NMS: Network Element Control Board

The NMS (Network Management System) is a specialized module designed for the OSP3800 series products. Its primary function is to provide interfaces between devices and the network management system. Working in tandem with the OSP3800 series OTN Network Management System, it manages various board-level operations, performs routine maintenance, and transmits management signals. This integrated solution enables real-time monitoring, maintenance, and management of both individual network elements and the entire synchronous equipment network, offering an effective solution for equipment supervision.

Product diagram

Product Features

- The high-speed ARM processor is adopted to provide powerful data processing capability, collect the status information, alarm events and performance parameters of each single board functional module, transform, process and store them, and transmit control and management information to other functional blocks of the equipment.
- Provides a Console interface to support simulated terminal operations.
- Provides 4 RJ45 Ethernet interfaces and supports IP-based graphical SNMP network management.
- It provides two SFP optical module interfaces and supports in-band management of the device. It can process two optical monitoring channels and complete the reception and transmission processing of optical signals in optical monitoring channels of each station.
- The network management module supports hot plugging, and the failure does not affect the normal operation of the current service module.

size of product

function	explain
NMS model	3800-NMU1A-A0
Local management serial port	Supports 1 Micro USB local management serial port
Remote management Ethernet port	Supports 4 RJ45 Ethernet interfaces with 10/100M adaptive interface rate
OSC optical monitoring port	Supports two plug-in optical ports SFP, the interface is LC type
Ways of management	Support CLI, Telnet, SNMP, Web and other network management methods
functions of exchange	Support IP communication function between devices to realize comprehensive management of multiple devices
defencive function	Hot plugging or failure of the network management card will not affect the existing service
Maintenance functions	Supports online software upgrades, local or remote
reset function	Support operation keys to reset the local NMS board hardware

Initialization function	Support operation keys to initialize the local NMS board hardware
working temperature	-10℃~+60℃
Humidity at work	5%~95%
Number of slots occupied	Supports the full range of OSP3800 chassis, occupying 1 slot (0.5U)
maximum power dissipation	5W
MTBF	> 100,000 hours
Factory default IP address	192.168.1.188

NMS master card interface definition

Interface name	come into contact with	Type functionality
Ethernet port	LAN1	Connect the network management system to the OSP3800 through the network cable and realize the management of LAN1, LAN2, LAN3 and LAN4. Implement multi-network element cascaded management and realize the transmission of network management information
	LAN2	
	LAN3	
	LAN4	
SFP N. A	SFP1	The transmission optical cable is connected through OSC interface to realize the convergence of branch node network management information to the network management center. The dual optical ports realize two-direction transmission and 1+1 protection
	SFP2	
gorge line	CON	Provides local serial port network management function

NMS master card indicator light description

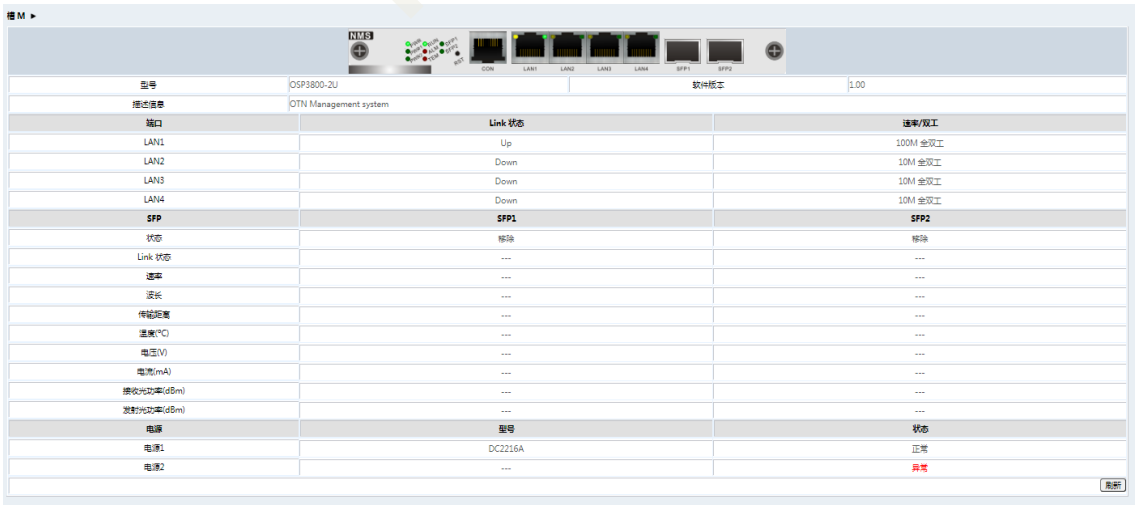
Indicating filament printing	name	description
PWR	Network management power indicator light	Light, the power supply of the network management panel is normal, out, the power supply fault
PWR1/PWR2	Equipment power indicator light	Light, the equipment power supply is normal, out, power supply fault
RUN	Network management system indicator light	Light, the network management system is running normally, out, operation failure
ALM	Alarm indicator light	1. The type of the chassis is unknown and the alarm is on 2. A power failure alarm is lit 3. A fan fault alarm is lit 4. Temperature alarm on 5. Unknown card message alarm on
TEM	Temperature alarm indicator	High temperature is an alarm
SFP1	Light port 1 indicator	Flash, data link normal, out, data connection abnormal
SFP2	Light port 2 indicator	Flash, data link normal, out, data connection abnormal

Web Network Management Login Interface

Open the web page and enter the IP address of the network management card in the address bar. The default address is 192.168.1.188. After entering, press the Enter key to enter the following login interface.

Select the Chinese page or English page, enter the user name and password to click login; the default user name is: admin, password: admin;

NMS Master Card Single Disk Network Management Information



型号	OSP3800-2U	软件版本	1.00
描述信息	OTN Management system		
端口	Link 状态	速率/双工	
LAN1	Up	100M 全双工	
LAN2	Down	10M 全双工	
LAN3	Down	10M 全双工	
LAN4	Down	10M 全双工	
SFP	SFP1	SFP2	
状态	移除	移除	
Link 状态	---	---	
速率	---	---	
波长	---	---	
传输距离	---	---	
温度(℃)	---	---	
电压(V)	---	---	
电流(mA)	---	---	
接收光功率(dBm)	---	---	
发射光功率(dBm)	---	---	
电源	型号	状态	
电源1	DC2216A	正常	
电源2	---	异常	

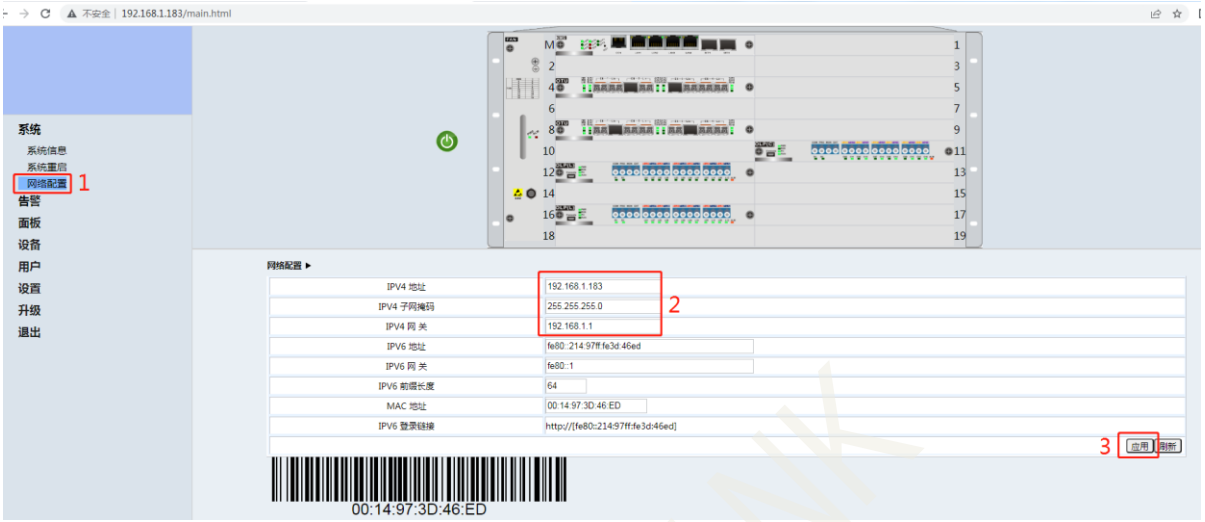
刷新

📖 **explain：** The four RJ45 Ethernet interfaces and two SFP optical interfaces are mutually switched, and one port or multiple ports can be selected at will. The network management unit board has only one IP address (default 192.168.1.188), and multiple ports can be accessed at the same time.

This page is the basic information page of NMS master card board. It mainly views the model, software version, network port status, optical module port, transmission distance, wavelength and rate of NMS master card board.

Change the device IP

After logging in the web page, you can change the IP address according to the following figure:

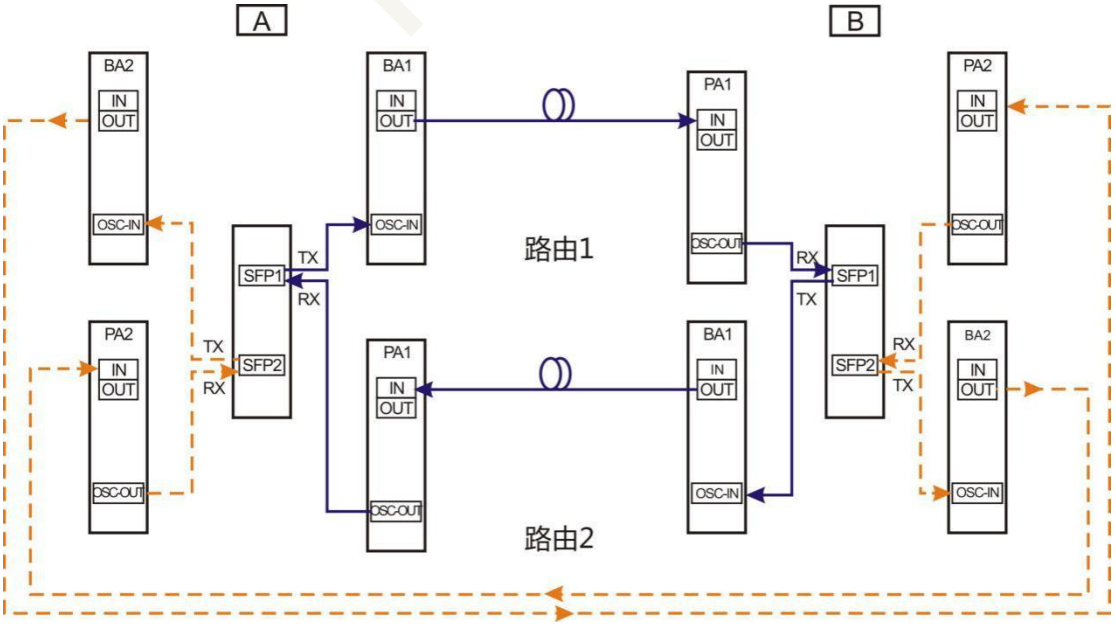


Monitored Information on a Single Disk

Real-time monitoring of network management disk working status;

Supports real-time monitoring of SFP port link status; supports real-time reading of SFP module DDM information; supports real-time monitoring of LAN port connection status;

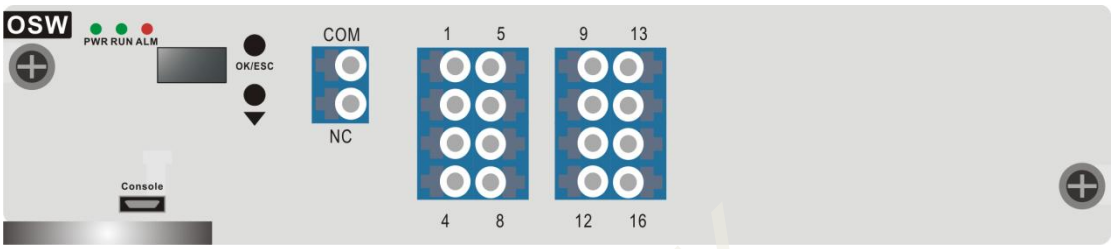
Network Applications



OSW: Optical Switchboard Card

An optical switch is a light path control device that manages and redirects optical signals. It plays a vital role in optical communication applications. Key applications include: multi-channel optical monitoring in transmission systems, automatic switching of multiple light sources/detectors in LANs, and dynamic monitoring systems for optical sensing. In fiber optic testing systems, it is used for evaluating fibers, optical components, network cables, and field engineering cables, as well as for equipment installation and commissioning.

Product diagram



- OSW can be set on the LCD screen through OK/ESC and down arrow keys on the panel. OSW working channel, cycle mode, cycle start and cycle times can be set. The keys need to be enabled in the network management when setting;
- OK/ESC Long press indicates return, and it needs to be enabled by the network manager after locking;

Product Features

- It has the characteristics of small insertion loss and fast switching speed.
- The single panel has an LCD display, which can be manually switched to facilitate user operation.
- A single board is a 1x16 optical switch, which can be expanded to 1x8/1x12/1x16 channels according to requirements.
- The network management interface is convenient and intuitive, and the working link can be set according to the needs, such as mode switching, cycle time and cycle times.
- As a board integrated into the 3800 platform, the light switch can be selected according to configuration requirements, which is convenient and flexible.

technical parameter

model	3800-OSW1×16-A1-LU-A0
operating wavelength	1260 ～ 1650nm
Test wavelength	1310 / 1550nm
insertion loss	Typ: ＜1.0 dB，Max: ＜1.2 dB
repetitiveness	≤±0.05 dB
return loss	≥50dB
cross fire	≥55dB
Wavelength-dependent loss	≤0.25

Polarization-related loss	≤0.05
switching period	≤ 10ms (adjacent sequence switching)
Type of optical fiber	SM（9/125um）
Type of connector	LC/UPC
life length	≥1 million times
working power supply	AC: 85 to 264 V (50/60Hz) or DC: 36 to 72 V
working temperature	-20 ～ + 70℃
Storage temperature	-40 ～ + 80°C

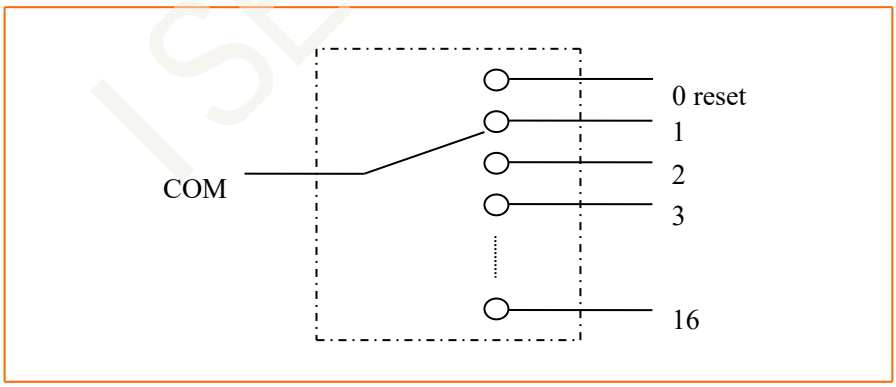
OSW board interface definition

Interface screen printing	name	Function/Links
COM	Public ports	Signal common port
1~16	number of channel	Exit points
Console	Local management serial port	Supports 1 Micro USB local management serial port

OSW board indicator light description

Indicating filament printing	name	description
PWR	OSW power light	On, OSW power supply normal; off, power supply fault
RUN	OSW operation indicator light	On, OSW running normally; off, operational failure
ALM	OSW alarm indicator	Bright, abnormal; Extinguished, normal

Schematic Diagram of Internal Optical Path of OSW Card



1×16 Schematic diagram of the internal optical path of the light switch

Monitored Information on a Single Disk

Real-time monitoring of OSW power supply working status;

Real-time monitoring of OSW working status;

Real-time monitoring of OSW chip temperature;

Displays the current channel.

Maintenance

The reasonable use and proper storage of the equipment can maintain good performance indicators for a long time and prolong its service life, so appropriate maintenance is needed:

（1） The equipment should avoid strong mechanical vibration, collision, drop and other mechanical damage. During transportation, there must be good packaging and vibration reduction, rain and waterproof measures;

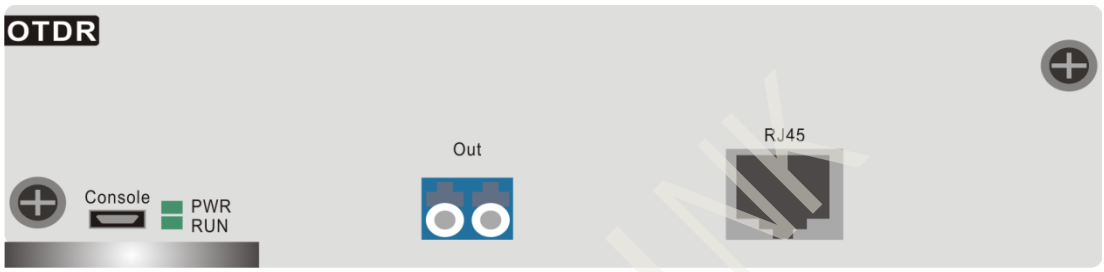
（2） The equipment should be kept clean at all times, and the working environment should be free of corrosive gases such as acid and alkali. The machine box and panel can be gently wiped with a clean towel soaked in water or soapy water. It is forbidden to wipe with alcohol and other solvents.

（3） The dust cover should be put on in time after the optical fiber connection line is removed to prevent hard objects, dust or other dirt from touching the optical fiber end face.

OTDR: Optical Path Test Board

During OTDR testing, pulses generated by the pulse generator drive the laser diode (LD) to emit light pulses. These pulses are directed into the fiber under test through a directional coupler. Scattering occurs within the fiber due to impurities and bubbles, with some of this backward scattering (BACK SCATTERING LIGHT) combining with Fresnel reflections from irregular fiber end surfaces. The resulting light is reflected back to the coupler and captured by photodiodes, where it is converted into electrical waves. Given the extremely weak nature of this reflected light, it undergoes repeated transmission, collection, averaging, and amplification before being processed by the network management platform. This system features high dynamic range and superior resolution.

Product Diagram



Operational precautions:

For compatibility, the OTDR has a dual output port. Unless otherwise specified, only the output port on the left side of the device is required.

Product Features

- 42dB large dynamic range, 32k data sampling points;
- Automatic monitoring function of communication light;
- Has Ethernet remote control function;
- Blind spot of ultra-short event less than 2m.

technical parameter

product model	3800-OTDR-A1-6236B-LU-A0
Central wavelength	1550nm
Event blind spots	≤2m
Blind spots are diminished	≤12m
Minimum sampling spacing	0.125m
dynamic range	42dB(single-mode fiber calculation, measurement distance above 120KM)
ranging accuracy	±(1m+5×10 $^{-5}$ × distance+ sampling spacing)

Maximum number of samples	32K
measuring range	1km、5km、10km、30km、60km、100km、120km
working temperature	-5℃～+55℃
relative humidity	30℃ not more than 90% (no condensation)
storage tempera-ture	20℃～+70℃
size	1U standard slot (190.7mm (width) × 254mm (deep) × 41.15mm (height))

OTDR board interface definition

Interface screen printing	name	Function/Links
OUT	Public ports	Public ports
RJ45	Ethernet interface	Communication interface for equipment monitoring data
Console	Local management serial port	Supports 1 Micro USB local management serial port

OTDR board indicator light description

Indicating filament printing	name	description
PWR	OTDR power indicator light	On: OTDR power supply is normal; Off: Power supply fault
RUN	OTDR operation indicator light	On: OTDR is operating normally; Off: Operational failure

Monitored Information on a Single Disk

Real-time monitoring of OTDR power working status;

Real-time monitoring of OTDR working status;

Real-time monitoring of OTDR chip temperature;

Maintenance

The reasonable use and proper storage of the equipment can maintain good performance indicators for a long time and prolong its service life, so proper maintenance is required:

(1) The equipment should avoid strong mechanical vibration, collision, drop and other mechanical damage. During transportation, there must be good packaging and vibration reduction, rain and waterproof measures;

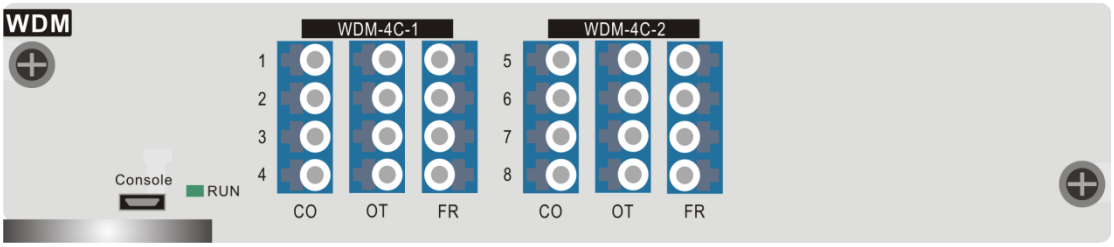
(2) The equipment should be kept clean at all times, and the working environment should be free of corrosive gases such as acid and alkali. The machine box and panel can be gently wiped with a clean towel soaked in water or soapy water. It is forbidden to wipe with alcohol and other solvents.

(3) The dust cover should be put on in time after the optical fiber connection line is removed to prevent hard objects, dust or other dirt from touching the optical fiber end face.

WDM: Combined Splitter

When WDM is used for online monitoring or spare fiber monitoring, it is installed in the local office room to provide optical wave splitting and combining for OTDR board, user optical transceiver and monitored optical fiber.

Product diagram



Product Features

- Low insertion loss (IL)
- High channel isolation
- High stability and reliability
- Wide operating wavelength range
- Complies with ITU-T G.694.2
- Complies with Telcordia GR-1209-CORE-2001 standard
- Complies with Telcordia GR-1221-CORE-1999 standard
- Complies with RoHS-6 (lead free)

technical parameter

product model	3800-FWDM-A1-8C-T62/R31&55-A0	
Transmissive wave-length	1625nm	
Reflectance wavel-ength	1310/1550nm	1550/1625nm
Passage bandwidth insertion loss	≤1.0 dB	
Reflective bandwidth insertion loss	≤0.80 dB	
Transceiver bandwidth isolation	≥40 dB	
Reflective band bandwidth iso-lation	≥15 dB	
Polarization-related loss	≤0.1 dB	
Band thermal stability	≤0.003 (nm/℃)	
Adhesion thermal stability	≤0.005(dB/℃)	
directivity	≥55 dB	
Type of optical fiber	SM（9/125um）	
Type of connector	LC/UPC	
working temperature	0℃～+45℃	

relative humidity	30℃ not more than 90% (no condensation)
storage tempera-ture	–20℃～+70℃
size	1U standard slot

WDM board interface definition

Interface screen printing	name	Function/Links
1~8	WDM split and combine port	Provide optical wave splitting and combining for OTDR board, user optical transceiver and monitored fiber
Console	Local management serial port	Supports 1 Micro USB local management serial port

WDM board indicator light description

Indicating filament printing	name	description
RUN	WDM operation indicator light	On: WDM is running normally; Off: operation fault

Monitored Information on a Single Disk

Real-time monitoring of WDM power supply working status;

Real-time monitoring of WDM working status;

Real-time monitoring of WDM chip temperature;

Maintenance

The reasonable use and proper storage of the equipment can maintain good performance indicators for a long time and prolong its service life, so appropriate maintenance is needed:

(1) The equipment should avoid strong mechanical vibration, collision, drop and other mechanical damage. During transportation, there must be good packaging and vibration reduction, rain and waterproof measures;

(2) The equipment should be kept clean at all times, and the working environment should be free of corrosive gases such as acid and alkali. The machine box and panel can be gently wiped with a clean towel soaked with water or soapy water. It is forbidden to wipe with alcohol and other solvents.

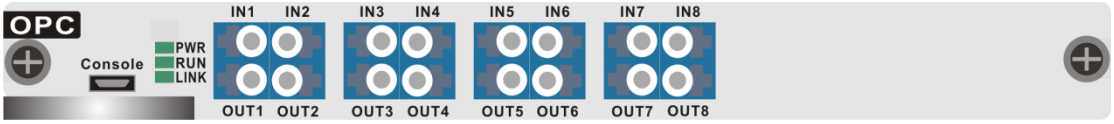
(3) The dust cover should be put on in time after the optical fiber connection line is removed to prevent hard objects, dust or other dirt from touching the optical fiber end face.

OPM: Optical Power Monitoring Board

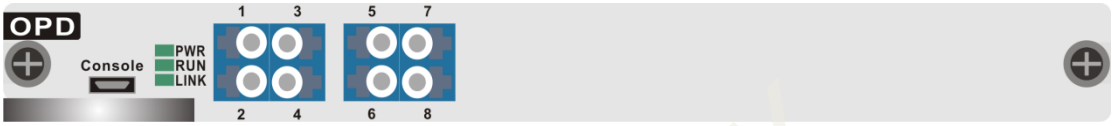
Optical power monitoring board (OPM) has a variety of types, can be used in offline real-time alarm test and online real-time alarm test; by monitoring optical power, the purpose of real-time alarm test can be achieved.

Product Diagram

OPC: Online optical capture card



OPD: End-type light acquisition card



technical parameter

OPC model	3800-OPC-A1-8C-LU-A0
OPD model	3800-OPD-A1-8C-LU-A0
number of channels	8
Calibration wavelength	1310nm / 1550 nm
power bracket	-70 ～ +3 dBm (offline)
power bracket	-50 ～ +23 dBm (online)
accuracy	± 5%
resolution ratio	0.01
Type of optical fiber	SM（9/125um）
Type of connector	LC/PC
working temperature	0℃～+45℃
relative humidity	30℃ not more than 90% (no condensation)
storage temperature	–20℃～+70℃
size	0.5U standard slot

OPC board interface definition

Interface screen printing	name	Function/Links
IN1~IN8	Optical power input port	Real-time detection of input light power
OUT1~OUT8	Light power output port	Real-time detection of output optical power

OPD board interface definition

Interface screen printing	name	Function/Links

1~8	Optical power input port	Real-time detection of light power

OPC&OPD board indicator light description

Indicating filament printing	name	description
PWR	OPC&OPD single disk power indicator light	Light, OPC&OPD panel power supply normal, out, power supply fault
RUN	OPC&OPD operation indicator light	Light, OPC&OPD operating normally; Extinguished, operational fault
LINK	OPC&OPD network connection indicator	Light: OPC&OPD network connection normal; Off: connection fault

Monitored Information on a Single Disk

Real-time monitoring of OPC and OPD power supply working status;

Real-time monitoring of OPC and OPD working status;

Real-time monitoring of OPC and OPD chip temperature;

Maintenance

The reasonable use and proper storage of the equipment can maintain good performance indicators for a long time and prolong its service life, so appropriate maintenance is needed:

(1) The equipment should avoid strong mechanical vibration, collision, drop and other mechanical damage. During transportation, there must be good packaging and vibration reduction, rain and waterproof measures;

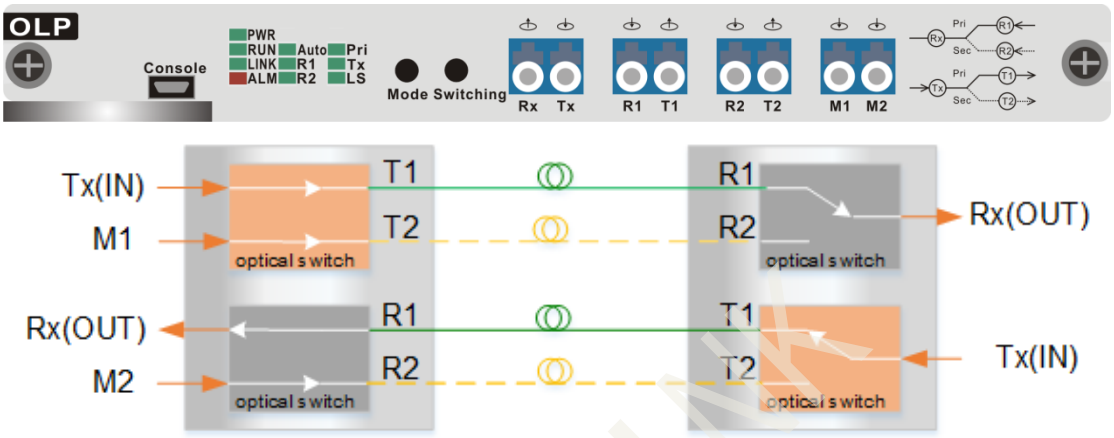
(2) The equipment should be kept clean at all times, and the working environment should be free of corrosive gases such as acid and alkali. The machine box and panel can be gently wiped with a clean towel soaked in water or soapy water. It is forbidden to wipe with alcohol and other solvents.

(3) The dust cover should be put on in time after removing the fiber optic connection cable to prevent hard objects, dust or other dirt from touching the fiber optic end face.

OLP: Optical Fiber Auto-Switching Card

The OLP Optical Protection Board primarily assists optical cable monitoring systems in implementing optical layer protection solutions such as 1+1 optical line protection and 1+1 optical wavelength protection. It continuously monitors signal status on primary and backup optical paths, automatically performing secure failover between paths when optical signal interruptions or performance degradation occur, ensuring rapid system recovery. By executing path switching at the optical layer, OLP technology offers unparalleled advantages over upper-layer service protection in optical layer protection, providing users with the optimal solution for uninterrupted communication.

Product diagram



technical parameter

function		explain
OLP model		3800-OLP1:1A3-A0
Working wavelength range		1260nm～1650nm
OLP type		OLP-1: 1 (optional)
Switching Time		＜35ms
Introduction of loss	Pathways to work	＜1.3dB
	Backup path	＜1.3dB
Monitor the optical power range		-50 dBm～+25dBm
application scenarios		Optical line protection
Network management functions		Support real-time monitoring of OLP optical power, active switching scheduling, performance management, routing management and other functions
Number of slots occupied		Supports the full range of OSP3800 chassis, occupying 1 slot (0.5U)
optical interface		LC/UPC
maximum power dissipation		5W
MTBF		> 100,000 hours

OLP board interface definition

Interface screen printing	name	Function/Links
Rx	OLP Local output interface	Connect the local device receiver port

Tx	OLP Local receiving interface	Connect the local device transmitter port
R1	Master routing receives interface	Connect to the other end T1
T1	Master routing output interface	Connect to the other end R1
R2	Prepare routing receiving interface	Connect to the other end T2
T2	Prepare routing output interface	Connect to the other end R2
M1/M2	The OTDR's access port	Test faulty lines in the transmission route

OLP board indicator light description

Indicating filament printing	name	description
PWR	OLP Power indicator light	On, OLP power supply normal, off, power supply fault
RUN	OPL Operating indicator light	Light, OLP is running normally, off, operational fault
Auto	OLP working mode indicator	On: Works in automatic mode, off: Works in manual mode
R1	OLP main routing indicator	Light, reception normal, off, reception abnormal
R2	OLP backup routing receive indicator	Light, reception normal, off, reception abnormal
Pri	Master route working indicator	Light, working on the main route
Tx	Local reception indicator	Light, reception normal, off, reception abnormal
LS	Internal light source working status of the device	On means normal operation, off means abnormal

Monitored Information on a Single Disk

- Online real-time monitoring of OLP disk working status;
- Online real-time monitoring of OLP's current working route;
- Online real-time monitoring OLP working mode manual or automatic;
- Real-time monitoring of OLP access side receiving and transmitting power;
- Real-time monitoring of OLP master and backup routing light emission power.

Maintenance

The reasonable use and proper storage of the equipment can maintain good performance indicators for a long time and prolong its service life, so proper maintenance is required:

(1) The equipment should avoid strong mechanical vibration, collision, drop and other mechanical damage. During transportation, there must be good packaging and vibration reduction, rain and waterproof measures;

（2） The equipment should be kept clean at all times, and the working environment should be free of corrosive gases such as acid and alkali. The machine box and panel can be gently wiped with a clean towel soaked in water or soapy water. It is forbidden to wipe with alcohol and other solvents.

（3） The dust cover should be put on in time after the optical fiber connection line is removed to prevent hard objects, dust or other dirt from touching the optical fiber end face.