



HT6000 Serial DWDM Transmission System

User Manual

Content

Content	1
Chapter 1 Overview	1
1 Product Description	1
2 Product Highlights	1
Chapter 2 Transmission Platform Introduction	3
1 HT6000 Serial 5U Transmission Platform	3
2 HT6000 Serial 2U Transmission Platform	6
3 HT6000 Serial 1U Transmission Platform	8
Chapter 3 Single Board Description	10
1 Network Management System (HT6000-NMS)	10
2 40G&100G OEO : 6*QSFP28	18
Chapter 4 HT6000 Network Management Configuration	25
1 Web Network management configuration	25
2 System Configuration Interface	27
3 Alarm	28
4 Panel	29
5 Device	30
6 User	31
7 Setting	32
8 Upgrade	35
9 Logout	37

Chapter 1 Overview

1 Product Description

HT6000 series equipment is a high-capacity DWDM dense wavelength division multiplexing transmission products developed and produced by Shenzhen HTFuture Technology Co., Ltd., applicable to various network levels such as national, provincial, and metro core, and meets the needs of large-capacity nodes of 16T and above. It is cost-effective in the industry. The highest transmission application platform to build large-granular WDM transmission solutions for IDC and ISP operators.

2 Product Highlights

● Super T-bit capacity, massive IP service delivery

- Super T-bit capacity, fast centralized scheduling
- Ultra-long distance 2000 kilometers without electric relay transmission capacity
- Single channel rate up to 400Gbps
- Large particles, large service, support 10G/100G/200G/400G mixed transmission
- Smooth network upgrade to obtain high bandwidth

● Intelligent protection of the whole network, higher reliability

- The client side supports 1+1 optical port dual-transmitting and selective-receiving thermal redundancy protection
- The wavelength side supports 1+1 optical port dual-transmitting and selective-receiving thermal redundancy protection
- The line side supports 1+1 dual-transmit and selective-receive thermal redundancy protection
- The power supply supports multi-channel power supply hot redundant backup

● Modular design, flexible and convenient

- The power supply adopts modular design, supports hot swap, and is easy to replace
- The fan adopts a modular design, supports hot swap, and is easy to replace
- The transaction card adopts modular design, supports hot swap, and is easy to replace
- Support wavelength adjustable,
- Management card automatic identification service card
- Service card automatically stores operational and fault information
- Service card supports online upgrade

● Small size, high integration

- 1U/2U/5U compact design, small size
- General transaction: 3/7/19 slots
- High-density MUX board supports 48CH
- High-density 10G OTU single board, support 8*SFP+.

● **Super Intelligent Network Management Platform**

- Support network management methods based on SNMP, CLI, WEB, TELNET, etc.
- Support automatic boardoverly of the whole network topology map and automatic generation of network elements
- Support electronic map location, fault location is fast and accurate
- Support sound alarm, email alarm, SMS alarm
- EMS network management platform, covering the whole process from planning to operation and maintenance
- Support fast fault diagnosis, one-click export of resource reports
- Support the location and diagnosis of fiber optic cable fault points, real-time detection of the quality of the fiber optic cable
- Support OPM real-time channel scanning, OSNR real-time monitoring

Chapter 2 Transmission Platform Introduction

1 HT6000 Serial 5U Transmission Platform

1.1 Overview

HT6000-CH20 is HTFuture developed high-capacity transmission platform. It is suitable for national, provincial, and metro core network levels to meet TBit capacity requirements. It is the industry's most cost-effective transmission application platform. It builds a large Granular WDM transmission solution.

1.2 Product Highlight

- Standard 19 inch 5U chassis
- High integration: a single rack supports 19 general service slots and 1 network management slot
- The single sub-rack supports up to 76 channels of 10G service conversion; supports up to 9 channels of 100G service conversion; supports up to 9 channels of 200G service conversion; supports up to 9 channels of 400G service conversion
- The single sub-rack supports up to 9*40 wavelength multiplexing and demultiplexing
- Unified platform: supports mixed insertion of various service cards (OTU cards, Mux demux cards, EDFA cards, DCM cards, OLP cards, OCP cards, etc) and unified network management;
- High reliability: modular power supply design, support for plugging and unplugging, support 2xDC -48V, 2xAC 220V dual power supply 1+1 protection
- Good heat dissipation performance: 6 high-performance, high-speed fan design to ensure sufficient heat dissipation;

1.3 Performance Parameters

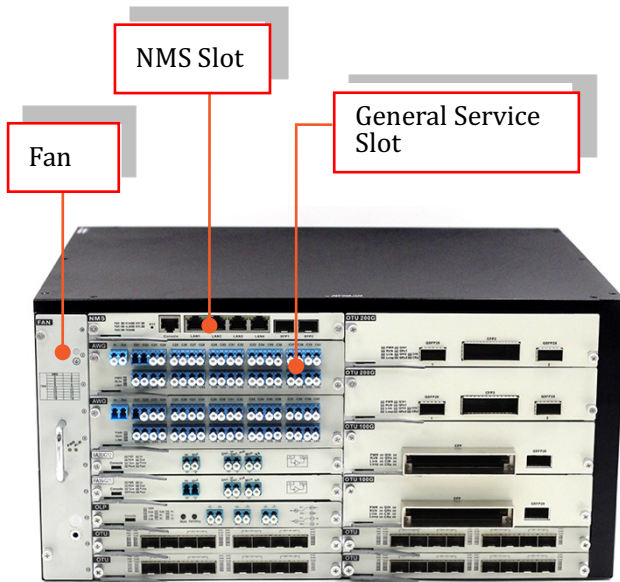
Parameter	Technical Index
Slot number	20 slots:1 NMS Slot, 19 Data Transaction Slots
Capacity	Single rack supports up to 9x40CH wavelength multiplexing or demultiplexing A single rack supports up to 76x10G service forwarding A single rack supports up to 9x100G service forwarding A single rack supports up to 9x200G service forwarding A single rack supports up to 9x400G service forwarding
Power supply	Dual Power 1+1 Protection, 220V AC (85V~220V) / -48V DC (-36~-72V) Optional

Power consumption	Full equipped < 500W
Fan	6pcs high-performance, high-speed Fan to ensure excellent heat dissipation performance
Operating Temperature	-10°C ~ 60°C
Storage Temperature	-40°C ~ 80°C
Relative humidity	5% ~ 95% non-condensation
Size	482.5 (W) × 222.5 (H) × 350 (D) (mm)
G.W.	20kg

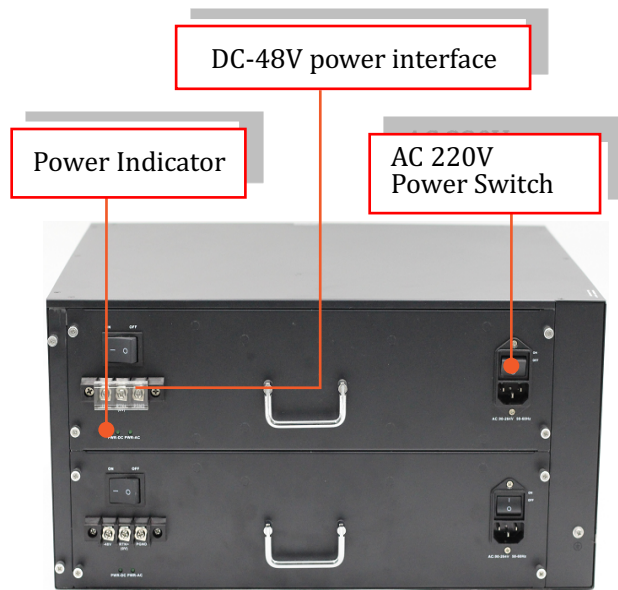
1.4 Product Pictures



5U 20-slot Sub-rack 3D perspective



5U 20-slot Sub-rack Front Panel



5U 20-slots Sub-rack Back Panel

1.5 Indicator Light Description

Indicator Screen	Name	Description
PWR	Rack Power Indicator	On: The rack power supply is normal Off: The rack is not powered
FAN-PWR	Power Working Indicator	On: the fan power supply is normal Off: the fan power supply is not working
ALM	Fan Alarm Indicator	On: the fan is not working properly Off: the fan is working normally

2 HT6000 Serial 2U Transmission Platform

2.1 Overview

HT6000-CH08 is HTFuture developed large-capacity transmission platform, applicable to various network levels such as national, provincial, and metropolitan core, and meets TBit capacity requirements. It is the industry's most cost-effective transmission application platform. It builds a large Granular WDM transmission solution.

2.2 Product Highlight

- Standard 19 inches 2U chassis ☐
- High integration: supports 7 general service slots and 1 NMS slot ☐
- The single sub-rack supports up to 28x10G service forwarding; supports up to 3x100G service forwarding; supports up to 3 x200G service forwarding; supports up to 3x 400G service forwarding☐
- Single sub-rack supports up to 3*40 wavelength multiplexing and demultiplexing ☐
- Unified platform: supports mixed insertion of various service cards (OTU cards, Mux demux cards, EDFA cards, DCM cards, OLP cards, OCP cards, etc) and unified network management
- High reliability: modular power supply design, support for plugging and unplugging, support 2xDC -48V, 2xAC 220V dual power supply 1+1 protection ☐
- Good heat dissipation performance: 3 high-performance, high-speed fan design to ensure sufficient heat dissipation

2.3 Performance Parameters

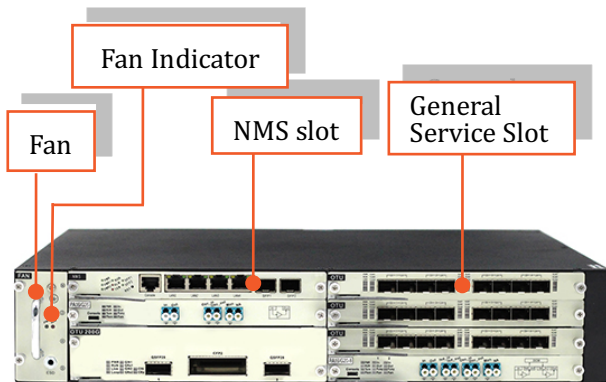
Parameters	Technical Index
Size	2U 19 inches
Slot	8 slots:1 NMS slot, 7 service slots
Capacity	Single rack supports up to 3x40 wavelength multiplexing or demultiplexing A single rack supports up to 28x10G service forwarding A single rack supports up to 3x100G service forwarding A single rack supports up to 3x200G service forwarding A single rack supports up to 3x400G service forwarding
Power Supply	Dual Power 1+1 protection, AC: 220V (85V~220V) /DC: -48V (-36~-72V) Optional
Power Consumption	Full equipped <200W

Fan	3pcs high-performance, high-speed Fan to ensure excellent heat dissipation performance
Operating temperature	-10°C ~ 60°C
storage temperature	-40°C ~ 80°C
Relative humidity	5% ~ 95% No condensation
Size	282.5 (W) × 89 (H) × 350 (D) (mm)
Weight	10kg

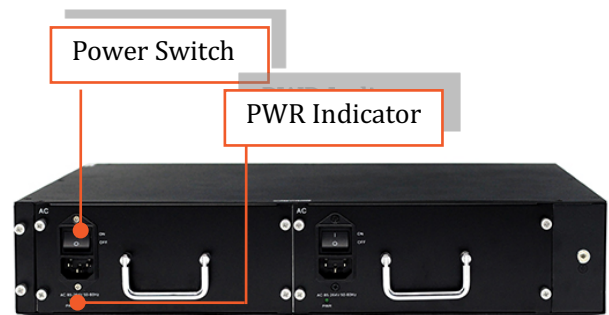
2.4 Product Pictures



2U 8-slot sub-rack 3D perspective



2U 8-slot sub-rack front pane



2U 8-slot sub-rack back pane

2.5 Indicator Light Description

Indicator screen	Name	Description
PWR	Rack power indicator	On: The rack power supply is normal Off: The rack is not powered
FAN-PWR	Power working indicator	On: the fan power supply is normal Off: the fan power supply is not working
ALM	Fan alarm indicator	On: the fan is not working properly Off: the fan is working normally

3 HT6000 Serial 1U Transmission Platform

3.1 Overview

HT6000-CH04 is HTFuture's developed large-capacity transmission platform, applicable to various network levels such as national, provincial, and metropolitan core, and meets TBit capacity requirements. It is the industry's most cost-effective transmission application platform. It builds a large Granular WDM transmission solution.

3.2 Product Highlights

- Standard 19 inches 2U height ☞
- High integration: single rack supports 3 general service slots, 1 network management slot ☞
- The single subrack supports up to 12x10G service forwarding; supports up to 1x100G service forwarding; supports up to 1 x200G service forwarding; supports up to 1x 400G service forwarding☞
- Single subrack supports up to 3*16 wavelength multiplexing and demultiplexing ☞
- Unified platform: supports mixed insertion of various service cards (OTU cards, Mux demux cards, EDFA cards, DCM cards, OLP cards, OCP cards, etc) and unified network management ☞
- High reliability: modular power supply design, support for plugging and unplugging, support 2xDC -48V, 2xAC 220V dual power supply 1+1 protection ☞
- Good heat dissipation performance: 4 high-performance, high-speed fan design to ensure sufficient heat dissipation

3.3 Performance Parameters

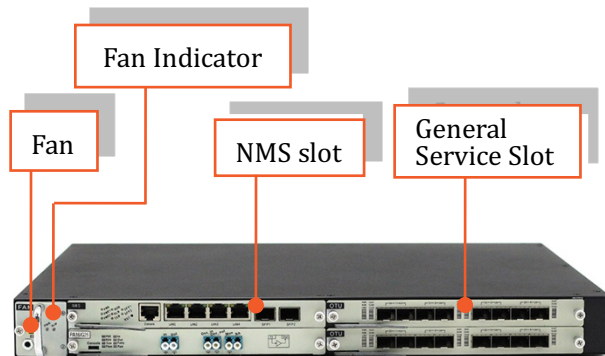
Parameters	Technical Index
Size	Standard 1U 19 inches
Slot Number	Single slot
Capacity	Single rack supports up to 3x16 wavelength multiplexing or demultiplexing A single rack supports up to 12x10G service forwarding A single rack supports up to 1x100G service forwarding Single rack supports up to 1x200G service forwarding Single rack supports up to 1x400G service forwarding
Power Supply	Dual Power 1+1 Protection, AC:220V (85V~220V/DC:-48V (-36~-72V) Optional

Power Consumption	Full set <100W
Fan	4pcs high-performance, high-speed Fan to ensure excellent heat dissipation performance
Operating Temperature	-10°C ~ 60°C
Storage Temperature	-40°C ~ 80°C
Relative humidity	5% ~ 95% non-condensation
Size	482.5 (W) × 44.5 (H) × 320 (D) (mm)

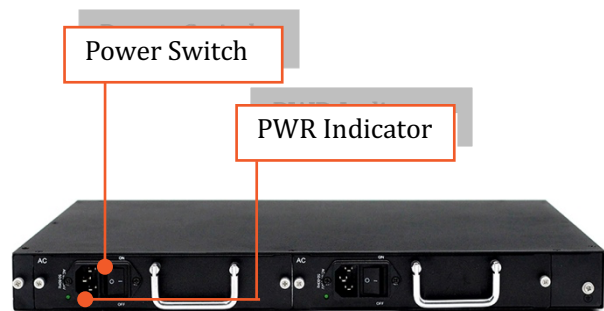
3.4 Product Pictures



1U 4-slot sub-rack 3D perspective



1U 4-slot sub-rack front pane



1U 4-slot sub-rack back pane

3.5 Indicator Light Description

Indicator Screen	Name	Description
PWR	Rack power indicator	On: The rack power supply is normal Off: The rack is not powered
FAN-PWR	Power working indicator	On: the fan power supply is normal Off: the fan power supply is not working
ALM	Fan alarm indicator	On: the fan is not working properly Off: the fan is working normally

Chapter 3 Single Board Description

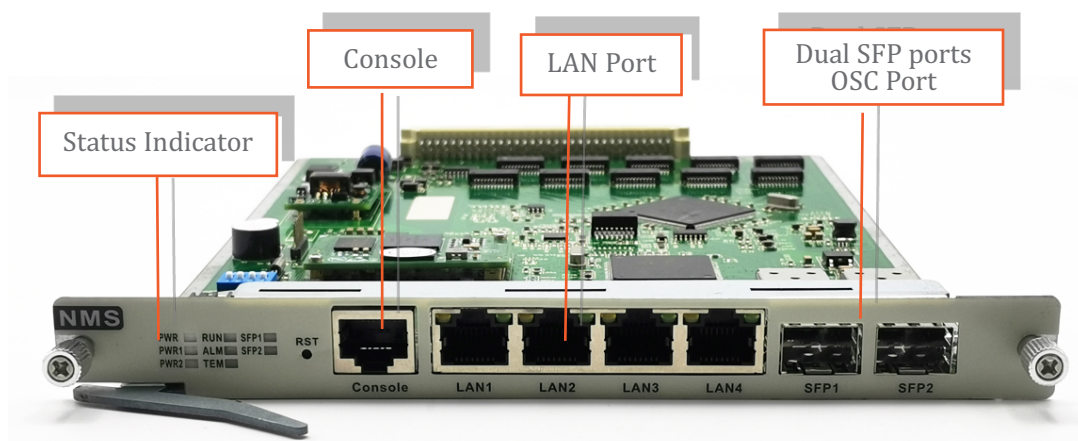
1 Network Management System (HT6000-NMS)

1.1 Equipment overview

The network management board is an important part of the HT6000 series. The network management card realizes online management and monitoring of the entire WDM system, and performs data configuration, alarm management, fault monitoring, etc. for each network element, and provides graphical information management, Topology management, electronic map positioning, friendly man-machine information, convenient for rapid service deployment, rapid fault location, and saving maintenance costs.

1.2 Product Highlights

- The optical monitoring channel does not limit the distance between 2 optical amplifiers ☐
- Amplifier failure does not affect the performance of the optical monitoring channel ☐
- The network management board is independent of the service board and does not affect the service ☐
- When the service board fails, the network management information transmission can still be guaranteed
- Failure of network management at this station does not affect the transmission of network management information at other stations.☐
- Using 1510nm wavelength, supporting maximum 40dB span transmission ☐
- Support RJ45, SFP, the largest possible use of existing transmission resources to transmit network management information



Network element management board panel diagram

1.3 Single Board Diagram

Local management console port	Support 1 local management console port
Remote management Ethernet port	Support 4pcs RJ45 Ethernet interfaces, interface rate 10/100M adaptive
OSC Optical monitoring port	Support 2 pluggable SFP ports , LC type
Network management Type	Support CLI, Telnet, SNMP, Web and other network management Types
Exchange function	Support IP communication function between devices to realize comprehensive management of multiple devices
Maintenance function	Support local or remote software online upgrade
Reset function	Support operation button to reset local NCP board hardware
Operating temperature	-10°C~+60°C
Working humidity	5%~95%
Size	191 (W) × 20 (H) × 253 (D)
Max. power consumption	5W
MTBF	>100,000 hours
Default IP address	192.168.1.188

1.4 Device Interface Definition

Interface	Interface Screen	Function
Ethernet port	LAN1	Connect to the network management computer through the network cable to realize the management of the HT6000 by the network management system 4 LAN1, LAN2, LAN3, LAN4 interfaces to realize cascading management of multiple network elements Simultaneously realize the transmission of network management information
	LAN2	
	LAN3	
	LAN4	
SFP Port	SFP1	Access to the transmission optical cable through the OSC interface to realize the aggregation of branch node network management information to the network management center, dual optical ports to achieve two-way transmission, and 1+1 protection
	SFP2	
Console	CON	Provide local console port network management function

1.5 Indicator Light Description

Indicator Screen	Name	Description
PWR	NMS power indicator	On: the power supply of NMS is normal Off: the power supply is faulty

PWR1	Rack power indicator 1	On: The rack power supply is normal Off: The rack is not powered
PWR2	Rack power indicator 2	
RUN	NMS indicator	On: NMS is operating normally Off: malfunctioning
ALM	Alarm indicator	1、Unknown rack type alarm is on 2、Any power failure alarm is on 3、Any fan failure alarm is on 4、The temperature alarm is on 5、The unknown card message type alarm is on
TEM	Temperature warning indicator	Alarm when the temperature is too high
SFP1	SFP 1 indicator	On: Flashing, data link is normal, Off: data connection is abnormal
SFP2	SFP 2 indicator	On: Flashing, data link is normal, Off: data connection is abnormal

1.6 Single Board Network Management Information

Mainly include NMS board : 1) panel picture; 2) Factory information; 3) LAN port information; 4) SFP information,

The screenshot displays the NMS board management interface. On the left is a sidebar menu with options: System, Alarm, Panel, Device, User, Settings, Upgrade, and Logout. The main content area shows the board's status and configuration.

Slot M

NMS Board Status:

- Hardware Version: 1.70
- Software Version: 5.32
- Protocol Version: 1.00
- Board Code: 0001
- Production Date: 2023.07.19
- SN: MAX287006123071909
- Type: OTN-1U
- Description: OTN Management system

LAN Port Information:

Port	Link Status	Speed/Duplex
LAN1	Down	10M Full
LAN2	Up	100M Full
LAN3	Down	10M Full
LAN4	Down	10M Full

SFP Information:

SFP	SFP1	SFP2
Status	On	Removed
Link Status	Down	---
Link Status	Down	---
Speed	200M	---
Wavelength	1510nm	---
Transmission Distance	160Km	---
Temperature	25.73	---
Voltage(V)	3.29	---
Current(mA)	25.18	---
RxOptical Power(dBm)	---	---
TxOptical Power(dBm)	3.59	---

Temperature Information:

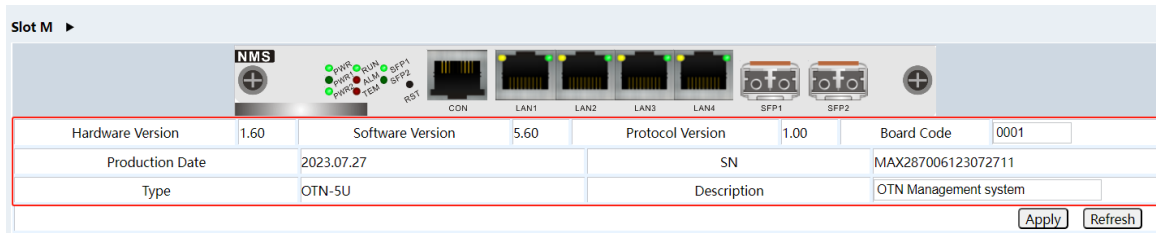
Temperature(°C)	Temperature Threshold(°C)	Status
30.12	75	Normal

Buttons: Apply, Refresh, Board information

Monitoring information

- Support real-time monitoring of the working status of the network management board [?](#)
- Support real-time monitoring of SFP port link status [?](#)
- Support real-time reading of SFP module DDM information [?](#)
- Support real-time monitoring of LAN port connection status

1.6.1 Panel picture:



Slot M: This NMS board is in slot M, This is an exclusive slot. Only the NMS board can be inserted into this slot, and other boards cannot be inserted.

CON port: For R&D operation

LAN1~LAN4: FOR CAT6 connect DWDM equipment to local area network

SFP1~SFP2: For OSC optical module. Usually we use 155M SFP 160KM as OSC optical module.

1.6.2 Factory information:

In red rectangle in upper picture, This shows the information of the product when it leaves the factory. Theoretically, this information is not allowed to be modified by users.

1.6.3 LAN1~LAN4 Status

Port	Link Status	Speed/Duplex
LAN1	Down	10M Full
LAN2	Down	10M Full
LAN3	Down	10M Full
LAN4	Down	10M Full

If LAN1~LAN4 are connected through CAT cable, the link status shows up, otherwise shows down.

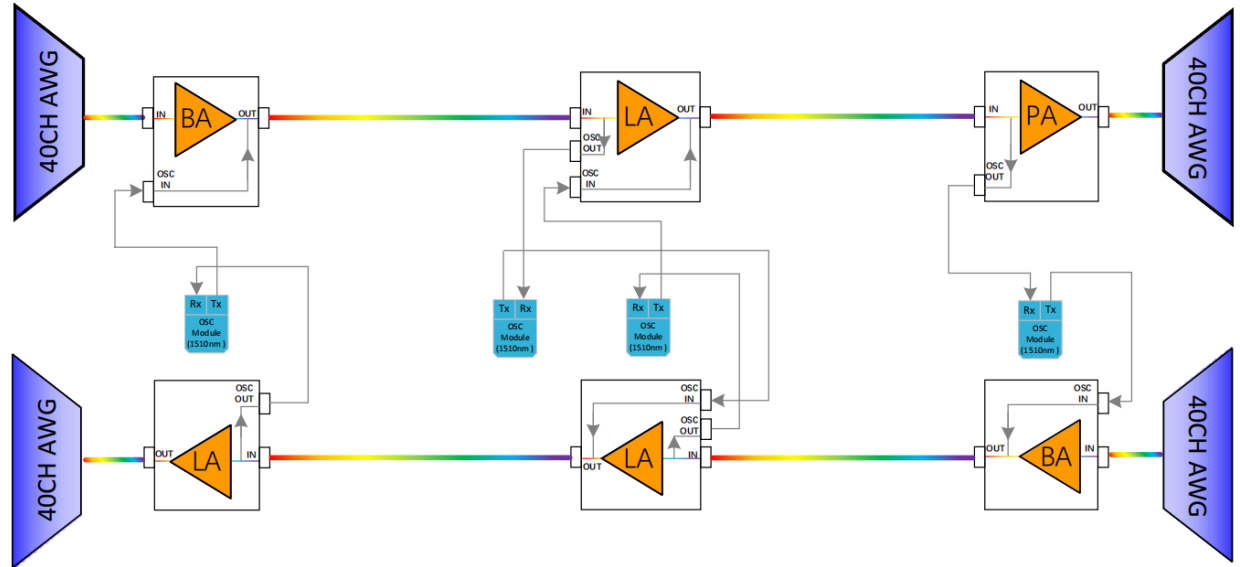
1.6.4 SFP1~SFP2 Status

SFP	SFP1	SFP2
Status	On	On
Link Status	Up	Up
Speed	200M	200M
Wavelength	1510nm	1510nm
Transmission Distance	80Km	80Km
Temperature	23.23	25.48
Voltage(V)	3.27	3.28
Current(mA)	20.73	21.53
RxOptical Power(dBm)	-6.30	-2.92
TxOptical Power(dBm)	-2.52	-2.17

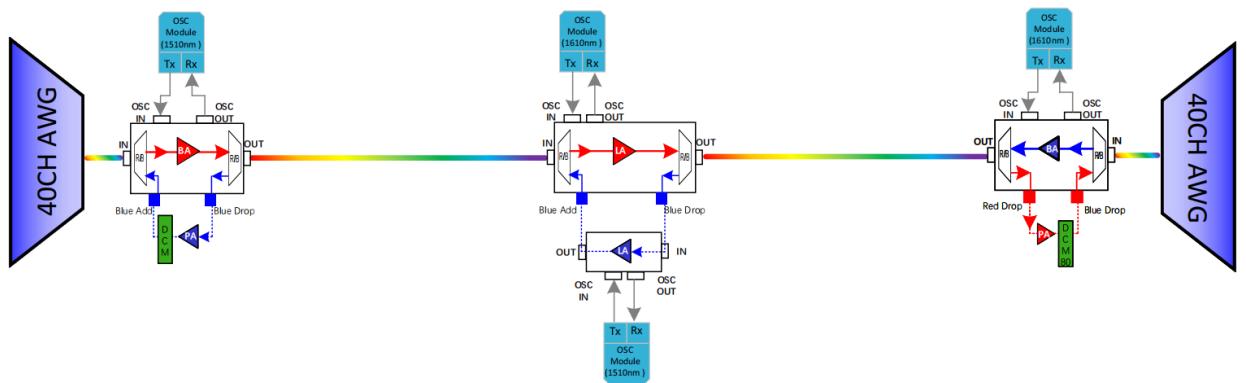
If SFP1~SFP2 are inserted OSC optical module, the link status shows up, otherwise shows down.

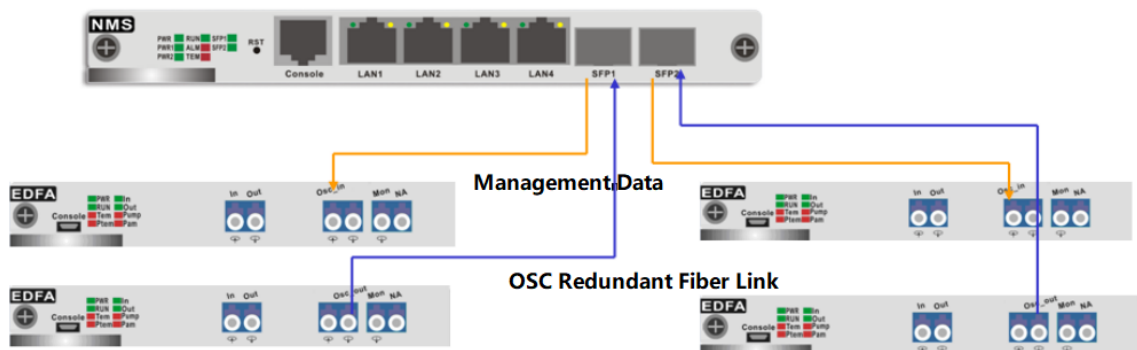
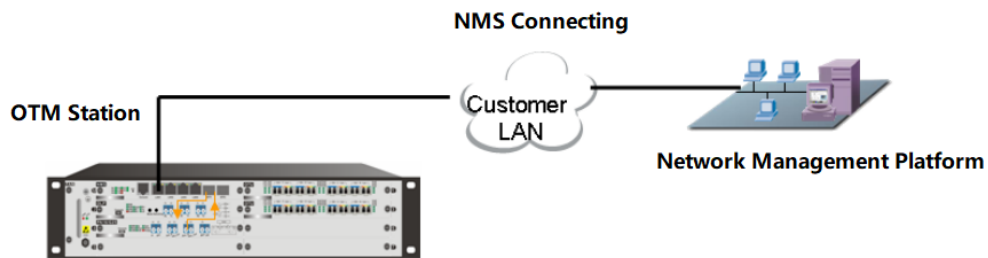
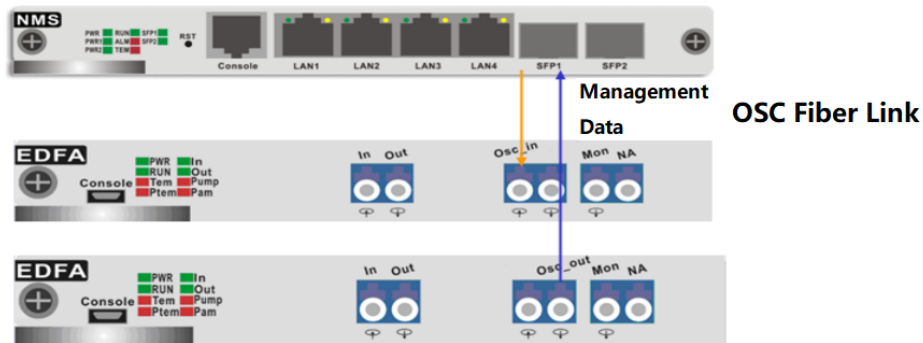
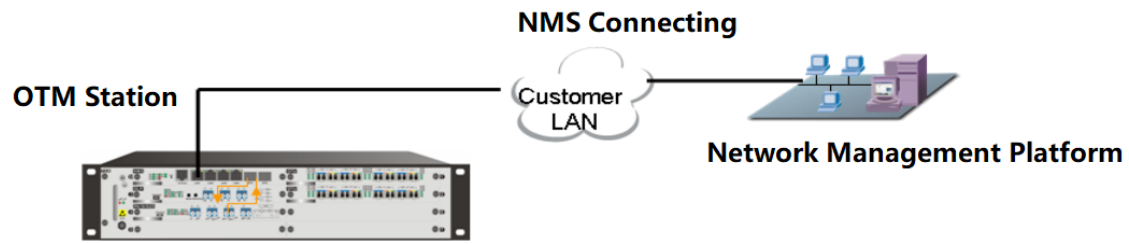
1.7 Project Connection Diagram

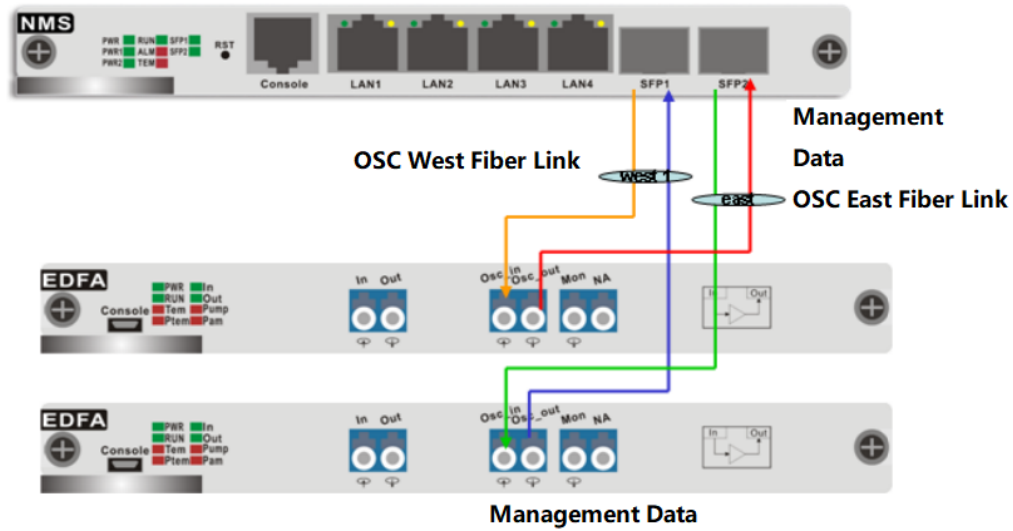
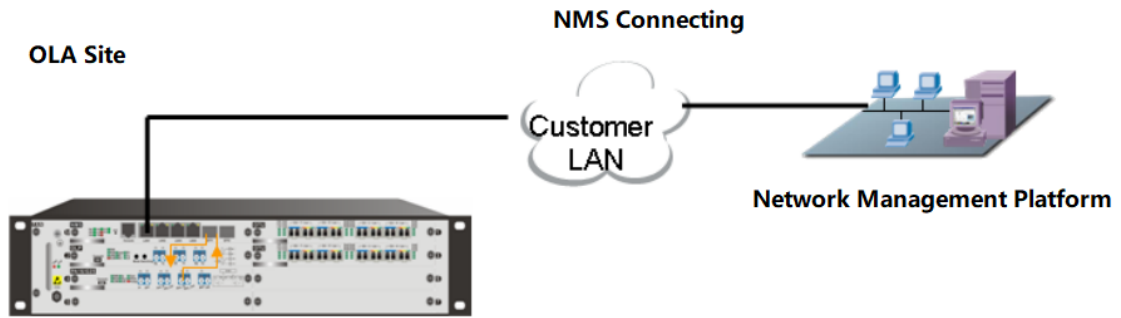
OSC Optical transceiver wiring connecting - Dual Fiber



OSC Optical transceiver wiring connecting - Single Fiber







Note:

1.The network management card has dual optical ports SFP1 and SFP2 with cascading, ring network, and 1+1 protection functions. SFP1 and SFP2 Tx and Rx are respectively connected to OSC-IN and OSC-OUT port on EDFA to realize the transmission of network management information.

2.The 4 LAN ports of the network management card have switching and cascading functions, connecting multiple PCs to realize multiple PCs to manage the DWDM system at the same time, and 4 LAN ports can be cascaded to 4 DWDM systems to realize multiple DWDM centralized network management.

2 40G&100G OEO : 6*QSFP28

2.1 Equipment Overview

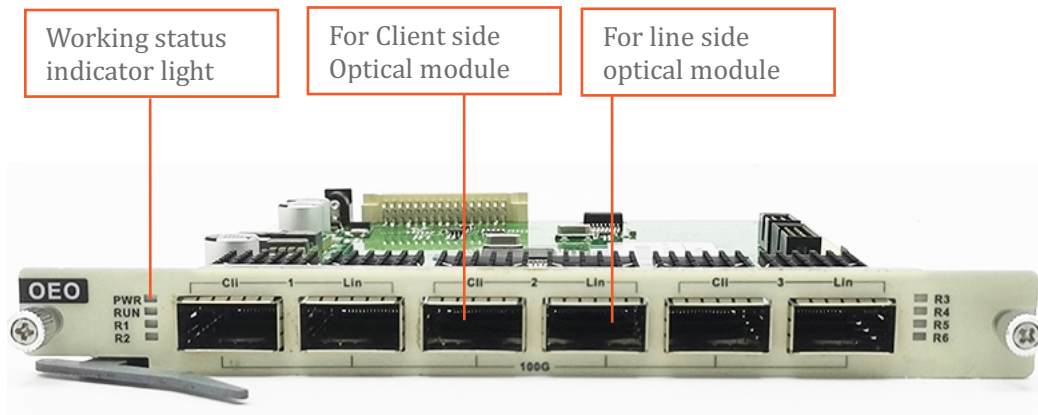
The 40G&100G OEO service board supports the access of three 40G or 100G services. Its main function is to perform regeneration of the three accessed 40G or 100G rate service signals and convert them into three WDM standard wavelength optical signals for convenient The multiplexing unit performs wavelength division multiplexing on optical signals of different wavelengths, and at the same time realizes the reverse process of the above process. It is suitable for 40G or 100G intra-city wavelength division short-distance transmission solutions.

2.2 Product Highlights

- Support single channel 40Gbps/100Gbps large particle transmission
- Client-side interface: supports 3xQSFP28-LR4 module
- Line side interface: supports 3xQSFP28-LR4 module
- Support DDM digital diagnosis
- Support ALS function
- Support LFP function

Performance parameters		Technical indicators
Central wavelength		850nm, DWDM C-band, 1270~1610nm
Rate (Gbps)		100Gbps/40G
100G interface	Branch circuit test	100G QSFP28 module/40G QSFP+ module
	line side	100G QSFP28 module/40G QSFP+ module
Business model		Support 100G/40G OEO relay amplification and regeneration, wavelength conversion
Size		191 (W) × 20 (H) × 253 (D)
Environment	Operating temperature	-10°C ~ 60°C
	Storage temperature	-40°C ~ 80°C
	Relative humidity	5% ~ 95% no condensation
Power consumption		≤30W

2.3 Single Board Panel Diagram



2.4 Device Interface Definition

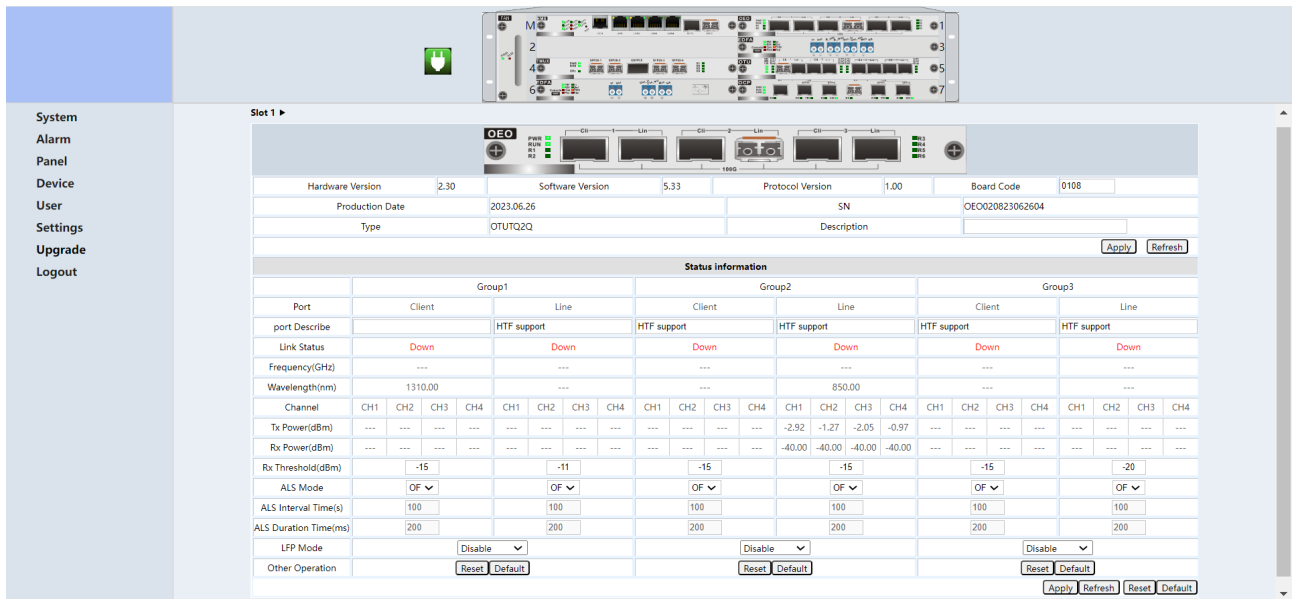
Interface silk screen	Name	Features/Links
Cli	Branch side interface	Connect to customer equipment, implement O/E conversion, and forward to the line side port
Lin	Line side interface	Connect to the OD/OM branch interface, convert the client signal to a specific wavelength, send it to the OM for multiplexing and transmission, amplify, retime, and regenerate the OD branch signal, and send it to the client port.
Note: 3 groups of QSFP28 interfaces		

2.5 Indicator Light Description

Indicator light screen printing	Name	Describe
PWR	Power Indicator	On, TMUX power supply is normal; off, power supply failure
RUN	System indicator light	Flashing, the system is operating normally, on or off, operating failure
Lnk1~6	Branch end receiving indicator light	On, the data connection is normal; off, the data connection is abnormal.

2.6 Single Board Network Management Information

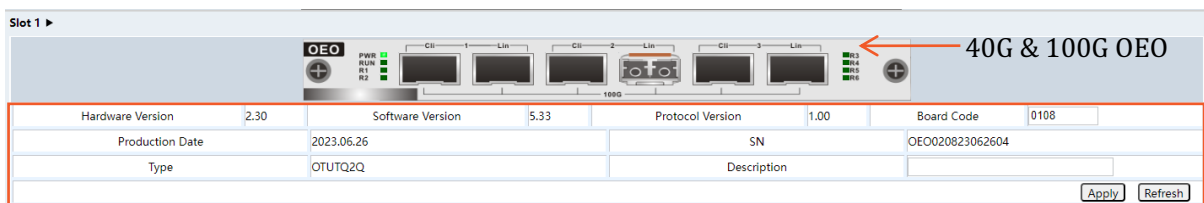
Mainly include : 1) panel picture; 2) Factory information; 3) Status information



Single board monitoring information

- Online real-time monitoring of business board working status
- Online monitoring of module link status and port link status
- Real-time monitoring of the module's receiving and receiving optical power and current working rate
- Support real-time reading of optical module DDM information

2.6.1 Panel picture:



Slot 1: This OEO board is in slot 1

Picture shows 40G&100G OEO board's panel, there are 6 ports (3 groups) on this panel, the left port under "Cli" is for client side modules, it can be 40G QSFP+ modules or 100G QSFP28 modules. The right port under "Lin" is for line side modules it can be 40G QSFP+ modules or 100G QSFP28 modules.

2.6.2 Factory information:

In red rectangle in upper picture, This shows the information of the product when it leaves the factory. Theoretically, this information is not allowed to be modified by users.

2.6.3 Status Information

Status information																								
	Group1								Group2								Group3							
Port	Client				Line				Client				Line				Client				Line			
port Describe					HTF support				HTF support				HTF support				HTF support				HTF support			
Link Status	Down				Down				Down				Down				Down				Down			
Frequency(GHz)	---				---				---				---				---				---			
Wavelength(nm)	1310.00				---				---				850.00				---				---			
Channel	CH1	CH2	CH3	CH4	CH1	CH2	CH3	CH4	CH1	CH2	CH3	CH4	CH1	CH2	CH3	CH4	CH1	CH2	CH3	CH4	CH1	CH2	CH3	CH4
Tx Power(dBm)	---	---	---	---	---	---	---	---	---	---	---	---	-2.92	-1.27	-2.05	-0.97	---	---	---	---	---	---	---	---
Rx Power(dBm)	---	---	---	---	---	---	---	---	---	---	---	---	-40.00	-40.00	-40.00	-40.00	---	---	---	---	---	---	---	---
Rx Threshold(dBm)	-15				-11				-15				-15				-15				-20			
ALS Mode	OF ▾				OF ▾				OF ▾				OF ▾				OF ▾				OF ▾			
ALS Interval Time(s)	100				100				100				100				100				100			
ALS Duration Time(ms)	200				200				200				200				200				200			
LFP Mode	Disable ▾								Disable ▾								Disable ▾							
Other Operation	Reset Default								Reset Default								Reset Default							
Apply Refresh Reset Default																								

1. Port describe:

User can mark for different port, It makes it easier for users to distinguish different services of all ports more clearly. If use write some notes in the column, should click button “Apply” to make it effective.

2. Link status:

It shows link transmission normal or abnormal.

Port is inserted in optical transceiver
link is connecting
Tx power is in spec
Rx power is in spec

Only if all conditions are met, up will be displayed here.
“Up” means transmission is ok .

port isn't inserted in optical transceiver,
link is broken
Tx power is out of spec
Rx power is out of spec

If there is a problem with any of them, down will be displayed here.

1. Frequency (THz):

This is the optical transceiver's parameter. The signal of that channel is emitted, and the corresponding frequency is displayed here.

4. Wavelength (nm):

This is the optical transceiver's parameter. The signal of that channel is emitted, and the corresponding wavelength is displayed here.

5. Channel:

Because 40G and 100G optical transceivers are inserted, so here shows 4 channels.

6. Tx power (dBm) :

Optical transceiver's transmission power.

7. Rx power (dBm) :

Optical transceiver's Receiver Sensitivity. This is an instant data, it's related to optical transceiver's Tx power and transmission link attenuation.

8. Rx threshold:

Channel	CH1	CH2	CH3	CH4	CH1	CH2	CH3	CH4	CH1	CH2	CH3	CH4	CH1	CH2	CH3	CH4	CH1	CH2	CH3	CH4	CH1	CH2	CH3	CH4
Tx Power(dBm)	---	---	---	---	---	---	---	---	---	---	---	---	-2.96	-1.30	-2.08	-1.00	---	---	---	---	---	---	---	---
Rx Power(dBm)	---	---	---	---	---	---	---	---	---	---	---	---	-40.00	-40.00	-40.00	-40.00	---	---	---	---	---	---	---	---
Rx Threshold(dBm)		-15				-11				-15				-15				-15					-20	

The receiving power alarm threshold of the optical module can be set through the network management. When the receiving power is lower than the threshold, the device will prompt an alarm to notify the maintenance personnel to pay attention, and the transmission service will not be affected. The threshold is set according to the spec of the optical module's receiving sensitivity, and is not an arbitrary value. Refer to below table blue mark:

Optical Module	Data Rate	Mode	Tx			Rx	
			Min	Typical	Max	Max	Min
40G QSFP+ 1310nm 10km	40G		-7	-	+2.3	+3.3	-11.5
40G QSFP+ 1310nm 40km	40G		-6	-	+3	+3.3	-13.5
40G QSFP+ 1310nm 80km	40G		+4	-	+7	-6	-24
100G QSFP+ 1310nm 10km	100G		-4.3	-	+4.5	+4.5	-10.6
100G QSFP+ 1310nm 40km	100G		-2.9	-	+4.5	-4.9	-18
100G QSFP+ 1310nm 80km	100G		+2	-	+4.5	-7	-28

When you set the Rx threshold, you need to click "Apply" at the right bottom to make it effective.

9. ALS Mode:

Rx Threshold(dBm)	-15	-11	-15	-15	-15	-20
ALS Mode	OF ▾	OF ▾	OF ▾	OF ▾	OF ▾	OF ▾
ALS Interval Time(s)	100	100	100	100	100	100
ALS Duration Time(ms)	200	200	200	200	200	200

It has 2 options, always select "OFF"

ON- Automatic Laser Shutdown function enable. To put it simply: if the optical module cannot receive light, it will not emit light. If the optical module can receive light, it will always emit light. Specifically: when the optical fiber is broken and the maintenance personnel are splicing the fiber, ALS is selected, and the optical module emits light intermittently. If the opposite optical module cannot receive light, it will not emit light, thus preventing the optical module from emitting light. It enters people's eyes through optical fibers and accidentally injures the eyes of maintenance personnel. When the optical fiber is successfully spliced, the optical module emits light intermittently. After receiving the optical signal, the opposite optical module emits light regularly, and the link is established.

OFF- ALS function close. Optical transceiver works normally.

10. LFP mode:

ALS Mode	OF ▾	OF ▾	OF ▾	OF ▾	OF ▾	OF ▾
ALS Interval Time(s)	100	100	100	100	100	100
ALS Duration Time(ms)	200	200	200	200	200	200
LFP Mode	Disable ▾		Disable ▾		Disable ▾	
Other Operation	Reset Default		Reset Default		Reset Default	
Apply Refresh Reset Default						

LFP mode: Link failover function, when transmission link is normal, user should set “Disable”. When the LFP function is enabled, if the OTU line side does not receive light, the client side does not emit light, and when the client side does not receive light, the line side does not emit light.

11. Other Operation:

ALS Mode	OF ▾	OF ▾	OF ▾	OF ▾	OF ▾	OF ▾
ALS Interval Time(s)	100	100	100	100	100	100
ALS Duration Time(ms)	200	200	200	200	200	200
LFP Mode	Disable ▾		Disable ▾		Disable ▾	
Other Operation	Reset Default		Reset Default		Reset Default	
Apply Refresh Reset Default						

Reset: Restart this modules

Default: If the user wants to restore the factory settings of this port, click Default

All buttons at the right bottom corner

Apply: If you edit any information, then click apply to take effect

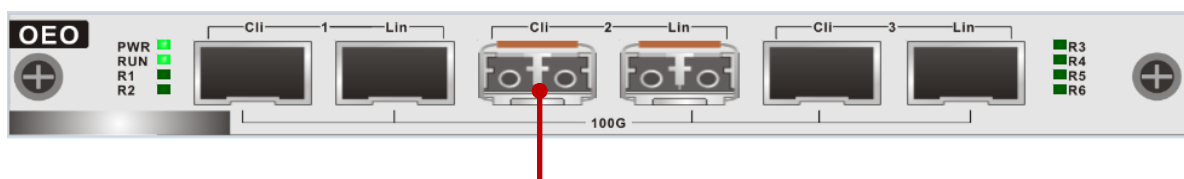
Refresh: Click if when some information is not update.

Reset: restart this board.

Default: all data are back to factory settings

2.6.4 Optical Module Information

User can get Optical modules information by click them on the panel, refer to below pictures, then you will see each optical transceiver’s information



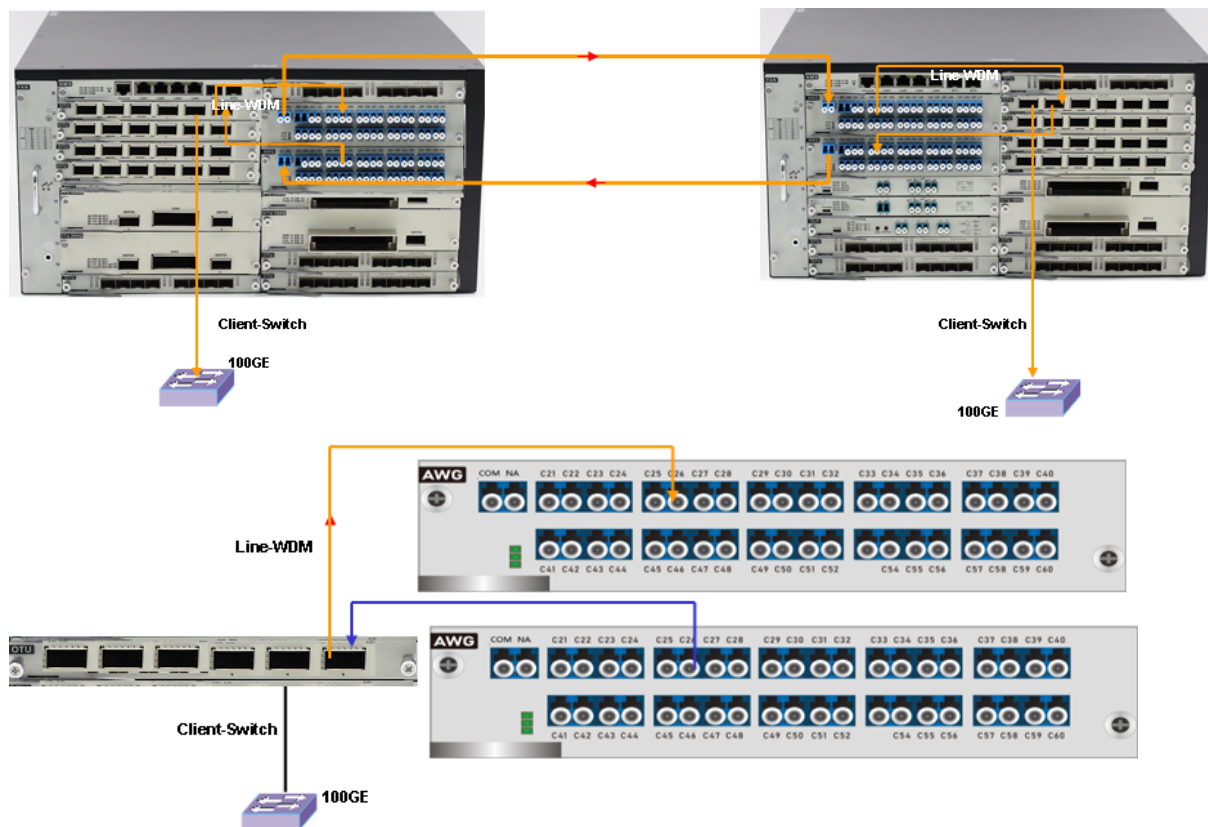
Use your mouse click
the optical module

Slot 1 Channel 2 Client QSFP Information ▶	
Parameter	Value
Wave Tunable	Not Support
Wavelength(nm)	1310.00
Single mode fiber(Km)	10
DDM	Support
Calibration	Internal
Rx Power(dBm)	CH1 : -40.00 ; CH2 : -40.00 ; CH3 : -40.00 ; CH4 : -40.00 ;
Tx Power(dBm)	CH1 : 0.37 ; CH2 : -0.20 ; CH3 : 0.33 ; CH4 : 0.06 ;
Temperature	30.88
Voltage(V)	3.24
Current(mA)	CH1 : 32.70 ; CH2 : 32.16 ; CH3 : 32.16 ; CH4 : 32.16 ;
Refresh Back	

If you insert a tunable module, Wavelength can be set through the network management interface.

If you insert a non-tunable module, Wavelength cannot be set through the network management interface.

2.7 Engineering Connection Diagram



Chapter 4 HT6000 Network Management Configuration

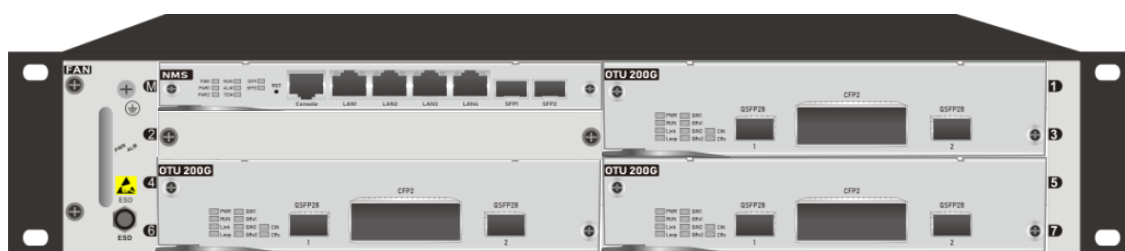
The HT6000 network management system is a super intelligent network management platform developed by HTFuture company for the current long-distance WDM transmission system, which is difficult to locate faults and high maintenance costs. It supports Web network management, NMS network management, CLI local serial port command line, TELNET and other network management methods. It supports intelligent management such as graphical interface, electronic map positioning, alarm positioning, fiber optic cable monitoring and accurate positioning of fault breakpoints. The man-machine interface is friendly and clear at a glance, saving maintenance costs.

1 Web Network management configuration

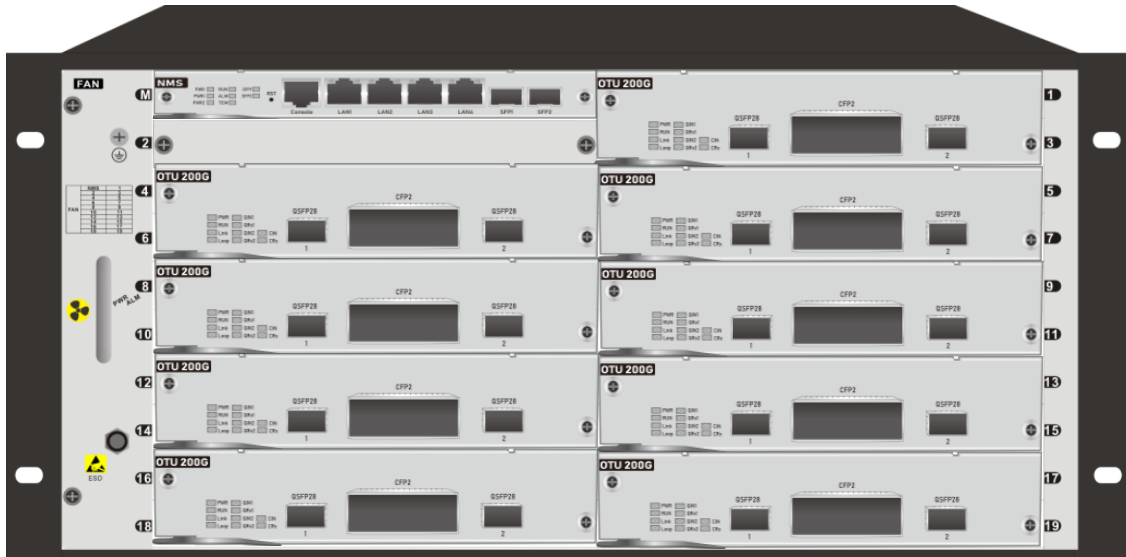
1.1 Insert the boards into the chassis, refer to below pictures



1U Chassis With 1pcs 200G OTU board , and NMS board



2U Chassis With 3pcs 200G OTU board , and NMS board



5U Chassis With 9pcs 200G OTU board , and NMS board

1.2 Web Network Management Login

Open the web page, enter the IP address of NMS , the factory default is 192.168.1.188:8181, and enter the following login interface.



中文 ☐ English ☒

username

password

Enter the user Name and password and click login to enter the main page of the network management;

Default:

user Name: admin

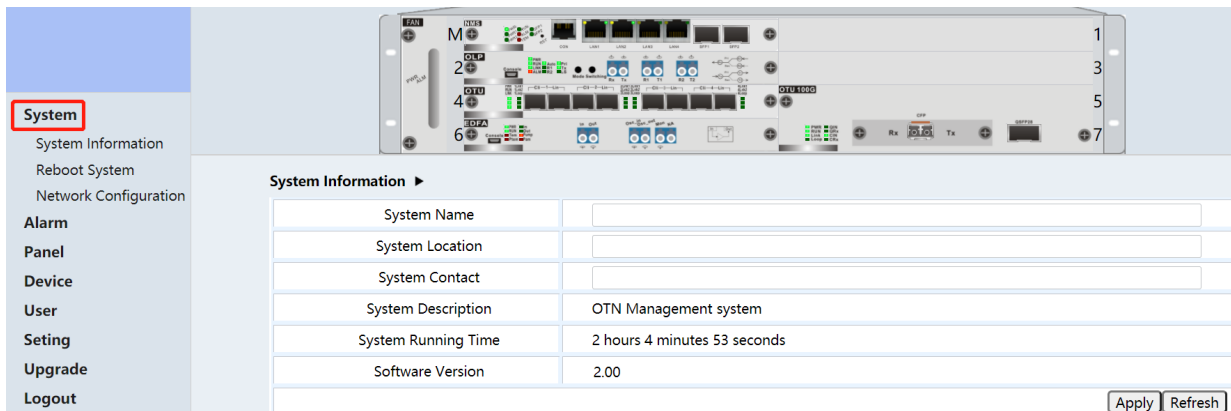
password: admin

The main page of the network management is composed of four parts:

1. The upper left is the LOGO and operation catalog. The right is equipment diagram, and the single service card display content and picture ;
2. The equipment diagram and the single-card picture are consistent with the physical picture; The display content, indicator light, power supply, and fan status are consistent with the physical picture;
3. The operating directory includes: system, alarm, panel, equipment, user, and other components
4. The display content on the right can view the working status and performance parameters of the equipment in real time, and do some simple parameter configuration.

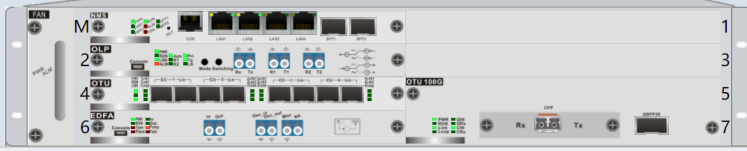
2 System Configuration Interface

There are System Information, Reboot System , and Network Configuration in the system directory. In this directory, you can configure and view system information, network management card IP, and restart the device.



2.1 System Information

Click "System" on the left to enter the "system information" page, you can configure the system Name, installation location, administrator information, view running time, software version information, etc.



System

- System Information**
- Reboot System
- Network Configuration

Alarm

Panel

Device

User

Setting

Upgrade

Logout

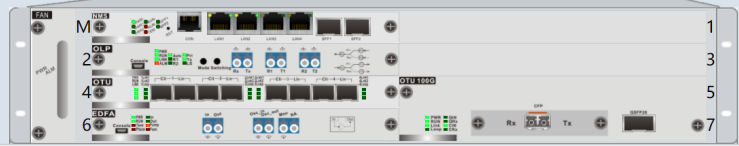
System Information

System Name	
System Location	
System Contact	
System Description	OTN Management system
System Running Time	2 hours 4 minutes 53 seconds
Software Version	2.00

Apply Refresh

2.2 Reboot System

Click "System" on the left to enter the "reboot system" page, you can restart the system and restore factory settings.



System

- System Information
- Reboot System**
- Network Configuration

Alarm

Panel

Device

User

Setting

Upgrade

Logout

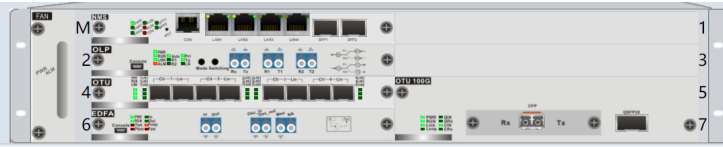
Reboot System

Note: Reboot button will reboot the system ! Please save the configuration file before restarting !
Default button will load factory default setting!

Reboot Default

2.3 Network Configuration

Click "System" on the left to enter the "network configuration" page, and configure the IP address, sub-net mask, gateway, etc.



System

- System Information
- Reboot System
- Network Configuration**

Alarm

Panel

Device

User

Setting

Upgrade

Logout

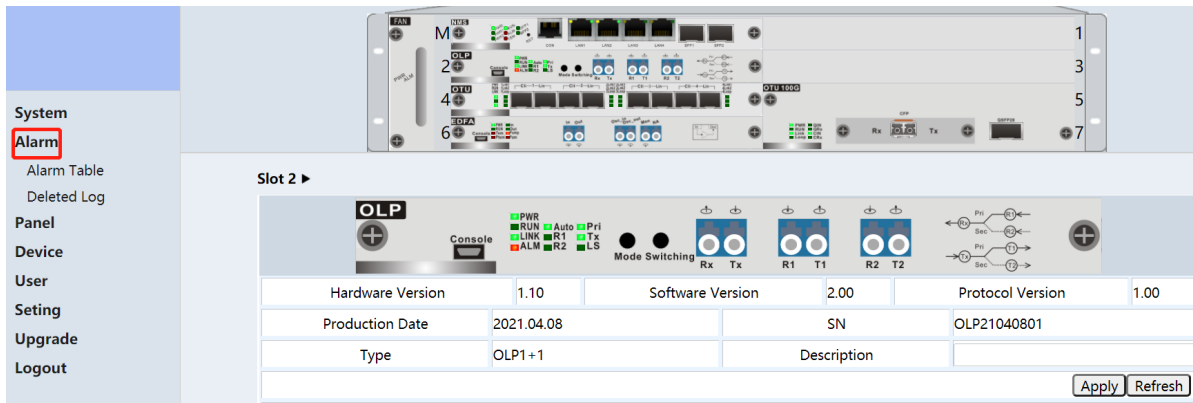
Network Configuration

IPv4 Address	192.168.1.189
IPv4 SubNet Mask	255.255.255.0
IPv4 Gateway	192.168.1.1
IPv6 Address	fe80::214:97ff:fe31:679
IPv6 Gateway	fe80::1
IPv6 Prefix Length	64
MAC Address	00:14:97:31:06:79
IPv6 Login URL	http://[fe80::214:97ff:fe31:679]

Apply Refresh

3 Alarm

Click "alarm" to display two function : Alarm Table and Delete Log.



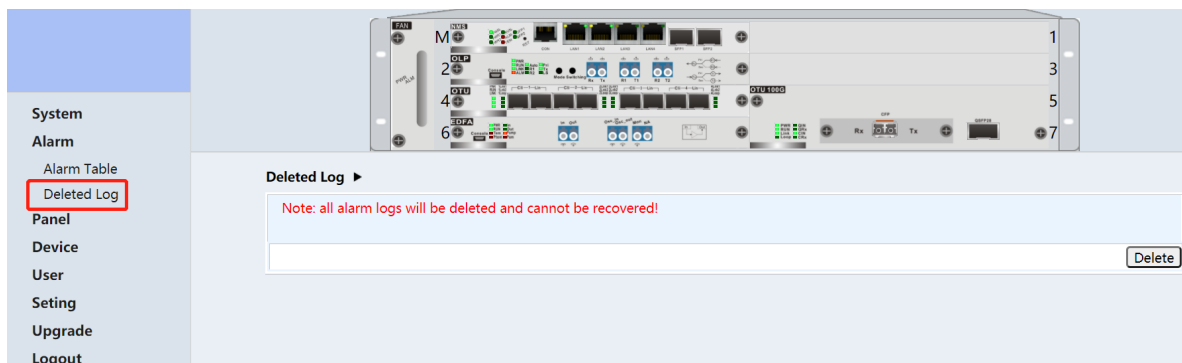
3.1 Alarm Table

Click "Alarms" on the left to enter the "Alarm Table", you can perform alarm query and alarm clearing operations

2394	2023/07/11	11:57:52	01	4X10G_OEO Channel2 Line SFP Rx Power Normal (-1.36dBm/0dBm)
2393	2023/07/11	11:57:52	01	4X10G_OEO Channel2 Line SFP Up
2392	2023/07/11	11:57:52	01	4X10G_OEO Channel1 Line SFP Rx Power Normal (-1.23dBm/0dBm)
2391	2023/07/11	11:57:52	01	4X10G_OEO Channel1 Line SFP Up
2390	2023/07/11	11:57:45	06	EDFA01 Gain deviation Normal
2389	2023/07/11	11:57:45	06	EDFA01 Out(19.81dBm/-23.00dBm) Optical PowerNormal
2388	2023/07/11	11:57:44	06	EDFA01 In(4.89dBm/-23.00dBm) Optical PowerNormal
2387	2023/07/11	11:57:42	06	EDFA01 Card Found
2386	2023/07/11	11:56:49	06	EDFA01 Card Loss
2385	2023/07/11	11:56:46	06	EDFA01 Gain deviation Alarm
2384	2023/07/11	11:56:46	06	EDFA01 In(-45.00dBm/-23.00dBm) Optical PowerAlarm
2383	2023/07/11	11:56:46	01	4X10G_OEO Channel1 Line SFP Down
2382	2023/07/11	11:56:45	01	4X10G_OEO Channel2 Line SFP Down
2381	2023/07/11	11:55:11	01	4X10G_OEO Channel2 Line SFP Rx Power Normal (-1.37dBm/0dBm)
2380	2023/07/11	11:55:11	01	4X10G_OEO Channel2 Line SFP Lin

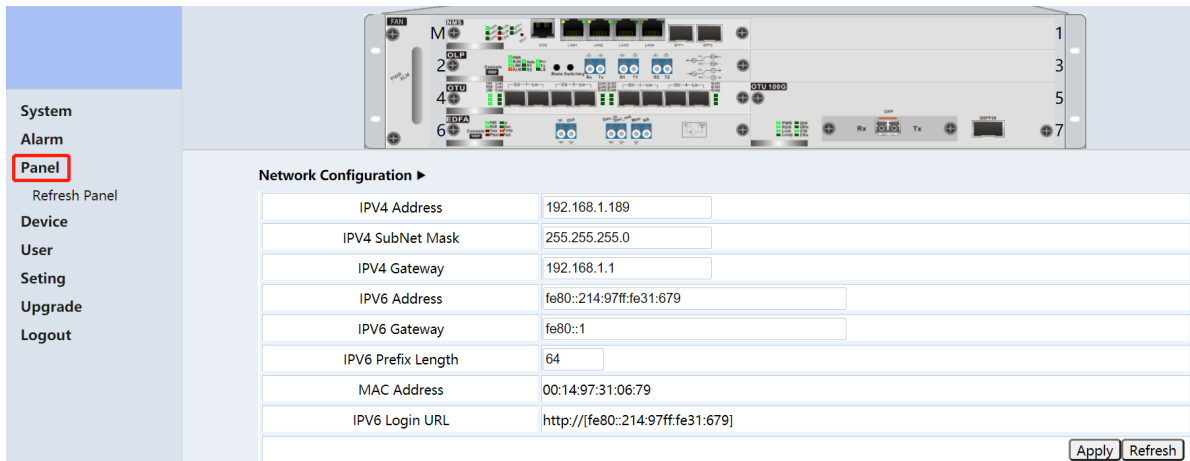
1.3.2 Deleted Log

Delete Log function, you can delete all alarms, the alarm will not be restored after deletion, please operate with caution



4 Panel

Click “panel”, the entire chassis diagram appears, you can clearly see the slot and model of each card and the refresh panel

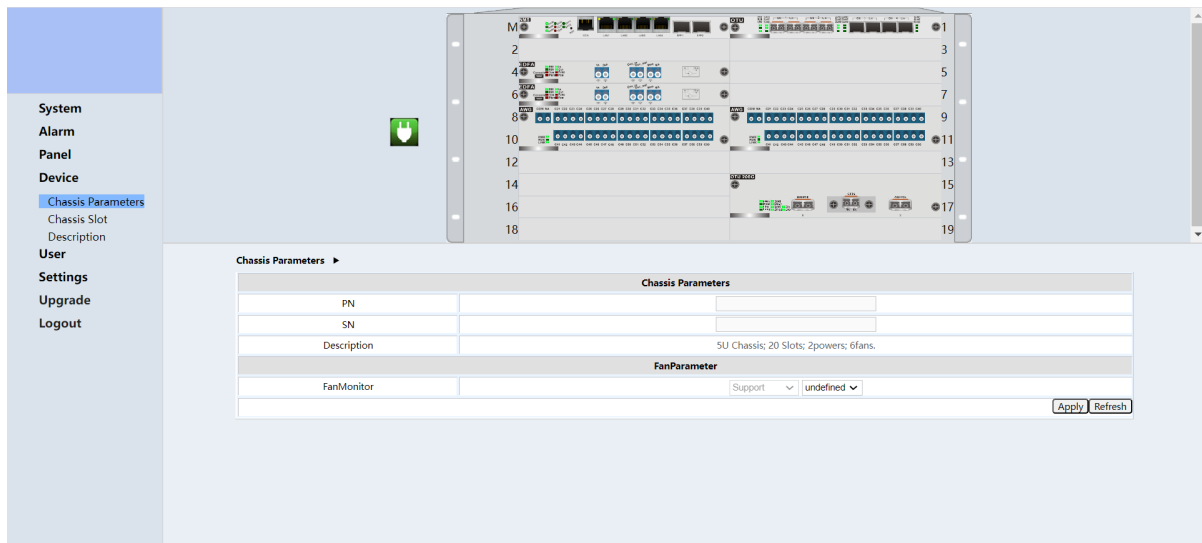


5 Device

Click “Device” and the following sub-items will appear: Chassis Parameters, Chassis Slots and Description.

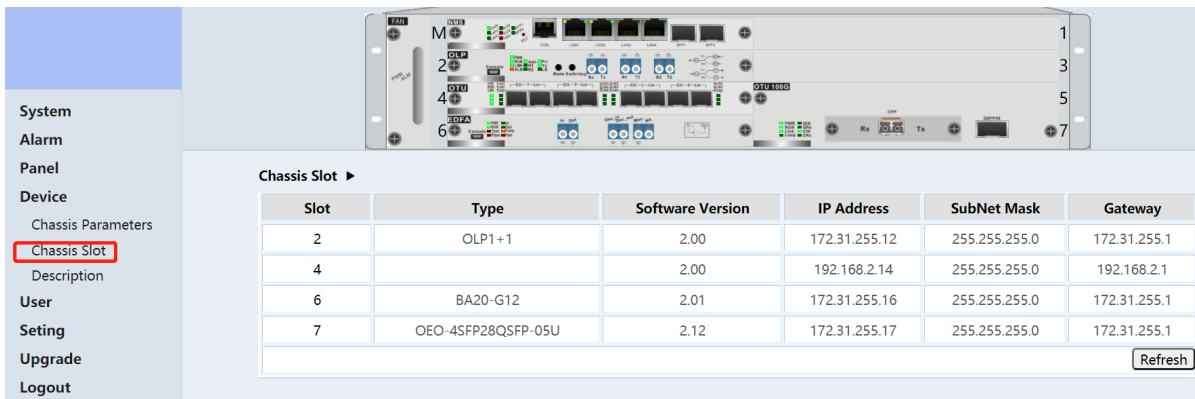
5.1 Chassis Parameters

Click “Device” on the left to enter the “Chassis Parameters”, You can query chassis information, chassis fan working status.



5.2 Chassis Slot

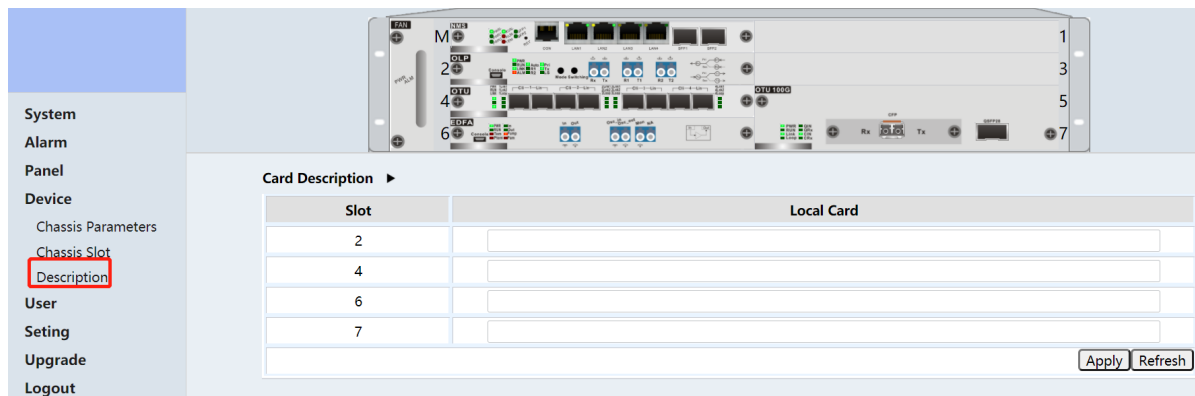
Click “Device” on the left to enter the “Chassis slot”, You can find the board type corresponding to each slot (1~19)



Slot	Type	Software Version	IP Address	SubNet Mask	Gateway
2	OLP1+1	2.00	172.31.255.12	255.255.255.0	172.31.255.1
4		2.00	192.168.2.14	255.255.255.0	192.168.2.1
6	BA20-G12	2.01	172.31.255.16	255.255.255.0	172.31.255.1
7	OEO-4SFP28QSP-05U	2.12	172.31.255.17	255.255.255.0	172.31.255.1

5.3 Description

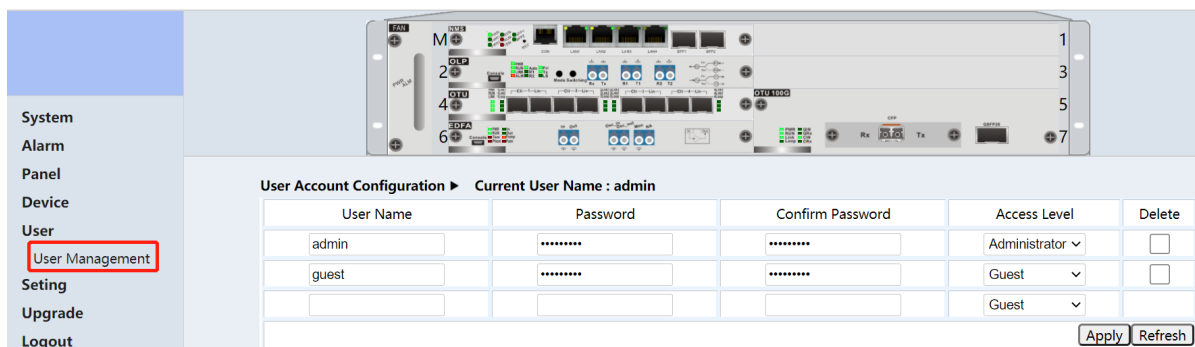
Click “Device” on the left to enter the “Description”, you can add description information to each service card.



Slot	Local Card
2	
4	
6	
7	

6 User

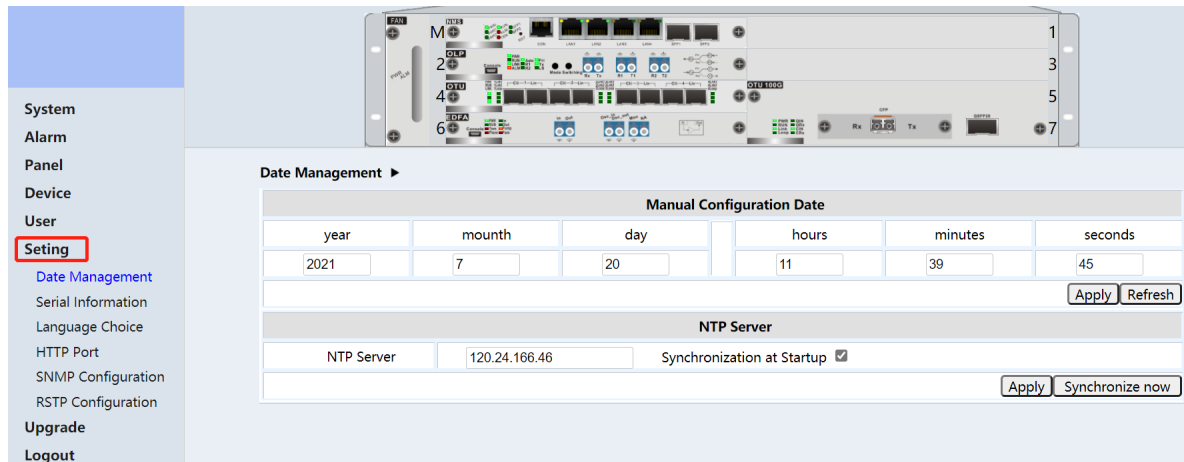
Click “User” on the left to enter the “User Management”, you can change the user Name and password, create a new user Name, password, and set the priority. The user levels are divided into super user, administrator, and ordinary user. Super user is the highest priority and can perform all operations including user management. Administrator It is the second priority and can perform all operations except user management. Ordinary users have the lowest priority and can only view relevant information;



User Name	Password	Confirm Password	Access Level	Delete
admin	*****	*****	Administrator	☐
guest	*****	*****	Guest	☐
			Guest	

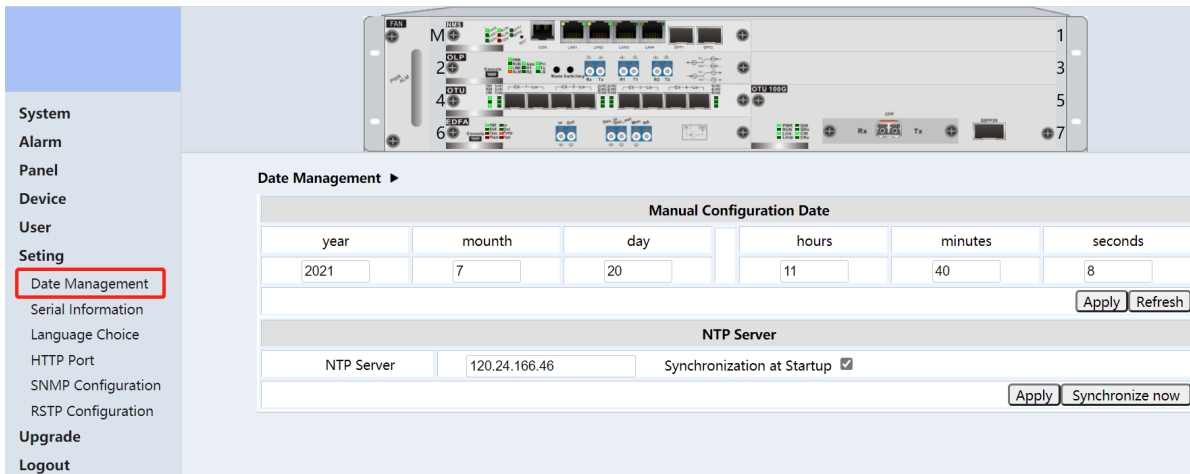
7 Setting

“Setting” includes Date Management, Serial Information, Language Choice, HTTP port, SNMP configuration and RSTP configuration.



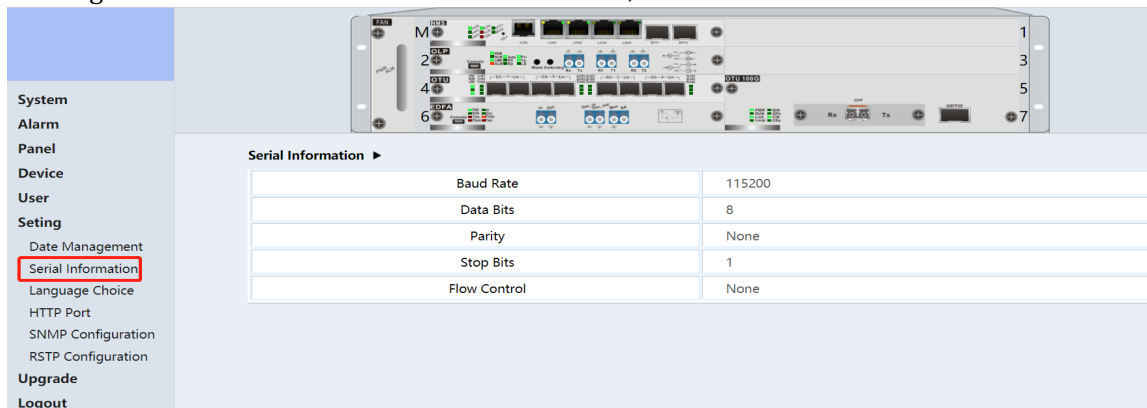
7.1 Date Management

Click “Setting” on the left to enter the “Date Management”, You can set the date and time to synchronize with the local time



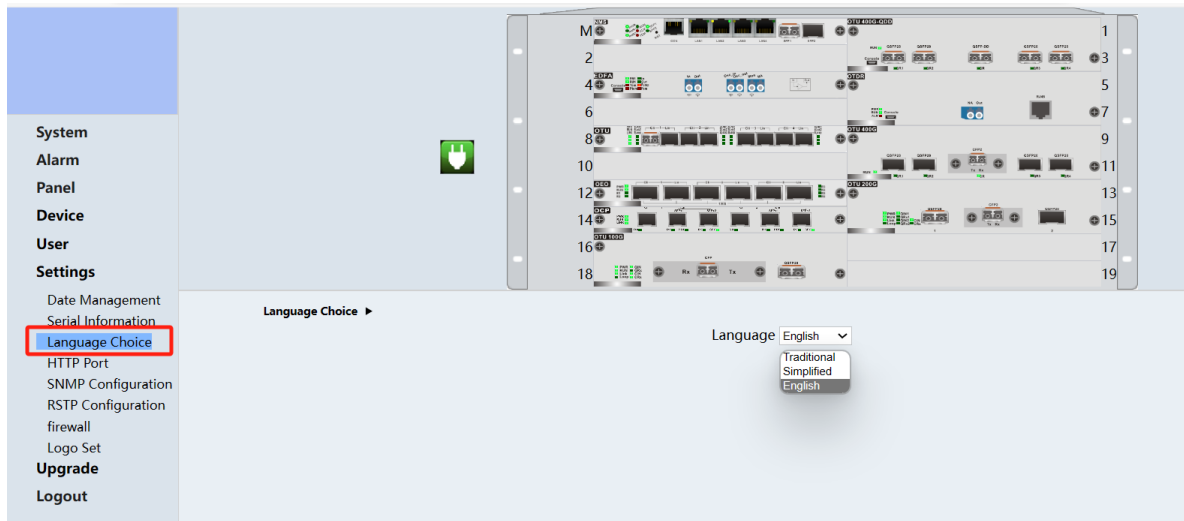
7.2 Serial Information

Click “Setting” on the left to enter the “Serial Information”, You can view serial information



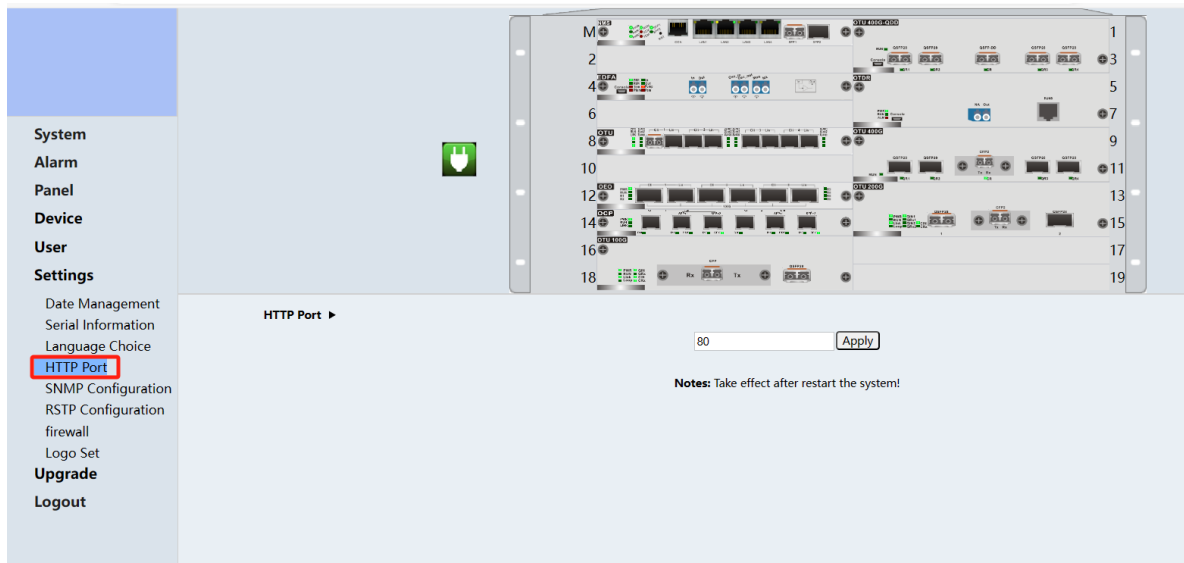
7.3 Language Choice

Click “Setting” on the left to enter the “Language Choice”,you can choose Chinese or English interface



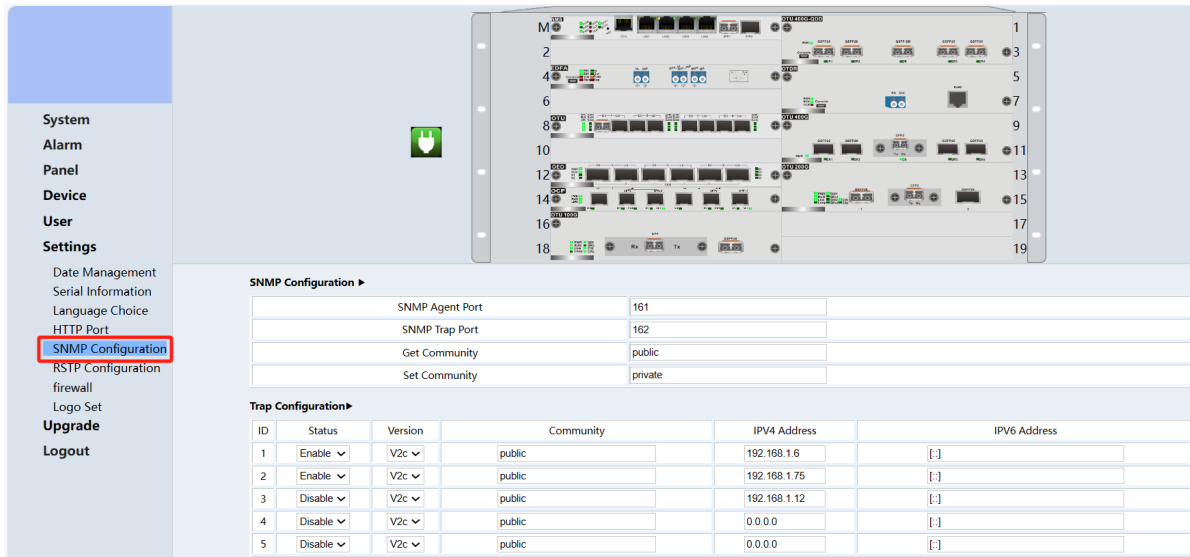
7.4 HTTP Port

In the “ HTTP port ”, we can set the HTTP port.



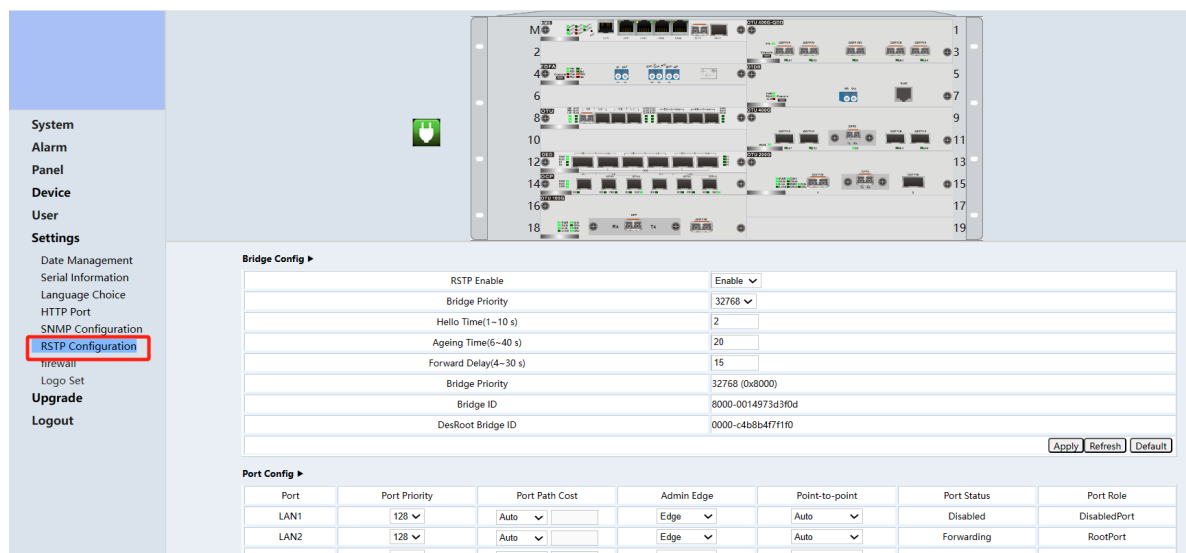
7.5 SNMP Configuration

In the “ SNMP configuration ”, we can set the SNMP port.



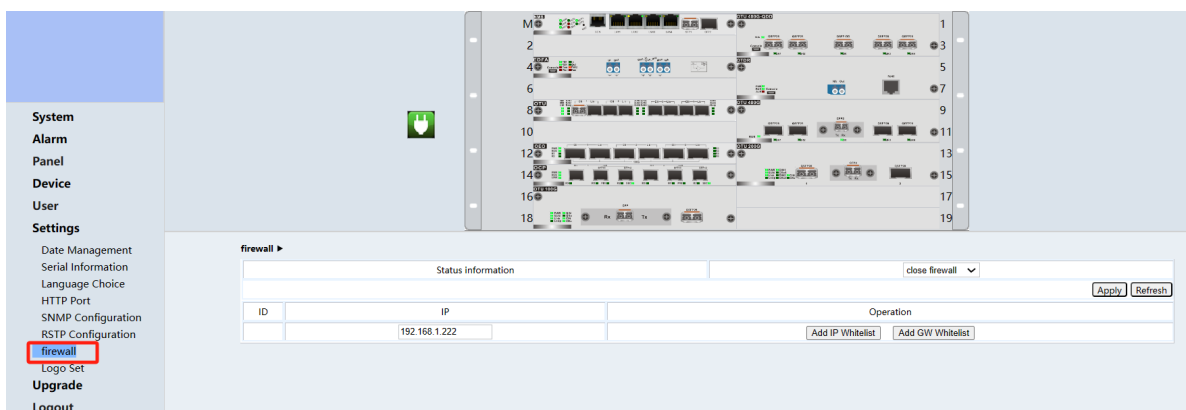
7.6 RSTP Configuration

RSTP Configuration can realize port backup.



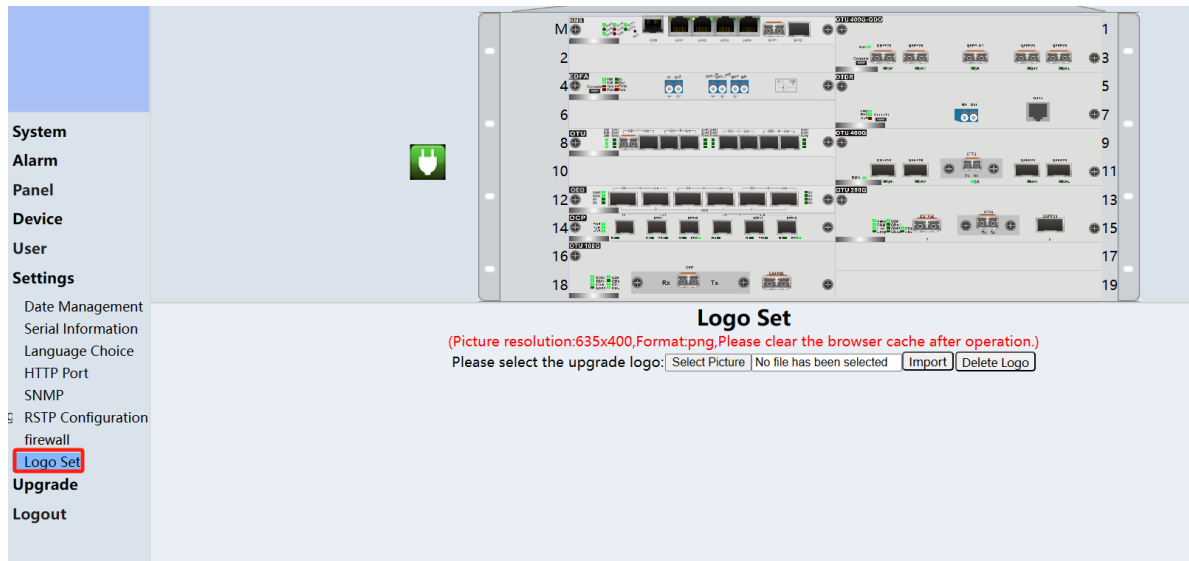
7.7 Firewall configuration

Firewall settings to add protection to the system



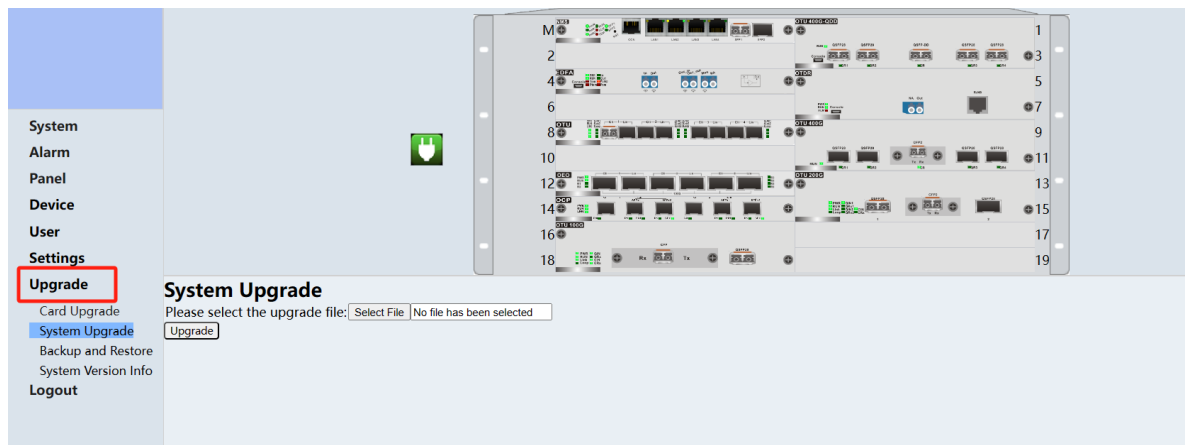
7.8 Logo settings

Logo settings, support logo modification settings



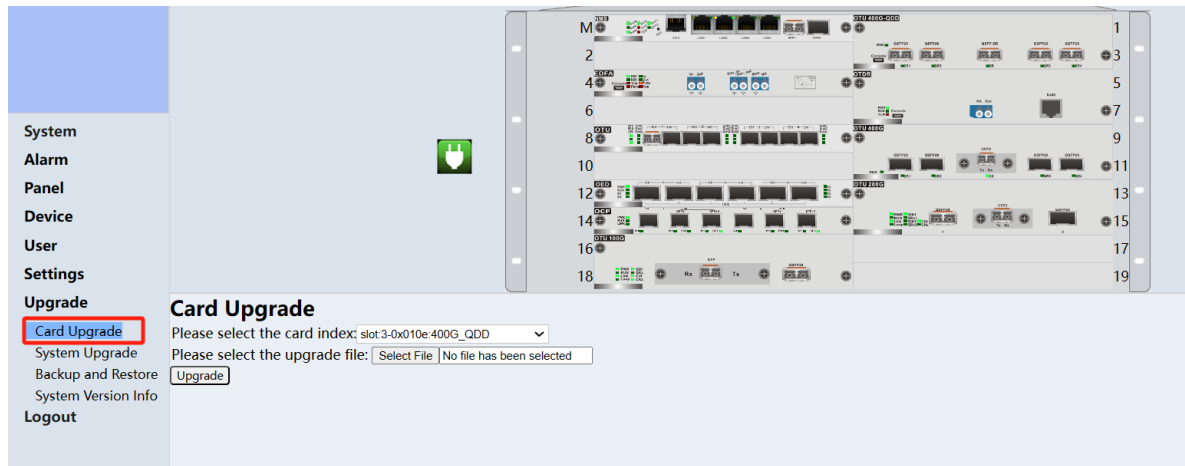
8 Upgrade

In the upgrade section, we can upgrade our system or services cards, as well as backup and restore.



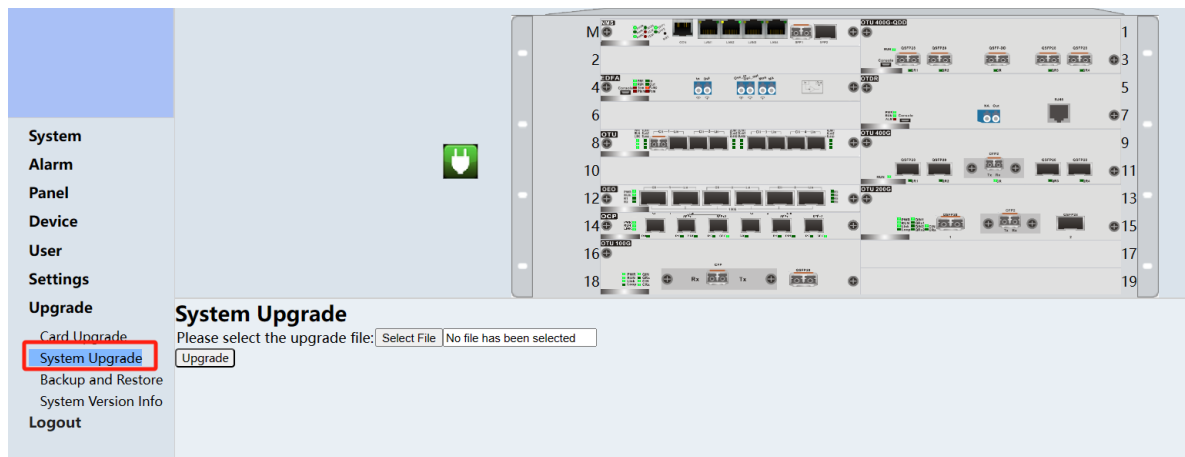
8.1 Upgrade

First you select the slot and the card type, and then upload the file.



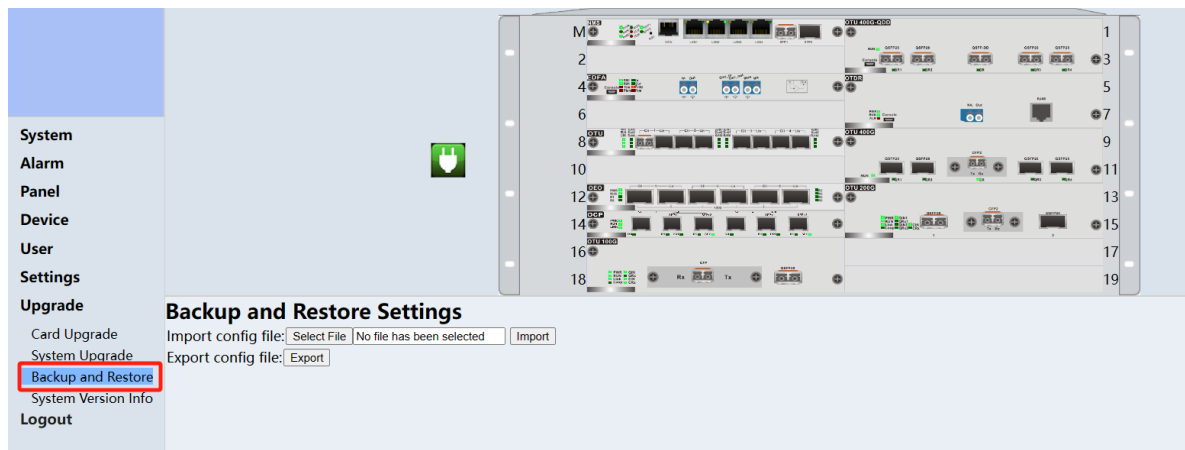
8.2 System Upgrade

Click directly to the upgrade file, and then upgrade.



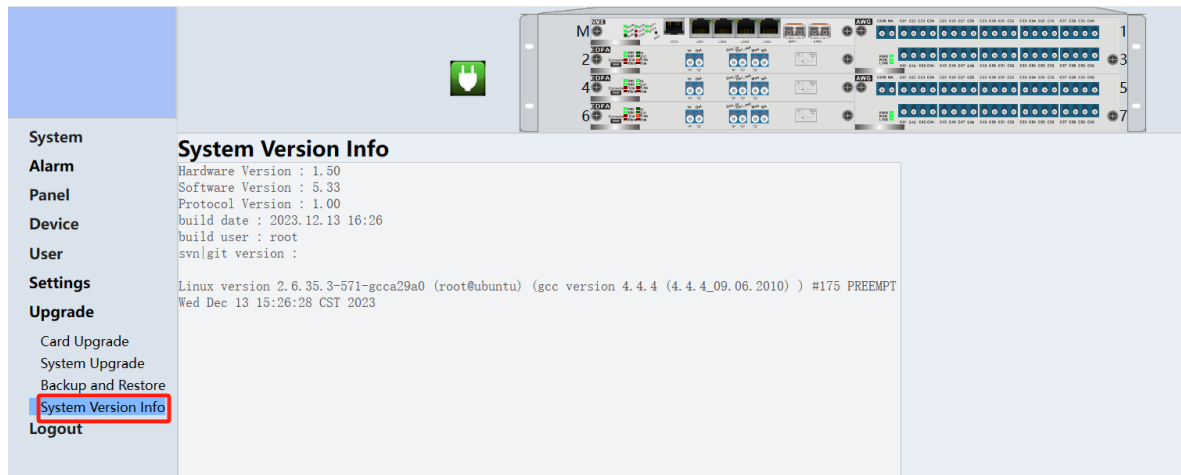
8.3 Backup and Restore

Click Export config file to back up the data; select the import config file when restoring, and click Import.



8.4 System version information

Click System Version Information to view the current version information.



9 Logout

After clicking logout, we return to the initial page of our login account.

