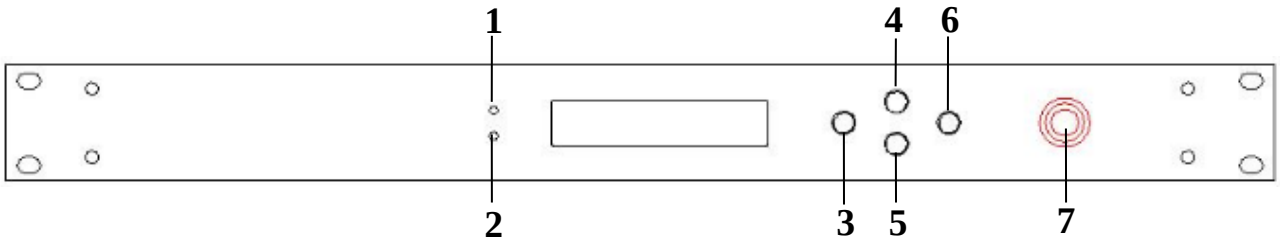
6.6 The setting menu of Ethernet parameters



Displayed parameters	Comment	Remark
Set IP Addr 192 . 168 . 1 . 168	Set IP address	Can change
Set Mark Addr 255 . 255 . 255 . 0	Set subnet mask	Can change
Set Gateway 192 . 168. 1 . 1	Set gateway	Can change
Set Trap Addr1 192 . 168. 1 . 24	Set trap1 address	Can change
Set Trap Addr2 192 . 168. 1 . 25	Set trap2 address	Can change

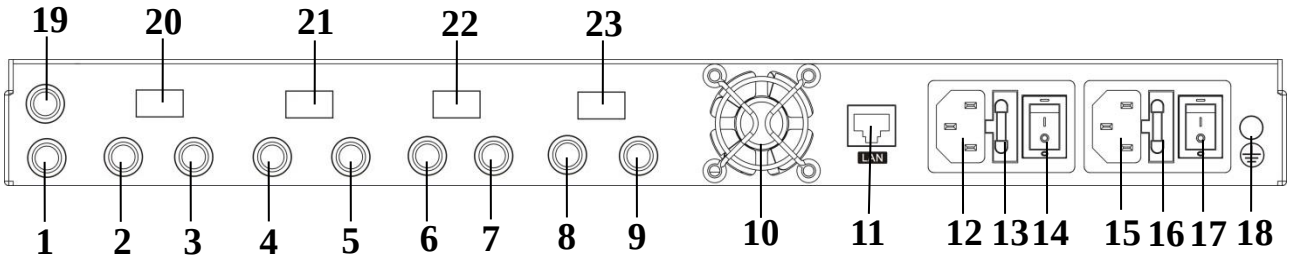
7. Product Schematic Diagram

7.1 Front Panel



1	Running indicator	2	Power indicator	3	Esc key
4	Up key	5	Down key	6	Enter key
7	Reserved preposition four-way mixed -20dB test port				

7.2 Rear Panel



1	Reserved four-way mixed RF output	2	-20dB test port 1	3	RF output 1
4	-20dB test port 2	5	RF output 2	6	-20dB test port 3
7	RF output 3	8	-20dB test port 4	9	RF output 4
10	Fan outlet	11	Network management interface	12	~AC220V power input
13	Fuse	14	Power switch	15	~AC220V power input
16	Fuse	17	Power switch	18	Grounding stud
19	Reserved postposition four-way mixed -20dB test port	20	Optical signal input 1	21	Optical signal input 2
22	Optical signal input 3	23	Optical signal input 4		

8. NMS setup instructions

If users configured the network management responder, need to do the following settings:

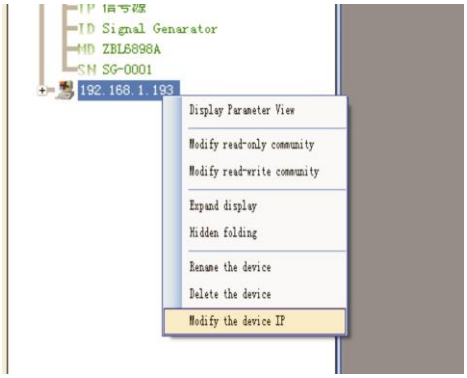
Responder IP setup instruction:

Network management directly modify:

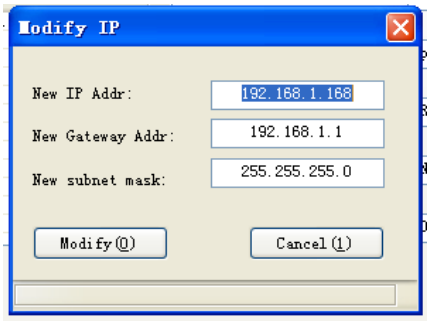
1. Default IP is 192.168.1.168，default gateway is 192.168.1.1，default subnet mask is 255.255.255.0

2. Connect the computer and responder (can be direct connected), and change the computer IP to 192.168.1.XXX (XXX is any number from 0 to 255 except 168); start upper computer network management software, then search the device and log in.

3. Right-click device icon and choose modify the device IP.



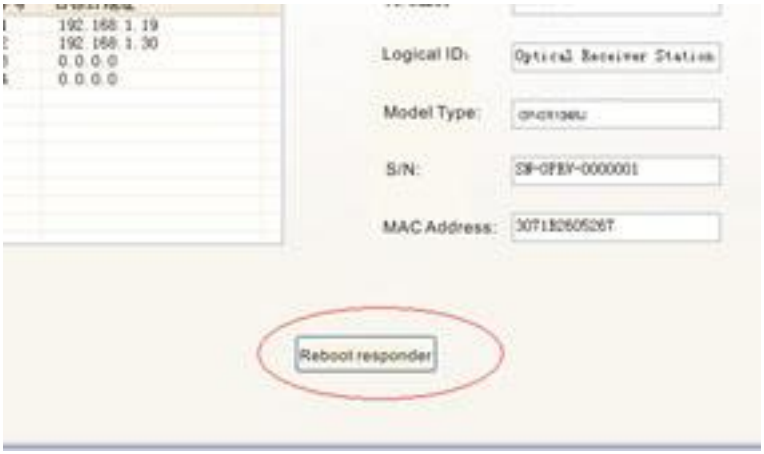
4. Enter new IP address, gateway and subnet mask.



5. Click modify，then exit, it is done. There will show new IP address and gateway on 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

6. Reboot the responder, the new IP take effect (Click the reboot button in the network management software or power on again)



9. Clean and maintenance method of the optical fiber active connector

In many times, we misjudge the decline of the optical power or the reduce of optical receiver output level as the equipment faults, but actually it may be caused by the incorrect connection of the optical fiber connector or the optical fiber connector has been polluted by the dust or dirt.

Now introduce some common clean and maintenance methods of the optical fiber active connector.

1. Carefully pull off the optical fiber active connector from the adapter. The optical fiber active connector should not aim at the human body or the naked eyes to avoid accidental injury.
2. Wash carefully with good quality lens wiping paper or medical degrease alcohol cotton. If use the medical degrease alcohol cotton, still need to wait 1~2 minutes after wash, let the connector surface dry in the air.
3. The cleaned optical fiber active 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 fiber active connector back to adapter, should notice to make the force appropriate to avoid the ceramic tube in the adapter crack.
5. If the output optical power is not normal after cleaning, should pull off the adapter and clean the other connector. If the optical power still low after cleaning, the adapter may be polluted, clean it. (Note: Be carefully when pull off the adapter to avoid hurting inside fiber.**)**
6. Use the dedicated compressed air or degrease alcohol cotton bar to clean the adapter. When use the compressed air, the muzzle of the compressed air tank should aims at the ceramic tube of the adapter, clean the ceramic tube with compressed air. When use degrease alcohol cotton bar, carefully insert the alcohol cotton bar into the ceramic tube to clean. The insert direction should be consistent, otherwise can not reach ideal cleaning effect.

10. After-sales Service Description

1. We promise: Free warranty for thirteen months (Leave factory time on product qualification certificate as the start date). The extended warranty term based on the supply agreement. We responsible for lifetime maintenance. If the equipment fault is resulted from the users' improperly operation or unavoidable environment reasons, we will responsible maintenance but ask suitable material cost.
2. When the equipment breaks down, immediately contact local distributor or directly call our technical support hotline 86-755-26400198
3. The site maintenance of the fault equipment must be operated by professional technicians to avoid worse damage.

Special notice:
If the equipment has been maintained by users, we will not responsible free maintenance. We will ask suitable maintenance cost and material cost.

Contact OPTOSTAR

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