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
- Deptical 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

I 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 ~ -30 dBill
Monitor optical power	±0.5 dB (+20 ~ -30 dBm)
accuracy	±1.0 dB (-30 ~ -50 dBm)
Monitor optical power	+0.01 dP
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)或 DC: 36 ~ 72 V
Working temperature	-10 ~ + 55℃
Storage temperature	-40 ~ + 80°C
The case type	19-inch standard 2U rack (483×500×89mm)

Directions for use

1.1. Panel illustration

The front panel

	Optical Switch	
	RS-232	
	RJ 45	\square

(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 \sim IN32 on the device panel are optical input interfaces, OUT1 \sim 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

注: 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

光路: I1-O1 I2-O2 I3-O3 I4-O4

Input and output port selection interface:

① 按 "Enter" 键进入进入更改界面;② 按 "▲" 或 "▼" 键选择 "Ix" 的输出端口;③ 按 "Enter" 键确定选择;④按 "Esc" 键返回上一步。

更改: II - <mark>01</mark> I2 - 02	设置成功
13 - O3 $14 - O4$	

注意:在选择"I1"~"I32"的输出端时,不能选择相同的端口。否则不能进行切换,并提示:



(2), IP address setting

 ① 长按 "Enter" 键 4 秒进入菜单;② 按 "▲"或 "▼" 键选择 "1.IP 地址设置";③ 按 "Enter" 键进入可看到 当前 IP 地址;④ 按 "Enter" 键进入 IP 设置界面;⑤按 "▲"或 "▼" 键选择 "IP 地址"。⑥按 "Enter" 键确定 完成。



- (3), TCP port setup
- ① 长按 "Enter" 键 4 秒进入菜单;② 按 "▲" 或 "▼" 键选择 "2.TCP 端口设置";③ 按 "Enter" 键进入;④ 按 "▲" 或 "▼" 键选择端口号;⑤ 按 "Enter" 键确定完成。

光路: I1-O1 I2-O2	【2.TCP 端口设置】	端口号: 04001	设置成功
I3 – O3 I4 – O4	3.网关设置	0	

(4), The gateway is set

① 长按 "Enter" 键 4 秒进入菜单;② 按 "▲" 或 "▼" 键选择 "3.网关设置";③ 按 "Enter" 键进入可看到当前网关地址;④ 按 "Enter" 键进入网关设置界面;⑤按 "▲" 或 "▼" 键选择 "网关地址"。⑥按 "Enter" 键确定完成。



- (5), Subnet mask Settings
- ① 长按 "Enter" 键 4 秒进入菜单;② 按 "▲" 或 "▼" 键选择 "4.子网掩码设置";③ 按 "Enter" 键进入可看 到当前网关地址;④ 按 "Enter" 键进入子网掩码设置界面;⑤按 "▲" 或 "▼" 键选择 "子网掩码地址"。⑥按 Tel: +86-773-8990122
 Fax: +86-773-8990122
 Web: www.glhcoptical.com



植林恒创光电科技有限公司 HC Optical Science and Tech Co., Ltd. Rack 32 x 32MEMS matrix optical switch

"Enter"键确定完成。			
光路: II-O1 I2-O2 I3-O3 I4-O4	【4. 子网掩码设置 】 5. LCD 背光	子网掩码设置 255.255.255.000	255 . 255 . 255 . 000 25
设置成功			

(6), LCD backlight

① 长按 "Enter"键4秒进入菜单;② 按 "▲"或 "▼"键选择 "5. LCD 背光";③ 按 "Enter"键进入;④ 按
"▲"或 "▼"键选择时间;⑤ 按 "Enter"键确定完成。

光路: I1-O1 I2-O2	【5. LCD 背光】	背光时间: 00010	设置成功
I3-O3 I4-O4	6. 恢复出厂设置	0	

(7), Factory data reset

① 长按 "Enter" 键 4 秒进入菜单;② 按 "▲" 或 "▼" 键选择 "6. 恢复出厂设置";③ 按 "Enter" 键进入;
④ 按 "Enter" 键确定完成。

光路: I1-O1 I2-O2	5. LCD 背光	恢复出厂设置	设置成功
I3 – O3 I4 – O4	【6.恢复出厂设置】	【确定】 取消	

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
	通道切换	发送:
<osw_sw_i1_i2_i3_i4< td=""><td>发送:<osw_sw_in1对应的输出通道< td=""><td><osw_sw_01_02_03_04_05_06_07_08_09_1< td=""></osw_sw_01_02_03_04_05_06_07_08_09_1<></td></osw_sw_in1对应的输出通道<></td></osw_sw_i1_i2_i3_i4<>	发送: <osw_sw_in1对应的输出通道< td=""><td><osw_sw_01_02_03_04_05_06_07_08_09_1< td=""></osw_sw_01_02_03_04_05_06_07_08_09_1<></td></osw_sw_in1对应的输出通道<>	<osw_sw_01_02_03_04_05_06_07_08_09_1< td=""></osw_sw_01_02_03_04_05_06_07_08_09_1<>
_I5_I6_I7_I8_I9_I10_I11	_In2对应的输出通道_In3对应的输出通道	0_11_12_13_14_15_16_17_18_19_20_21_22_
_I12_I13_I14_I15_I16_I	_In4对应的输出通道_In5对应的输出通道	23_24_25_26_27_28_29_30_31_32>
17_I18_I19_I20_I21_I2	_In6对应的输出通道_In7对应的输出通道	返回:
2_I23_I24_I25_I26_I27	_In8对应的输出通道_In9对应的输出通道	<osw_sw_01_02_03_04_05_06_07_08_09_1< td=""></osw_sw_01_02_03_04_05_06_07_08_09_1<>
_I28_I129_I30_I31_I32	_In10对应的输出通道_In11对应的输出通	0_11_12_13_14_15_16_17_18_19_20_21_22_
>	道_In12对应的输出通道_In13对应的输出	23_24_25_26_27_28_29_30_31_32_OK>
(I1~I32取值01~32,且	通道_In14对应的输出通道_In15对应的输	表示将32X32光路设置为:
取值不能相同!)	出通道_In16对应的输出通道_In17对应的	In1→Out1、In2→Out2、In3→Out3、In4→
	输出通道_In18对应的输出通道_In19对应	Out4、In5→Out5、In6→Out6、In7→Out7、



	的输出通道_In20对应的输出通道_In21对 应的输出通道_In22对应的输出通道_In23 对应的输出通道_In24对应的输出通道 _In25对应的输出通道_In26对应的输出通 道_In27对应的输出通道_In28对应的输出 通道_In29对应的输出通道_In30对应的输 出通道_In31对应的输出通道_In32对应的 输出通道>	In8 \rightarrow Out8, In9 \rightarrow Out9, In10 \rightarrow Out10, In11 \rightarrow Out11, In12 \rightarrow Out12, In13 \rightarrow Out13, In14 \rightarrow Out14, In15 \rightarrow Out15, In16 \rightarrow Out16, In17 \rightarrow Out17, In18 \rightarrow Out18, In19 \rightarrow Out19, In20 \rightarrow Out20, In21 \rightarrow Out21, In22 \rightarrow Out22, In23 \rightarrow Out23, In24 \rightarrow Out24, In25 \rightarrow Out25, In26 \rightarrow Out26, In27 \rightarrow Out27, In28 \rightarrow Out28, In29 \rightarrow Out29, In30 \rightarrow Out30, In31 \rightarrow Out31, In32 \rightarrow Out32;
<osw_a_?></osw_a_?>	查询通道状态 成功返回: < OSW_In1 对应的输出通道 _In2 对应的输出通道_In3 对应的输出通道 _In4 对应的输出通道_In5 对应的输出通道 _In6 对应的输出通道_In7 对应的输出通道 _In8 对应的输出通道_In7 对应的输出通道 _In10 对应的输出通道_In17 对应的输出通道 _In10 对应的输出通道_In13 对应的 输出通道_In14 对应的输出通道_In15 对 应的输出通道_In16 对应的输出通道_In17 对应的输出通道_In18 对应的输出通道 _In19 对应的输出通道_In20 对应的输出 通道_In21 对应的输出通道_In22 对应的 输出通道_In23 对应的输出通道_In24 对 应的输出通道_In25 对应的输出通道_In26 对应的输出通道_In27 对应的输出通道 _In28 对应的输出通道_In29 对应的输出 通道_In30 对应的输出通道_In31 对应的 输出通道_In32 对应的输出通道>	32X32 光开关 返回: <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> 当前光路为: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→ 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_01_02_03_04_05_06_07_08_09_10_1
<opm_xx_p_?></opm_xx_p_?>	查询 OUT 端口光功率值 xx 取值:01~32,分别表示 OUT1 端口到 OUT32 端口; xx 取值:00,表示所有 OUT 端口; xx≠00,成功返回: <osw_xx_p_±yy.yy> xx=00,成功返回: <osw_xx_p_out1光功率_out2光功 率OUT31光功率_OUT32光功率></osw_xx_p_out1光功率_out2光功 </osw_xx_p_±yy.yy>	<pre>发送: <opm_02_p_?> 成功返回: <opm_02_p_+02.54> 表示 OUT2 的功率为+2.54dBm; 发送: <opm_00_p_?> 成功返回: <opm_00_p_+02.5402.00_+02.5402.00_ +02.5402.00_+02.5402.00_+02.5402.00_ 0_+02.5402.00_+02.5402.00_+02.5402.00_+02.5402.00_+02.5402.00_+02.5402.00_+02.5402.00_+02.5402.00_+02.5402.00_+02.5402.00_+02.5402.00_+02.5402.00_+02.5402.00></opm_00_p_+02.5402.00_+02.5402.00_ </opm_00_p_?></opm_02_p_+02.54></opm_02_p_?></pre>
<opm_xx_w_y></opm_xx_w_y>	设置 OUT 端口工作波长 xx 取值 : 01~32 , 分别表示 OUT1 端口到 OUT32 端口 ; xx 取值 : 00 , 表示所有 OUT 端口 ; y 取值 : 1~2 , 1 表示 1310nm , 2 表示 1550nm ; y 取值? , 表示查询 ;	发送: <opm_01_w_1> 成功返回:<opm_01_w_1_ok> 表示将 OUT1 端口的工作波长设置为 1550nm; 发送:<opm_00_w_1> 成功返回:<opm_00_w_1_ok> 表示将所有 OUT 端口工作波长设置为 1550nm; 发送:<opm_08_w_?> 成功返回:<opm_08_w_1> 表示 OUT8 端口的工作波长为 1550nm;</opm_08_w_1></opm_08_w_?></opm_00_w_1_ok></opm_00_w_1></opm_01_w_1_ok></opm_01_w_1>



发送: <opm_00_w_?></opm_00_w_?>
成功返回:
<opm_00_w_1_1_1_1_1_1_1_1_1_1_1_1_1_1_1_1_1_< th=""></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>
表示 OUT1 端口到 OUT31 端口的工作波长为
1310nm , OUT32 端口的工作波长为 1550nm ;

Device parameter instruction set:

<set_ip_xxx_xxx_xxx_ xxx> <set_gw_xxx_xxx_xxx _xxx></set_gw_xxx_xxx_xxx </set_ip_xxx_xxx_xxx_ 	设置/查询本机IP地址(重启生效) 1.xxx为000~255表示设置IP地址 2.成功返回: <set_ip_ok> 3.<ip_?>表示查询IP地址 设置/查询网关(重启生效) 1.xxx为000~255表示设置网关 2.成功返回:<set_gw_ok> 3.<gw_?>表示查询网关地址</gw_?></set_gw_ok></ip_?></set_ip_ok>	发送: <set_ip_192_168_002_011> 表示设置IP为: 192.168.2.11 发送: <ip_?> 返回: <ip_192_168_002_011> 表示当前IP为: 192.168.2.11 发送: <set_gw_192_168_002_001> 表示设置网关为: 192.168.2.1 发送: <gw_?> 返回: <gw_192_168_002_001></gw_192_168_002_001></gw_?></set_gw_192_168_002_001></ip_192_168_002_011></ip_?></set_ip_192_168_002_011>
<set_sm_xxx_xxx_xxx _xxx></set_sm_xxx_xxx_xxx 	设置/查询子网掩码(重启生效) 1.xxx为000~255表示设置子网掩码 2.成功返回: <set_sm_ok> 3.<sm_?>表示查询子网掩码</sm_?></set_sm_ok>	表示当前网天为:192.168.2.1 发送: <set_sm_255_255_255_000> 表示设置子网掩码为:255.255.255.0 发送: <sm_?> 返回: <sm_255_255_255_000> 表示当前子网掩码为:255.255.255.0</sm_255_255_255_000></sm_?></set_sm_255_255_255_000>
<set_tcpp_xxxxx></set_tcpp_xxxxx>	设置/查询TCP通信端口号(重启生效) 1.xxxxx为00000~65534表示设置TCP通 信端口号 2.成功返回: <set_tcpp_ok> 3.<tcpp_?>表示查询TCP通信端口号</tcpp_?></set_tcpp_ok>	发送: <set_tcpp_04001> 表示设置TCP通信端口号:4001</set_tcpp_04001>
<set_key_x></set_key_x>	设置或查询设备按键的使用权限 1. x值:0表示禁止;1表示允许; 2. 成功返回: <set_key_x_ok> 3. < KEY_?>表示查询按键的使用权限状 态; 成功返回: < KEY_0> 或 < KEY_1></set_key_x_ok>	<set_key_1>表示按键允许使用; <set_key_0>表示按键禁止使用; <key_?>若按键允许使用,返回:<key_1>,若 按键禁止使用,返回: <key_0></key_0></key_1></key_?></set_key_0></set_key_1>
<reset></reset>	重启设备	成功串口返回: <reset_ok> 注:网口无返回 , 成功后TCP连接自动断开;</reset_ok>
<restore></restore>	恢复出厂设置	成功串口返回: < RESET_OK > 注:1、网口无返回 , 成功后TCP连接自动断开; 2、该指令只恢复网络参数为默认值;
<info_?></info_?>	查询设备信息	成功返回: <osw32x32-sm_ver1.00_sn01234567890 _C06.02.00020> 表示32X32光开关,SM表示单模,版本1.00, SN号01234567890,产品编号C06.02.00020;</osw32x32-sm_ver1.00_sn01234567890
<save_all></save_all>	保存配置 , 成功返回: <ok></ok>	对配置进行保存,如通道状态保存。

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	Allows the use of In1 \rightarrow Out1, In2 \rightarrow Out2, In3 \rightarrow Out3, In4 \rightarrow Out4, In5 \rightarrow Out5, In6 \rightarrow Out6, In7 \rightarrow Out7, In8 \rightarrow Out8, In9 \rightarrow Out9, In10 \rightarrow Out10, In11 \rightarrow Out11, In12 \rightarrow Out12, In13 \rightarrow Out13, In14 \rightarrow Out14, In15 \rightarrow Out15, In16 \rightarrow Out16, In17 \rightarrow Out17, In18 \rightarrow Out18, In19 \rightarrow Out19, In20 \rightarrow Out20, In21 \rightarrow Out21, In22 \rightarrow Out22, In23 \rightarrow Out23, In24 \rightarrow Out24, In25 \rightarrow Out25, In26 \rightarrow Out26, In27 \rightarrow Out27, In28 \rightarrow Out28,	
	In29 \rightarrow Out29 \langle In30 \rightarrow Out30 \langle In31 \rightarrow Out31 In32 \rightarrow 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	
Gateway equipment	192.168.1.1	Way to work + TCD Correr
Subnet mask	255.255.255.0	way to work : TCP Server
The TCP port number	4001	

D Note and maintenance

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.

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	The panel keys are	Allow panel keys to be used by sending commands
switch light paths	locked	through the serial port.
The upper computer	The serial port is not set correctly	The query checks the serial port Settings
instruction is invalid	The serial line is not properly connected	Power off first, recheck the serial line, and then power on.

Equipment maintenance common fault handling