Product features

Low insertion loss

Fast switching speed

LCD display screen, intuitive display light path status

Panel key and network interface command mode for light path switching setting, and can be operated by the chain interface command lock key

Output port (OUT port) with light power monitoring

Scope of application

Multichannel optical monitoring in optical transmission systems

Automatic LAN multi-light source/detector switching

Optical sensing multi-point dynamic monitoring system

Optical testing system for optical fiber, optical devices, network and field engineering optical cable testing

Optical device assembly and adjustment

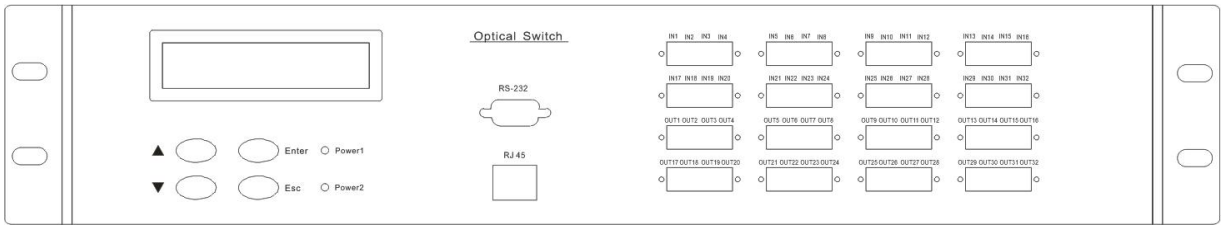
Technical parameters

Type no.	MFSW-32X32-2U-LP
Working wavelength	1260 ~ 1650nm
Test the wavelength	1310/1550 nm
Insertion loss	≤4.5 dB
Monitor optical power range	+20 ~ -50 dBm
Monitor optical power accuracy	±0.5 dB (+20 ~ -30 dBm) ±1.0 dB (-30 ~ -50 dBm)
Monitor optical power resolution	±0.01 dB
repetitive	≤±0.2 dB
Return loss	≥45 dB
crosstalk	≥50 dB
Wavelength dependent loss	≤0.8 dB
Polarization dependent loss	≤0.3 dB
Switch time	≤ 50 ms
Optical fiber type	SM (9/125um)
Connector type	LC/PC
Monitor the port	RJ45、RS-232
Working power supply	AC: 85 ~ 264 V (50/60Hz) or DC: 36 ~ 72 V
Working temperature	-10 ~ + 55℃
Storage temperature	-40 ~ + 80℃
The case type	19-inch standard 2U rack (483×500×89mm)

Directions for use

1.1. Panel illustration

The front panel



1、RJ45 network port: communication interface for equipment monitoring data and information.

2、RS-232 serial port: Communication interface for monitoring data and information of equipment.

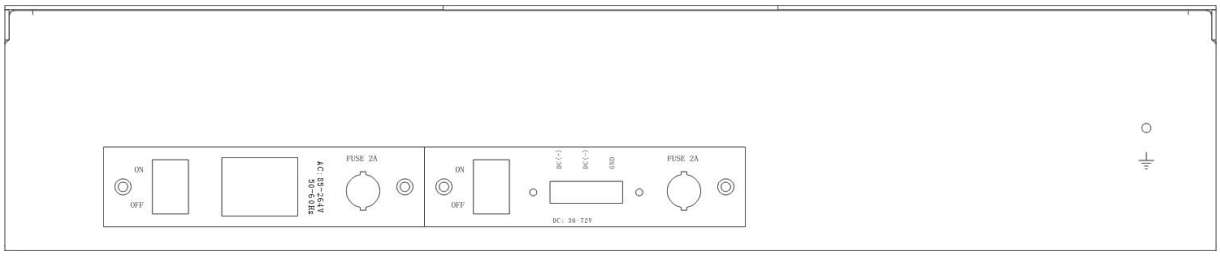
3、LCD display: Display of device address, current channel and related information.

4、▲ -- Up key;▼ -- Down key;Enter -- to determine the key;ESC -- Cancel key.

5、Power indicator light POWER1, POWER2: working power indicator.

6、Description of optical interface: IN1 ~ IN32 on the device panel are optical input interfaces, OUT1 ~ OUT32 are optical output interfaces.

Rear panel



1、Terminal post: External earthing post.

2、 AC and DC power interface: power input interface for equipment operation.

1.2. Illustration of optical path of equipment

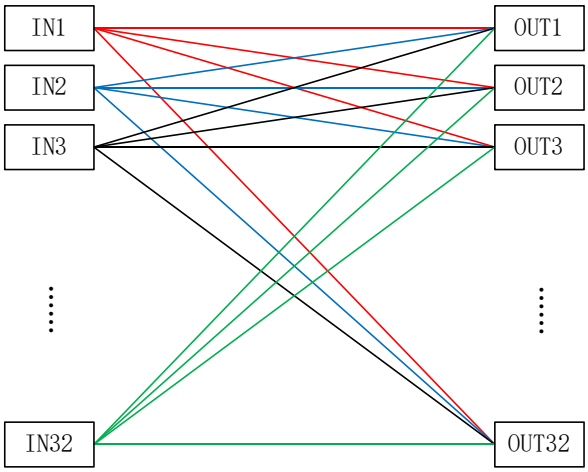


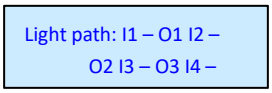
Diagram of internal optical path of 32×32 optical switch

Note: cannot have two input at the same time select the same output! Such an order is an illegal order.

1.3. Panel operation instructions

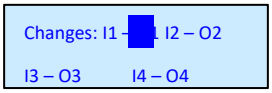
1、Panel button light path channel switch:

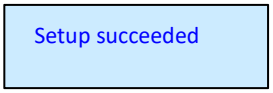
- Initial interface



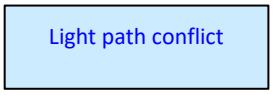
Input and output port selection interface:

- ① Press the "Enter" key to enter the change interface; ② Press the "▲" or "▼" key to select the output port of "Ix"; ③ Press the "Enter" key to confirm the selection; ④ Press the "Esc" key to return to the previous step.



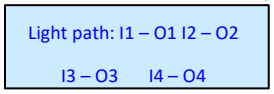


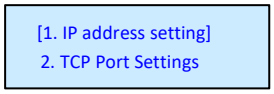
Note: When selecting the output terminals of "I1" ~ "I32", the same port cannot be selected. Otherwise, the switch cannot be performed, and a prompt is given:

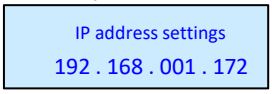


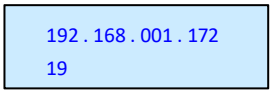
2、IP address setting

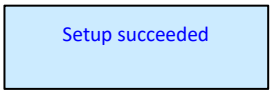
- ① Press and hold the "Enter" key for 4 seconds to enter the menu; ② Press the "▲" or "▼" key to select "1. IP address setting"; ③ Press the "Enter" key to enter the current IP address; ④ Press the "Enter" key to enter the IP setting interface; ⑤ Press the "▲" or "▼" key to select "IP address". ⑥ Press the "Enter" key to confirm completion.





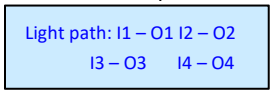


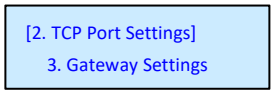


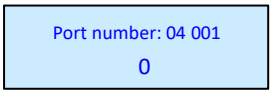


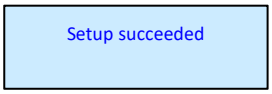
3、TCP port setup

- ① Press and hold the "Enter" key for 4 seconds to enter the menu; ② Press the "▲" or "▼" key to select "2. TCP Port Settings"; ③ Press the "Enter" key to enter; ④ Press the "▲" or "▼" key to select the port number; ⑤ Press the "Enter" key to confirm completion.



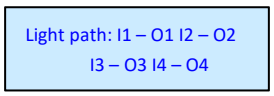


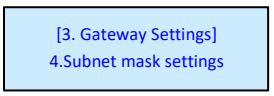


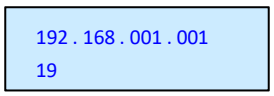


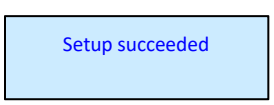
4、The gateway is set

- ① Press and hold the "Enter" key for 4 seconds to enter the menu; ② Press the "▲" or "▼" key to select "3. Gateway Setting"; ③ Press the "Enter" key to enter and view the current gateway address; ④ Press the "Enter" key to enter the gateway setting interface; ⑤ Press the "▲" or "▼" key to select "Gateway Address". ⑥ Press the "Enter" key to confirm





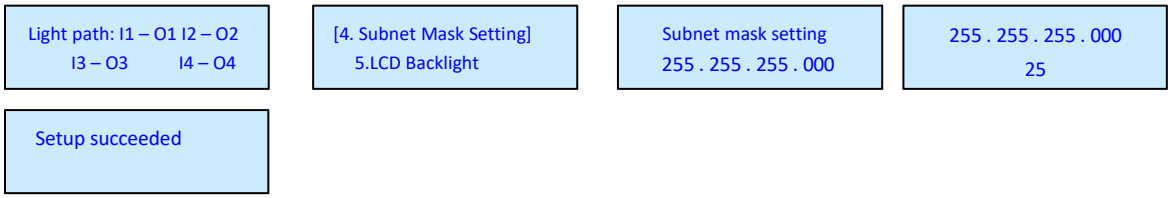




completion.

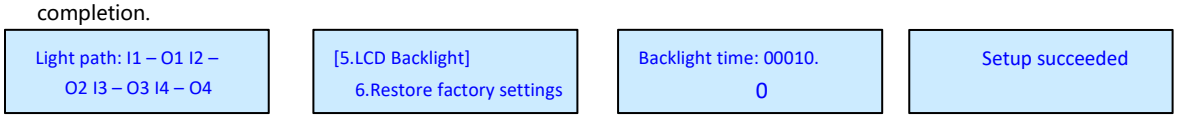
5、Subnet mask Settings

- ① Press and hold the "Enter" key for 4 seconds to enter the menu; ② Press the "▲" or "▼" key to select "4. Subnet Mask Setting"; ③ Press the "Enter" key to view the current gateway address; ④ Press the "Enter" key to enter the subnet mask setting interface; ⑤ Press the "▲" or "▼" key to select "Subnet Mask Address". ⑥ Press Enter to confirm completion.



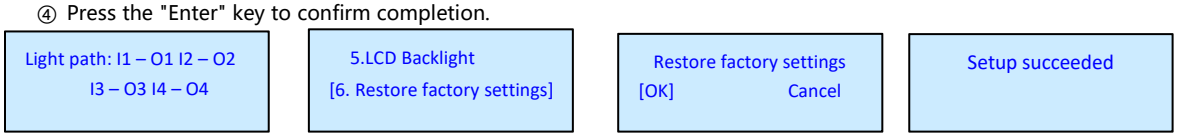
6、LCD backlight

- ① Press and hold the "Enter" key for 4 seconds to enter the menu; ② Press the "▲" or "▼" key to select "5. LCD backlight"; ③ Press the "Enter" key to enter; ④ Press the "▲" or "▼" key to select the time; ⑤ Press the "Enter" key to confirm completion.



7、Factory data reset

- ① Press and hold the "Enter" key for 4 seconds to enter the menu; ② Press the "▲" or "▼" key to select "6. Restore factory settings"; ③ Press the "Enter" key to enter;
  ④ Press the "Enter" key to confirm completion.



1.4. Monitoring instructions for upper computer

The device can realize automatic measurement or real-time monitoring by receiving control signals from the computer through interfaces such as Ethernet, RS232 and other interfaces on the front panel.

1、This instrument can only execute one instruction at a time.Usually wait for the program to return the corresponding value before entering the next instruction.

2、Please use capital letters.

3、In practice, enter the sharp bracket "<"As a starting character, the brackets ">As an end.

4、When accessed through a serial port, the format is: send command, note that send is lowercase, the command is uppercase, there is a space between send and the command, and the command is followed by carriage return.When using TCP connection, enter the command directly.

Programmed instruction set

Optical path switching instruction set:

The command	Describe	The sample
<OSW_SW_I1_I2_I3_I4 _I5_I6_I7_I8_I9_I10_I11 _I12_I13_I14_I15_I16_I 17_I18_I19_I20_I21_I2 2_I23_I24_I25_I26_I27 _I28_I129_I30_I31_I32> (I1 ~ I32 are 01 ~ 32, and the values cannot be the same!)	**Channel switching** Send: _ In2 corresponding output channel _ In3 corresponding output channel _ In4 corresponding output channel _ In5 corresponding output channel _ In6 corresponding output channel _ In7 corresponding output channel _ In8 corresponding output channel _ In9 corresponding output channel _ In10, _ In11, _ In12, _ In13, _ In14, _ In15, _ In16, _ In17, _ In18, and _ In19	Send: <OSW_SW_01_02_03_04_05_06_07_08_09_1 0_11_12_13_14_15_16_17_18_19_20_21_22_ 23_24_25_26_27_28_29_30_31_32> Return : <OSW_SW_01_02_03_04_05_06_07_08_09_1 0_11_12_13_14_15_16_17_18_19_20_21_22_ 23_24_25_26_27_28_29_30_31_32_OK> Indicates that the 32X32 optical path is set to: In1→Out1、In2→Out2、In3→Out3、In4→ Out4、In5→Out5、In6→Out6、In7→Out7、
	The output channels corresponding to the output channel _ In20, the output channel _ In21, the output channel _ In22, the output channel _ In23, and the output channel _ In24 _ In25, _ In26, _ In27, _ In28, _ In29, _ In30, _ In31, _ In32 >	In8→Out8、In9→Out9、In10→Out10、In11 →Out11、In12→Out12、In13→Out13、In14 →Out14、In15→Out15、In16→Out16、In17 →Out17、In18→Out18、In19→Out19、In20 →Out20、In21→Out21、In22→Out22、In23 →Out23、In24→Out24、In25→Out25、In26 →Out26、In27→Out27、In28→Out28、In29 →Out29、In30→Out30、In31→Out31、In32 →Out32；
<OSW_A_?>	**Query the channel status** Return Succeed : _ In2 corresponding output channel _ In3 corresponding output channel _ In4 corresponding output channel _ In5 corresponding output channel _ In6 corresponding output channel _ In7 corresponding output channel _ In8 corresponding output channel _ In9 corresponding output channel _ In10, _ In11, _ In12, _ In13, _ In14, _ In15, _ In16, _ In17, _ In18 _ In19, _ In20, _ In21, _ In22, _ In23, _ In24, _ In25, _ In26, _ In27 _ In28, output channel _ In29, output channel _ In30, and output channel _ In31 Output channel corresponding to output channel _ In32 >	32 X32 optical switch return: <OSW_01_02_03_04_05_06_07_08_09_10_1 1_12_13_14_15_16_17_18_19_20_21_22_23_ 24_25_26_27_28_29_30_31_32> The current optical paths are: In1 → Out1, In2 → Out2, In3 → Out3, In4 → Out4, In5 → Out5, In6 → Out6, In7 → Out7, In8 → Out8, In9 → Out9, In10 → Out10, In11 → Out11, In12→Out12、In13→ Out13、In14→Out14、In15→Out15、In16→ Out16、In17→Out17、In18→Out18、In19→ Out19、In20→Out20、In21→Out21、 In22→ Out22、In23→Out23、In24→Out24、In25→ Out25、In26→Out26、In27→Out27、In28→ Out28、In29→Out29、In30→Out30、In31→ Out31、 In32→Out32;

<OPM_xx_P_?>	Query the optical power value of the OUT port Value of XX: 01 ~ 32, respectively indicating OUT1 port to OUT32 port; Value of XX: 00, indicating all OUT ports; XX xx00, success return: < OSW _ XX _ P _ ± yy.yy > XX = 00, success return: <OSW_xx_P_OUT1 Optical Power_ OUT2 Optical Power Rate _ _ OUT31 Optical Power _ OUT32 Optical Power >	Send: < OPM 02 _ P _? : Successful return: < OPM _ 02 _ P _ + 02.54 > indicates that the power of OUT2 is + 2.54 dBm: Send: < OPM 00 _ P _? > Successfully returned: <OPM_00_P_+02.54_-02.00_+02.54_-02.00_ +02.54_-02.00_+02.54_-02.00_+02.54_-02.0 0_+02.54_-02.00_+02.54_-02.00_+02.54_-02 .00_+02.54_-02.00_+02.54_-02.00_+02.54_- 02.00_+02.54_-02.00_+02.54_-02.00_+02.54 _-02.00_+02.54_-02.00_+02.54_-02.00>
<OPM_xx_W_y>	Set the operating wavelength of the OUT port Value of XX: 01 ~ 32, respectively indicating OUT1 port to OUT32 port; Value of XX: 00, indicating all OUT ports; Value of y: 1 ~ 2, 1 represents 1310nm, 2 represents 1550nm; The value of y is?, which means query;	Send: < OPM _ 01 _ W _ 1 : Success return: < OPM _ 01 _ W _ 1 _ OK : Indicates that the operating wavelength of the OUT1 port is set to 1550 nm; Send: < OPM _ 00 _ W _ 1 : Success return: < OPM _ 00 _ W _ 1 _ OK : Indicating that the operating wavelength of all out ports is set to 1550nm; Send: < OPM 08 _ W _? : Success return: < OPM _ 08 _ W _ 1 : Indicates that the operating wavelength of the OUT8 port is 1550nm; Send: < OPM 00 _ W _? > Successfully returned: <OPM_00_W_1_1_1_1_1_1_1_1_1_1_1_1_1_1 _1_1_1_1_1_1_1_1_1_1_1_1_1_1_1_1_1_1_2> Indicates that the operating wavelength from OUT1 port to OUT31 port is 1310nm, the working wavelength of OUT32 port is 1550nm;

Device parameter instruction set:

<SET_IP_xxx_xxx_xxx_xxx>	Set/query local IP address (effective after restart) 1. When X is 000 ~ 255, it means to set the IP address 2.Success return: < SET _ IP _ OK : 3. <IP_?>Indicates the query IP address	Send: < SET _ IP _ 192 _ 168 _ 002 _ 011 > to set IP: 192.168.2.1: Send: < IP _? : Return: < IP _ 192 _ 168 _ 002 _ 011 : Indicates that the current IP is: 192.168.2.11
<SET_GW_xxx_xxx_xxx_xxx>	Setup/Query Gateway (Restart takes effect) 1. When X is 000 ~ 255, the gateway is set 2.Success return: < SET _ GW _ OK : 3.<GW_?>Indicates the query gateway address	Send: < SET _ GW _ 192 _ 168 _ 002 _ 001 : Indicates that the gateway is set to: 192.168.2.1 Send: < GW _? : Return: < GW _ 192 _ 168 _ 002 _ 001 : Indicates that the current gateway is: 192.168.2.1
<SET_SM_xxx_xxx_xxx_xxx>	Set/Query Subnet Mask (Restart takes effect) 1. When X is from 000 to 255, the subnet mask is set 2.Success return: < SET _ SM _ OK : 3. <SM_?>Indicates the query subnet mask	Send: < SET _ SM _ 255 _ 255 _ 255 _ 000 : Indicates that the subnet mask is set to: 255.255.255.0 Send: < SM _? : Return: < SM _ 255 _ 255 _ 255 _ 000 : Indicates that the current subnet mask is 255.255.255.0
<SET_TCPP_xxxxx>	Set/query the TCP communication port number (effective after restart) 1.xxxxx is the 00000 ~ the 65534 indicates that the TCP communication port number is set 2.Success return: < SET _ TCPP _ OK : 3. <TCPP_?>Indicates the query TCP communication port number	Send: < SET _ TCPP _ 04001 : Indicates to set the TCP communication port number: 4001
<SET_KEY_x>	Set or query the permission of the device button 1. X value: 0 means forbidden; 1 indicates permission; 2. Success return: < SET _ KEY _ X _ OK : 3. <KEY_?>3. Indicates the permission status of the query key; Success returned: < KEY _ 0 > or < KEY _ 1 :	<SET_KEY_1>Indicates that the key is allowed to be used; <SET_KEY_0>Indicates that the key is disabled; <KEY_?>If the key is allowed to be used, return to: <KEY_1>, If the key is disabled, return to. <KEY_0>
<RESET>	Restart the device	Successful serial port return: < RESET _ OK : Note: If the network port does not return, the TCP connection will be automatically disconnected after success;
<RESTORE>	Restore factory settings	Successful serial port return: < RESET _ OK : Note: 1. If the network port does not return, the TCP connection will be automatically disconnected after success; 2. The command only restores the network parameters to the default values;

<INFO_?>	Query device information	Successfully returned: <OSW32X32-SM_VER1.00_SN01234567890 _C06.02.00020> Represents a 32X32 optical switch, SM represents a single mode, version 1.00, SN No.01234567890, product No. C06.02. 00020;
<SAVE_ALL>	Save the configuration and return if successful: < OK :	Save the configuration, such as channel status save.

Note: Failure returns information <ER>

Factory default configuration

List of factory default configurations

Project	Factory default configuration	Note
Use of panel keys	Allows the use of	
The light path channel	In1→Out1、In2→Out2、In3→Out3、In4→Out4、In5→Out5、In6→Out6、In7→Out7、In8→ Out8、In9→Out9、In10→Out10、In11→Out11 、In12→Out12 、In13→Out13 、In14→Out14 、In15→Out15 、In16→Out16 、In17→Out17 、In18→Out18 、In19→Out19 、In20→Out20 、In21→Out21 、In22→Out22 、In23→Out23 、In24→Out24 、In25→Out25 、In26→Out26 、In27→Out27 、In28→Out28 、In29→Out29 、In30→Out30 、In31→Out31、In32→Out32	
Out port operating wavelength	1310nm	
Baud rate setting	19200	8 data bits, 1 stop bit, no parity.
LCD backlight	1 minute	In "1 minute" no panel button operation, backlight off.
The equipment IP	192.168.1.178	Way to work： TCP Server
Gateway equipment	192.168.1.1	
Subnet mask	255.255.255.0	
The TCP port number	4001	

Matters needing attention

1、When using this device, all ports must be connected correctly according to the optical connection instructions.

2、The power supply should be grounded, and ensure that the input power supply voltage is within the range required by the equipment.

3、In case of sudden disturbance, the host is abnormal, it should be shut down before processing.

4、The optical input port must be connected and positioned accurately, otherwise the measurement results and insertion losses may be incorrect.

5、It is normal to have slight vibration or sound when switching optical path channels.

Equipment maintenance

Reasonable use and proper storage of equipment can maintain good performance index for a long time and extend its service life, so proper maintenance is required:

1、The equipment should avoid strong mechanical vibration, collision, falling and other mechanical damage.Transport must have good packaging and vibration, rain and waterproof measures;

2、The equipment should be kept clean and the working environment should be free of corrosive gases such as acid and alkali.Use a clean towel with water or soapy water to gently scrub the chassis and panels.Do not use alcohol and other solvents to scrub.

3、Remove the fiber cable should be timely covered with dust caps to prevent hard objects, dust or other dirt touching the end face of the fiber.

Please feel free to contact us for any unspecified matters.We would be glad to hear your valuable comments.

Equipment maintenance common fault handling

The fault performance	Possible reasons for	The solution
No display after boot	The electricity is not properly connected	Reconnect the power and turn it on
Excessive insertion loss	The end face of the connection head is soiled	Rinse the end face of the smooth connection head and fix the connection head.Check the end face for damage.
The panel cannot switch light paths	The panel keys are locked	Allow panel keys to be used by sending commands through the serial port.
The upper computer instruction is invalid	The serial port is not set correctly	The query checks the serial port Settings
	The serial line is not properly connected	Power off first, recheck the serial line, and then power on.