



MX1X2OS Optical Switch



User manual



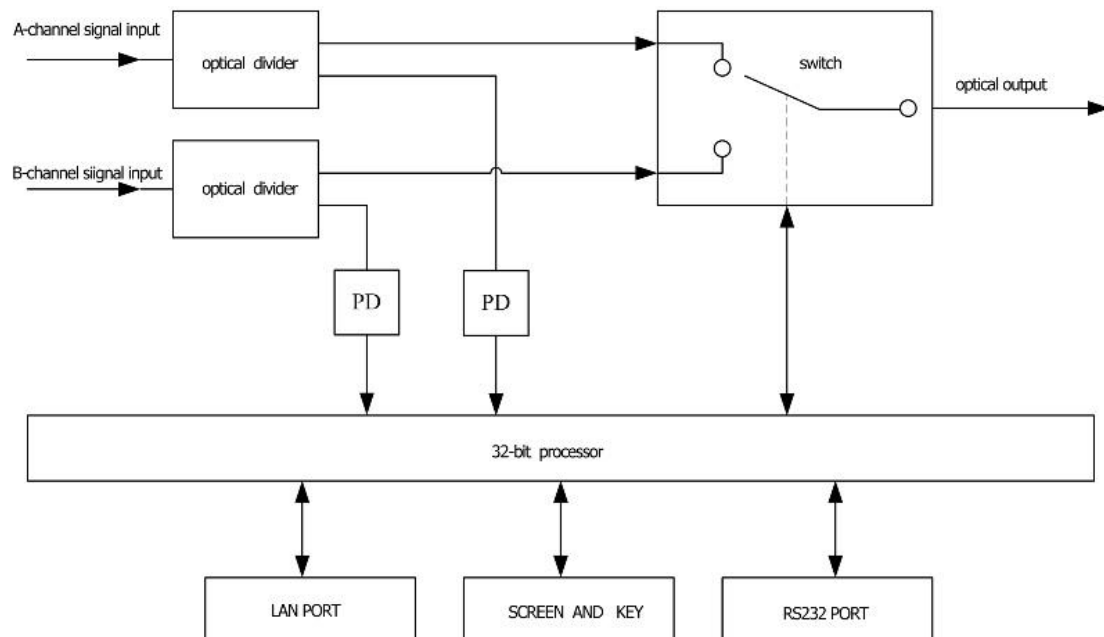
1. Product Overview

The MX1x2OS Optical switch is a critical device in an optical fiber communications system. It is primarily used as a backup switch for redundant route optical signals or multi-way optical signals. When the primary optical channel experiences a fault, it automatically switches to the backup channel, ensuring the system's continued operation.

2. Features

- High-performance switching components
- Advanced 32-bit processor; automatic monitoring circuit; precisely monitors all input power; auto switching mode and manual switching mode
- 160 × 32 dot matrix LCD in the front panel
- Standard 19"1U housing, Ethernet interface and RS-232 interface of 10Base-T/100Base-TX standard
- Supports “GB/T 20030-2005 HFC network equipment management system standard”.

3. Block diagram

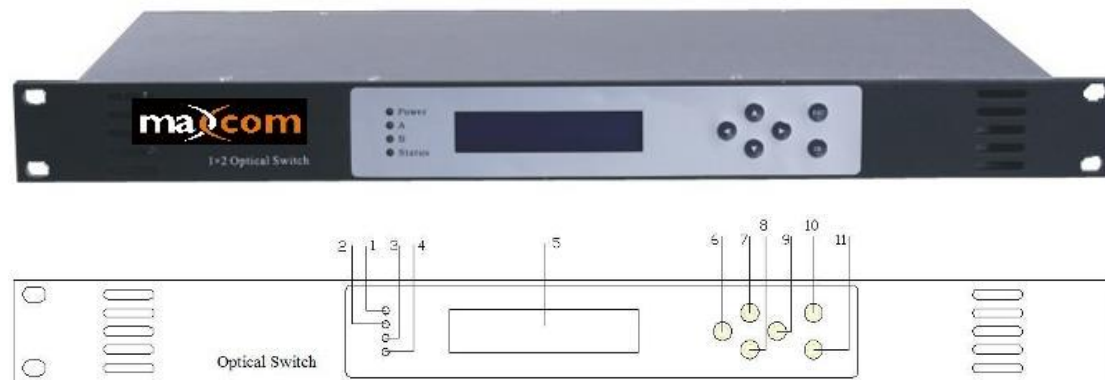


4. Technical parameters

Item	Unit	parameter	remark
Operating wavelength	nm	1200 – 1600	
Insertion loss	dB	≤ 1.5	Test at the position of 1310nm, 1490nm, or 1550nm
Switching time	ms	≤ 5	
Return loss	dB	≥ 55	
Max input optical power	mW	500	
Range of input optical power	dBm	-10 ~ +27	
Switching life		≥ 10 million times	
Connector type		FC/APC or SC/APC	
voltage	V	AC160V - 250V (50 Hz)	
consumption	W	≤ 2	
Operating temperature range	°C	-5 - +55	
Max operating relative humidity	%	Max 95% non-condensing	
Storage temperature range	°C	-30 - +70	
Max storage humidity	%	Max 95% non-condensing	
dimension	mm	483(W)×215(L)×44(H)	

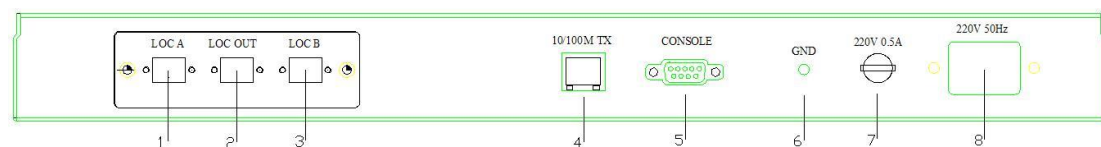
5. Function explanation

5.1 Front panel explanation



- 1: power indicator. It is on when the inner switching power is present.
- 2: indicator of A-channel output; it is green when the switch is at the position of A-channel, and red at the position of B-channel
- 3: indicator of B-channel output: it is green when the switch is at the position of B-channel, and red at the position of A-channel
- 4: alarm indicator: flickers when there is an alarm. The specific alarm content displays in the menu.
- 5: 160 × 32 dot matrix LCD: it displays all the parameters of the device.
- 6: left button - setting menu
- 7: up button
- 8: down button
- 9: right button
- 10: Cancel button
- 11: Ok button

5.2 back panel explanation



1. Input port of A-channel optical signal.
2. Output port of optical signal. When the equipment is operating normally, there is an invisible laser beam emitting from this port, do not look into the connector to avoid accidental injury.
3. Input port of B-channel signal
4. LAN interface: 10Base-T/100Base TX interface (Conforms to IEEE802.3-2002) for the network management

5. RS232 Interface: used to configure the network management parameter of the unit
6. Grounding stud
7. Installing port for fuse
8. AC110V power input port

5.3 Explanations of the displayed parameters


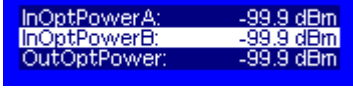

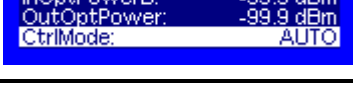




1. When the current of the switch is turned on, a menu appears as follows. Press “ok” to enter the main menu.



Current working channel and model

You may press any direction key to switch the sub-menu between parameter menu and alarm menu.

Displayed parameters



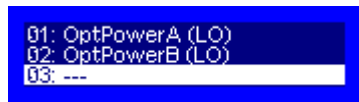
Displayed contents	meaning
	Input optical power of A-channel
	Input optical power of B-channel
	Output optical power
	Current control mode, press “ok” to set.
	Current operating channel
	Operating channel in manual mode, press “ok” to set.
	Switch threshold of auto control mode, when the input power of A-channel is less than this value, the working channel will automatically switch to B. You can press “ok” to set.
	Wavelength of the system. This value is set to adjust the accuracy of input optical power.

SW-Threshold: 0.0 dBm WaveLength: 1550nm BoxTemp: 28 °C	The current unit temperature
WaveLength: 1550nm BoxTemp: 28 °C LCDContrast: 7	LCD contrast, press “ok” to set.
LCDContrast: 7 AlarmSound: OFF Date(y-m-d): 2008-12-10 Wed	Alarm switch of buzzer, press “ok” to set.
LCDContrast: 7 AlarmSound: OFF Date(y-m-d): 2008-12-10 Wed	System date, press “ok” to set.
AlarmSound: OFF Date(y-m-d): 2008-12-10 Wed Time: 13:48:24	System time, press “ok” to set.
Date(y-m-d): 2008-12-10 Wed Time: 13:48:39 IP: 192.168.0.253	IP of the machine, press “ok” to set.
Time: 13:48:44 IP: 192.168.0.253 Gateway: 192.168.0.1	The gateway, press “ok” to set
IP: 192.168.0.253 Gateway: 192.168.0.1 NetMask: 255.255.255.0	Subnet mask , press “ok” to set
Gateway: 192.168.0.1 NetMask: 255.255.255.0 MAC: 00-b9-a0-00-00-01	MAC address of the machine
NetMask: 255.255.255.0 MAC: 00-b9-a0-00-00-01 S/N: YSE08xxxxxxxx	Serial number of the machine
MAC: 00-b9-a0-00-00-01 S/N: YSE08xxxxxxxx Version: 1.00	Version number of the soft system
S/N: YSE08xxxxxxxx Version: 1.00 WorkTime: 0 h 3 m	Cumulative working time

2. Press any direction key, and then entrance of alarm menu appears. Now you can press “ok” to enter it.



Displayed alarm contents

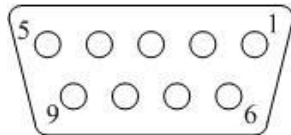
Displayed contents	meaning
	Input optical power alarm of port A. content in the brackets is the alarm state. It is low alarm in the picture.
	Input optical power alarm of port B. content in the brackets is the alarm state. It is low alarm in the picture.
	There is no other alarm.

6. Explanation of the network management

6.1 interface

1) RS232 communication interface (CONSOLE)

This interface adopts standard DB9 female connector, the foot position is defined as follows:

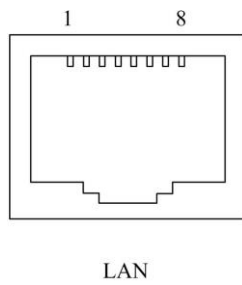


- 1: No Connect
- 2: TX
- 3: RX
- 4: No Connect
- 5: GND
- 6: No Connect
- 7: No Connect
- 8: No Connect
- 9: No Connect

This equipment's serial communication uses standard NRZ format, start bit is 1-bit, data bit is 8-bit, stop bit is 1-bit, and the baud rate is 115200.

2) LAN communication interface

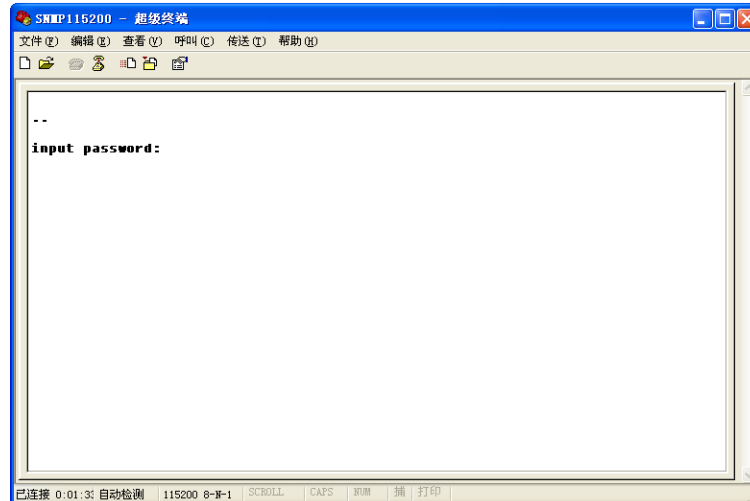
It uses standard RJ45 connectors; the foot position is defined as follows:



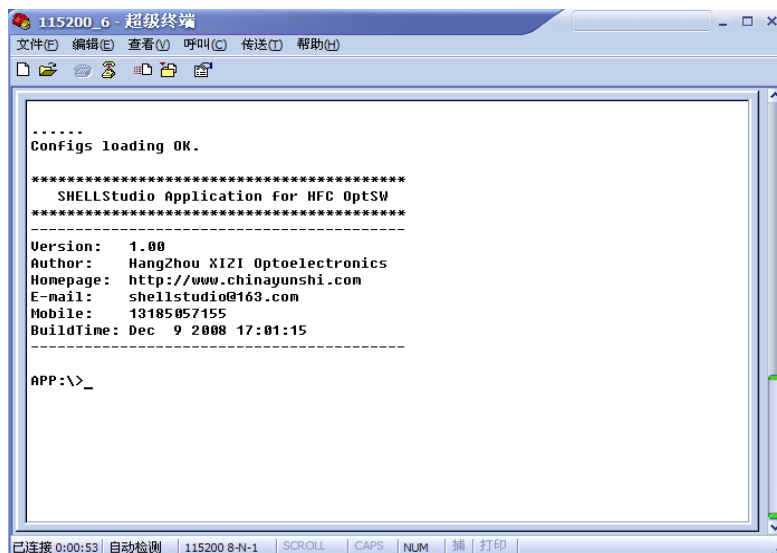
- 1: TX+
- 2: TX-
- 3: RX+
- 4: No Connect
- 5: No Connect
- 6: RX-
- 7: No Connect
- 8: No Connect

6.2 The configuration of operating parameters

In the case that power is off, connecting the RS232 port and computer's serial port with a serial line, opening the Windows HyperTerminal, and then turning on the power supply, you will see the following pictures. At the time, you can press "Enter" key in your PC keyboard to enter the bootstrap program, and create some advanced configuration. The bootstrap program looks like BIOS setup program in PC. In general, there is no need for the user to enter the bootstrap program to set parameters, so we added a password for the bootstrap program to prevent destroying the normal configuration.



Skip the bootstrap program, the application is started normally, as follows:



With this method, you can input commands in this interface, and configure relevant operating parameters.

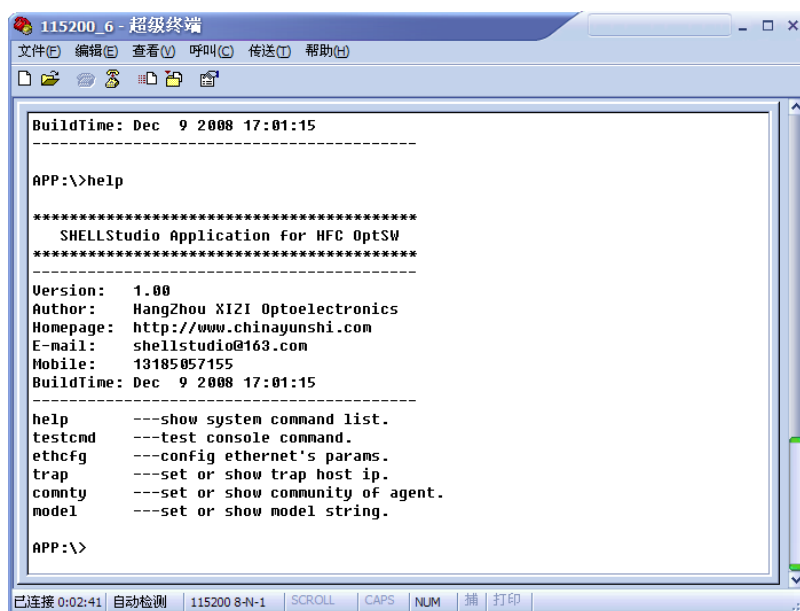
The system supports following commands:

help	list the system command
ethcfg	configure the Ethernet operating parameters
trap	configure the Host IP address of SNMP Trap
comnty	configure SNMP community name
model	configure the information of LOGO

The specific usage:

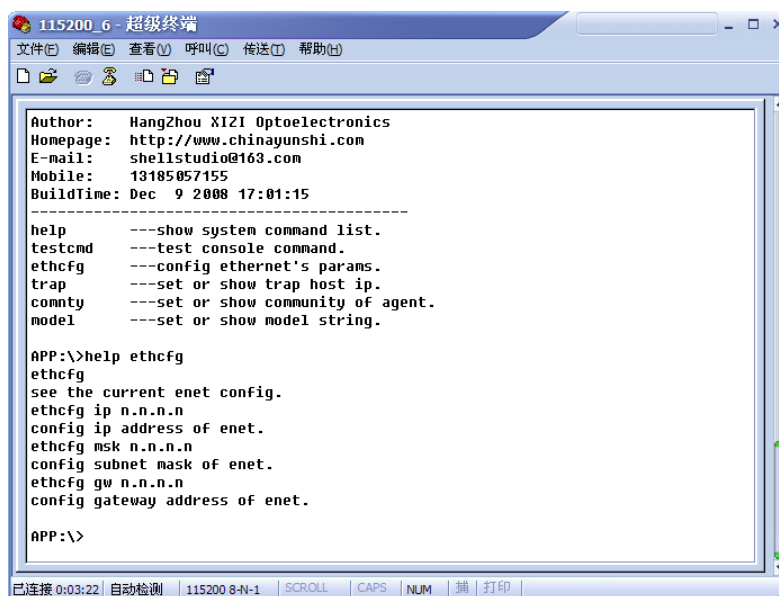
help

This command is used to display the version number, the program name, and the command list of system.



```
BuildTime: Dec 9 2008 17:01:15
-----
APP:\>help
*****
SHELLStudio Application for HFC OptSW
*****
Version: 1.00
Author: HangZhou XIZI Optoelectronics
Homepage: http://www.chinayunshi.com
E-mail: shellstudio@163.com
Mobile: 13185057155
BuildTime: Dec 9 2008 17:01:15
-----
help ---show system command list.
testcmd ---test console command.
ethcfg ---config ethernet's params.
trap ---set or show trap host ip.
comnty ---set or show community of agent.
model ---set or show model string.
APP:\>
```

You can also use the “help” command to display help information of other commands. For example, "help ethcfg", then following picture appears:



```
Author: HangZhou XIZI Optoelectronics
Homepage: http://www.chinayunshi.com
E-mail: shellstudio@163.com
Mobile: 13185057155
BuildTime: Dec 9 2008 17:01:15
-----
help ---show system command list.
testcmd ---test console command.
ethcfg ---config ethernet's params.
trap ---set or show trap host ip.
comnty ---set or show community of agent.
model ---set or show model string.
APP:\>help ethcfg
ethcfg
see the current enet config.
ethcfg ip n.n.n.n
config ip address of enet.
ethcfg msk n.n.n.n
config subnet mask of enet.
ethcfg gw n.n.n.n
config gateway address of enet.
APP:\>
```

ethcfg

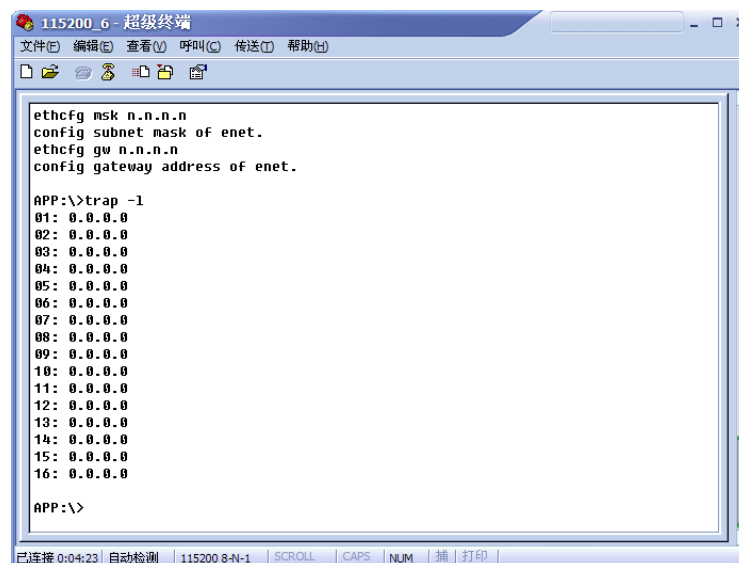
It is used to configure the Ethernet parameters, including IP address, subnet mask, and gateway.

As to the usage, you can refer to such command’s help information.

trap

This command is used to display or modify the IP address list that SNMP trap sends to the host. Trap-l command displays the target server list; trap-m command modifies

the target server list, as follows:



```
115200_6 - 超级终端
文件(F) 编辑(E) 查看(V) 呼叫(C) 传送(T) 帮助(H)

ethcfg msk n.n.n.n
config subnet mask of enet.
ethcfg gw n.n.n.n
config gateway address of enet.

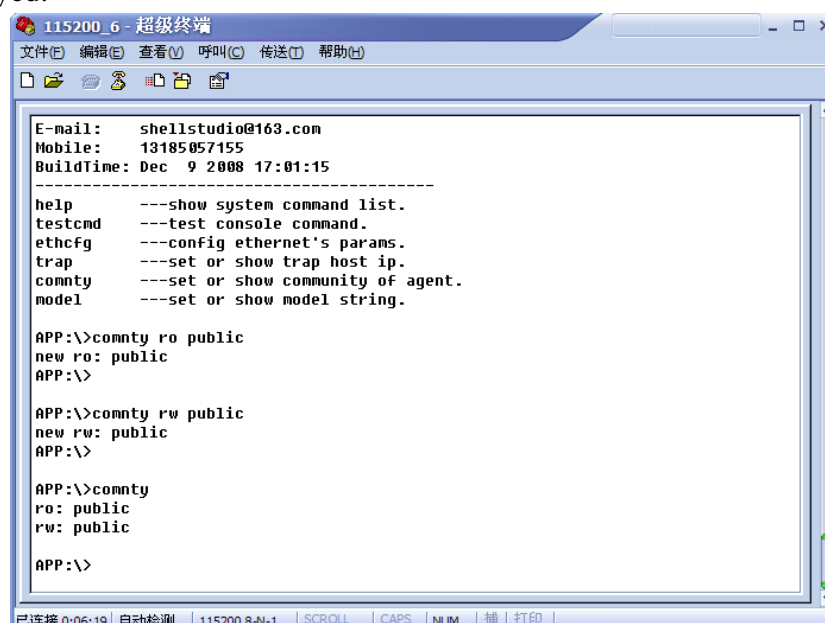
APP:\>trap -1
01: 0.0.0.0
02: 0.0.0.0
03: 0.0.0.0
04: 0.0.0.0
05: 0.0.0.0
06: 0.0.0.0
07: 0.0.0.0
08: 0.0.0.0
09: 0.0.0.0
10: 0.0.0.0
11: 0.0.0.0
12: 0.0.0.0
13: 0.0.0.0
14: 0.0.0.0
15: 0.0.0.0
16: 0.0.0.0

APP:\>
```

If the IP address is 0.0.0.0 or 255.255.255.255, it indicates these addresses are non-existent and the SNMP trap will not be sent to these addresses.

comnty

This command is used to configure the SNMP read-only community names and read-write community names. "Group name" is the concept of SNMP protocol, which is equivalent of SNMP password. You can set read-only community name with the command "comnty ro", and set read-write community name by using "comnty rw". In the example of inputting "comnty rw public", the "public" is read-write community name. If no parameter is added, the read-only and the read-write community names are displayed.



```
115200_6 - 超级终端
文件(F) 编辑(E) 查看(V) 呼叫(C) 传送(T) 帮助(H)

E-mail: shellstudio@163.com
Mobile: 13185057155
BuildTime: Dec 9 2008 17:01:15
-----
help      ---show system command list.
testcmd   ---test console command.
ethcfg    ---config ethernet's params.
trap      ---set or show trap host ip.
comnty    ---set or show community of agent.
model     ---set or show model string.

APP:\>comnty ro public
new ro: public
APP:\>

APP:\>comnty rw public
new rw: public
APP:\>

APP:\>comnty
ro: public
rw: public

APP:\>
```

- Note:**
1. In the cleaning process for the optical fiber connector, the connector should not be aimed to the body or eyes, this may cause permanent injury.
 2. The force used to install the optical fiber connector must be appropriate, or it may damage the ceramic tube in the adapter. If it is damaged, the Output Power will decline.
 3. Any operation to the optical fiber should be done in the case that the pump laser is turned off; otherwise the high-power output may potentially burn out or damage the optical fiber connector.



Provided by: Mega Hertz | 800-883-8839 | info@go2mhz.com | www.go2mhz.com