
OPTICAL

SYSTEMS

DESIGN

OPERATOR MANUAL

OSD8020

NETWORK CONCENTRATOR CARD

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1 TECHNICAL SUMMARY

1.1 BRIEF DESCRIPTION

1.1.1 OVERVIEW

The OSD Network Management System (NMS) is designed to be implemented in an SNMP (Simple Network Management Protocol) or Web Browser Based environment, in order to remotely check running status or to configure an OSD optical modem product.

The OSD8020 Concentrator Card can be plugged into any slot of the OSD350N or OSD370N chassis, connecting with other modem cards through a data bus on the backplane. The OSD8020 Concentrator is responsible for collecting running status from all other modem cards in the same chassis, responding to the data demands from the NMS Server (NMS Manager), and automatically sending notifications to the NMS Server once an alarm event occurs.

The OSD8020 has an embedded Linux Operating System with a pre-assigned IP address and an individual MAC address and supports full TCP/IP protocols. An authorized administrator can access an OSD8020 locally from the VCP port on the rear of the unit, or remotely via the Fiber or Copper Ethernet port.

1.1.2 FEATURES

- ▲ Intelligent remote monitoring and configuration, being compatible with standard SNMPv1, v2c and v3, and any third party SNMP software.
- ▲ Accessible through any standard Internet Web-browser from any location, with a graphical rack display.
- ▲ Chassis level and device level dynamical virtual panel display on Web-browser based GUI.
- ▲ Alarm notification functions.
- ▲ Configuration of OSD8020 can be changed locally or remotely.
- ▲ Multiple chassis can be stacked together via concentrators in each chassis.
- ▲ Ethernet switching function among the three Ethernet ports on the front panel.

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1.2 TYPICAL CONFIGURATION

Figure 1 below indicates a possible set-up for an OSD8020 system.

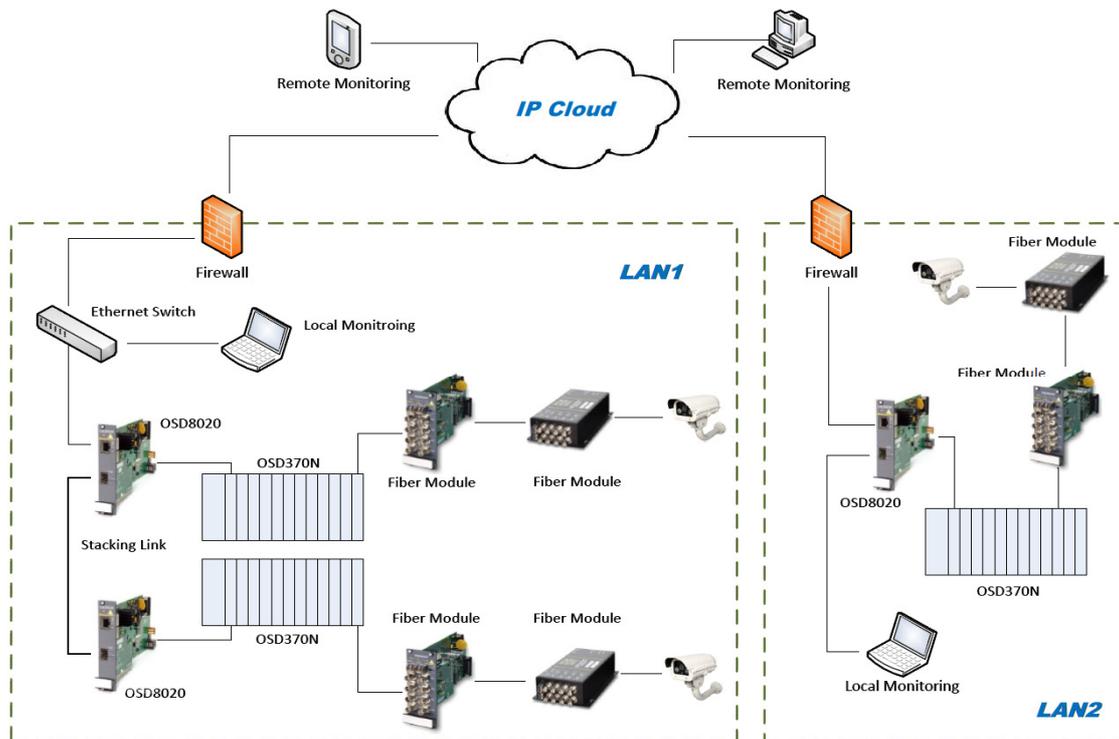


FIGURE 1: OSD8020 TYPICAL CONFIGURATION

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1.3 TECHNICAL SPECIFICATIONS

TABLE 1: TECHNICAL SPECIFICATIONS

SPECIFICATION	PERFORMANCE
MIB (Management Information Base)	
OSD's MIBs are compatible with (SMIv2), as described in RFC 2578 and RFC 2579. OSD has three types of MIBs available: <ul style="list-style-type: none"> • System level MIB: OSD-TOP-MIB • Concentrator MIB: OSD8020-MIB • Optical Modem MIBB (One MIB per each product: eg OSD8817-MIB) 	
Management Interface and Functions	
SNMP Interface	SNMPv1, v2c and v3, MIB file being compatible with RFC1212 standard
We Browser Interface	IE, Firefox, Chrome, Safari, Opera, etc
Management Functions	The OSD8020 Concentrator continuously monitors the running status of each modem in the same chassis and is able to offer two types of data responses to the NMS Server, for both SNMP or Web-Browser based NMS: <ul style="list-style-type: none"> • Responds to demands received from the NMS Server eg. "GET" or "SET" operations of SNMP • Sends a notification to the NMS Server when an alarm event occurs eg. Send notification of "Card IN" or "Card OUT" to a "TRAP" receiver of SNMP
Ethernet	
Default IP Address	192.168.0.99
Subnet Mask	255.255.255.0
Default Gateway	192.168.0.2
Copper Port	Two RJ45 copper ports, IEEE802.3i/802.3u/802.3ab for 10/100/1000Mbps
Operating Mode	Half of full duplex for 10/100Mbps, Full duplex for 1000Mbps
Copper Port Flow Control	Pause frames for full-duplex, back pressure for half-duplex
Fiber Port Type	One SFP fiber port, IEEE802.3u, 100Base-Fx
Fiber Connector	LC for SFP
NMS Physical Interface	
SNMP or Web based GUI	Via Ethernet Copper or fiber port on the front panel
CLI Interface	Option 1: VCP (Virtual COM Port, type B USB port on back) Option 2: SSH remote CLI via Ethernet Copper or Fiber port
Optical	
Transmitter Wavelength	1310 ±30nm
Transmit Optical Power	>-10dBm to -4dBm (-5dBm and +2dBm @ 1310nm and 1550nm are optional)
Receiver Sensitivity	<-21dBm
Standard Optical Link Budget	>11dB: >800m on multimode fiber @ 1310nm (Fiber bandwidth limited) >20km on singlemode fiber @ 1310nm >40km on singlemode fiber @ 1550nm
Optional Optical Link Budget	>23dB: >100km on singlemode fiber with optional 1550nm devices
Various SFP Options Possible	Short haul, long haul, single fiber operation, etc. Please consult OSD DATASHEET #1002100002 or contact OSD
Physical	
Dimensions (mm)	25W x 208D x 100H (card)
Weight	0.3kg (card)
Operating Temperature	-20°C to +75°C
Relative Humidity	0 to 95% non-condensing
Chassis Current Consumption	0.90 Amp when fully optioned

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1.4 OSD8020 FRONT AND REAR PANELS

There are two fixed copper ports for 10/100/1000Base-T and one SFP port which can be either copper or fiber on the front panel. The rear panel consists of a RJ11 data connector, 4-Way DIP switch, Type-A USB connector, Type-B USB connector, and a DB9M power connector. Each section will be described further throughout this manual.

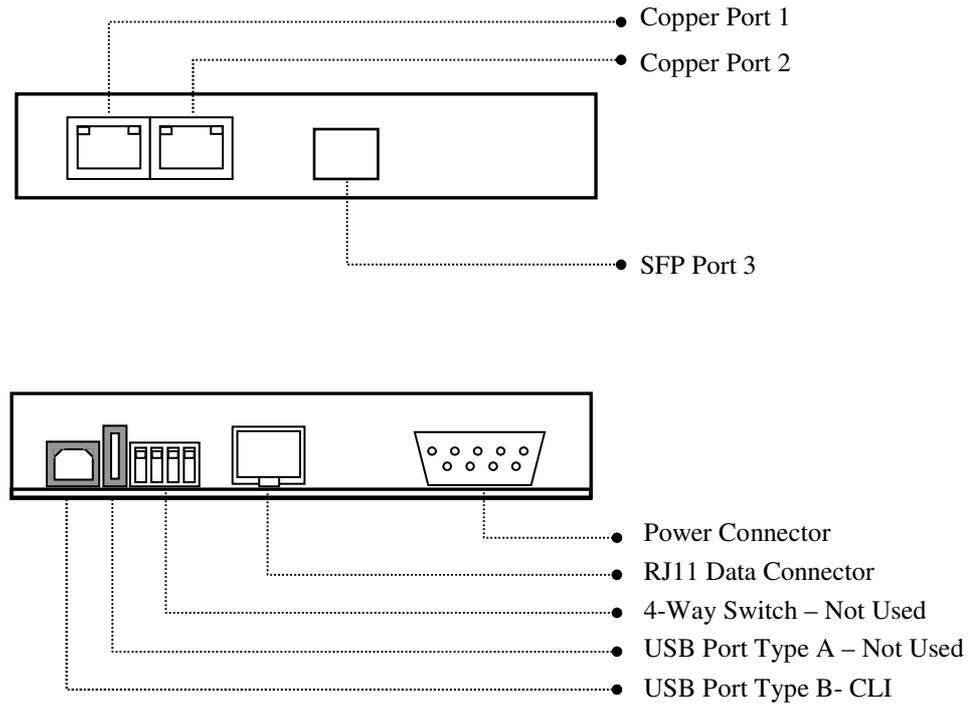


FIGURE 2: OSD8020 CONNECTORS

2 INSTALLATION AND OPERATION

2.1 INTRODUCTION

This section outlines the methods required to install and operate the OSD8020 successfully. It should be studied carefully if damage to the equipment or poor results are to be avoided.

This equipment has been fully tested prior to dispatch and is ready for immediate operation. However it is advisable to check for external transportation damage before operation. If damage is evident, return the unit with the packaging to your supplier immediately.

2.2 INSTALLATION

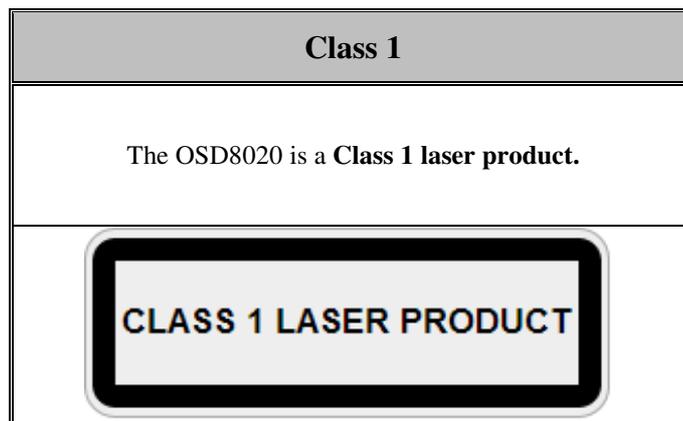
2.2.1 WARNING AND PRECAUTIONS

▲ ELECTROMAGNETIC COMPATIBILITY

WARNING: This is a Class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

▲ OPTICAL OUTPUT OPERATION

WARNING: Laser Safety: Class 1 Laser Product per IEC/EN 60825-1:20011 standard.



PRECAUTIONS

- ▲ All service personnel should be provided training as to the hazards of direct viewing of laser radiation and of the precautionary measures during servicing of equipment
- ▲ Areas where laser products are installed should be restricted in access to trained service personnel only and appropriate warning signs posted in the work area.
- ▲ All laser apertures should be covered by protective covers when not connected to optical fibers. Never leave outputs uncovered.
- ▲ Laser equipment should be positioned above or below eye level where possible. Apertures should be positioned away from personnel.
- ▲ Protective eyewear should be worn in the vicinity of laser equipment.

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2.2.2 OSD8020 DRAWINGS AND DIMENSIONS

The OSD8020 is designed to be inserted into a chassis and secured by means of captivated screws.

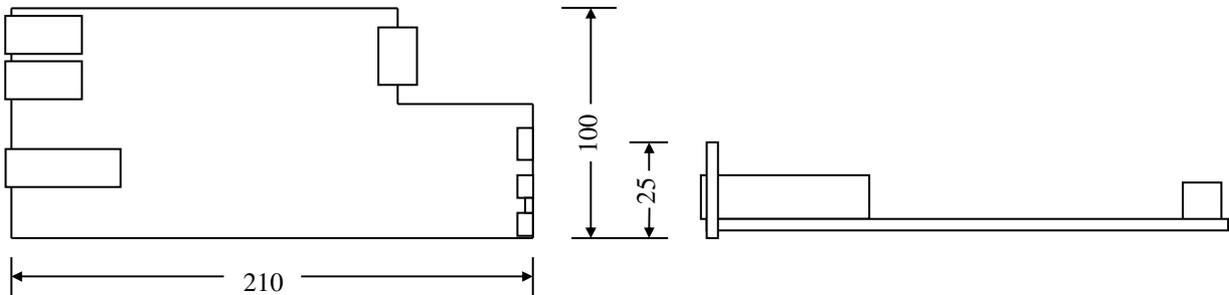


FIGURE 3: OSD8020 MOUNTING DIMENSIONS

2.2.3 POWER SUPPLY CONNECTIONS

The OSD8020 is powered from the OSD370N or OSD350N chassis. DC power on the OSD8020 is connected via the DB9 connector and should be fixed into the OSD370N (or OSD350N) chassis using the captivated screws. The card can be plugged in or out of the chassis with power on or off.

2.2.4 ALARM CONNECTIONS

The OSD8020 has two contact closure channels. The contact closure inputs (Pin 5 & 6 on the 6-way cage clamp connector) is driven high. To operate the contact closure, the input should be switched to ground.

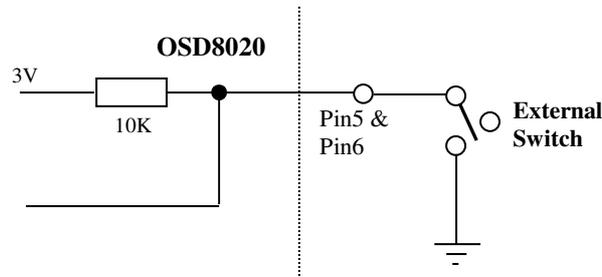


FIGURE 4: CONTACT CLOSURE INPUTS

The contact closure outputs (Pin 1 & 3 on the RJ11 connector) are to be connected to the relay coil. Maximum ratings the OSD8020 can drive is 1.5A @ 24V_(max).

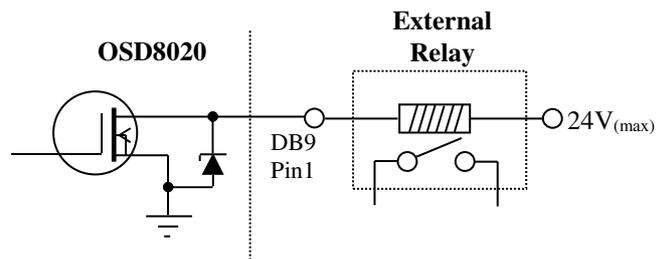


FIGURE 5: CONTACT CLOSURE OUTPUTS

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TABLE 2: DATA/ALARM CONNECTIONS

RJ11	Specification
Pin 1	Gnd
Pin 2	Ch 2 Contact Closure Output
Pin 3	Ch 1 Contact Closure Output
Pin 4	Gnd
Pin 5	Ch 2 Contact Closure Input
Pin 6	Ch1 Contact Closure Input

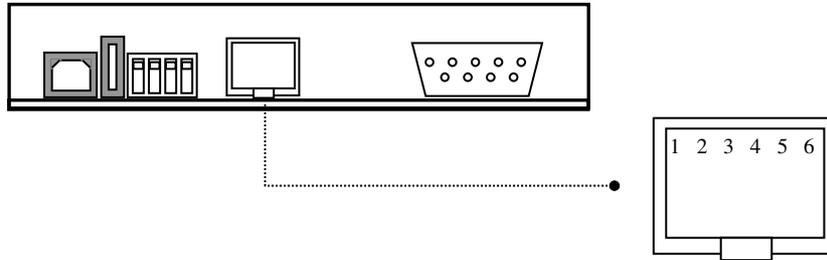


FIGURE 6: OSD8020 CONTACT CLOSURE CONNECTIONS

To connect alarm cabling for the OSD8020, ensure that the unit is connected and secured onto the chassis then insert the RJ11 plug end on the supplied cable to the rear of the OSD8020. Connect the DB9 end of the supplied cable to the rear of the OSD350N chassis (see APPENDIX 1)

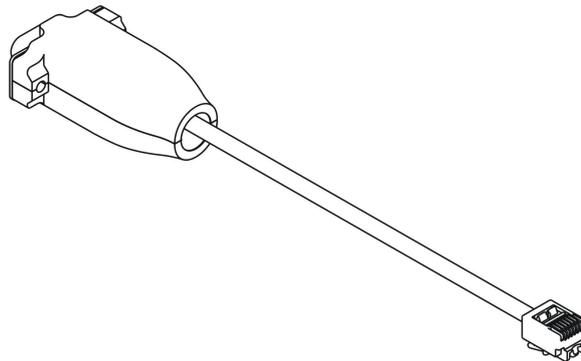


FIGURE 7: ALARM CABLING

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2.2.5 RJ45 COPPER PIN ASSIGNMENTS

Figure 8 shows the pin configuration for both the fixed copper ports and the SFP port fitted with RJ45 copper port

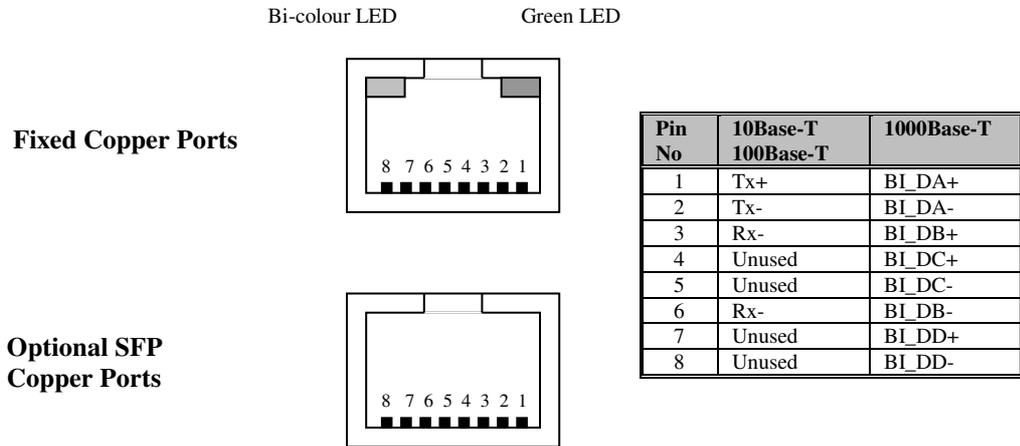


FIGURE 8: FIXED 10/100/1000BASE-T ETHERNET RJ45 CONNECTORS

2.2.6 USB CONNECTOR

The OSD8020 has a USB – Type B connector located on the rear of the unit that is used for Command Line Interface (CLI) from the PC to the OSD8020 via the PC’s USB connector. See section 2.4 for further CLI information.

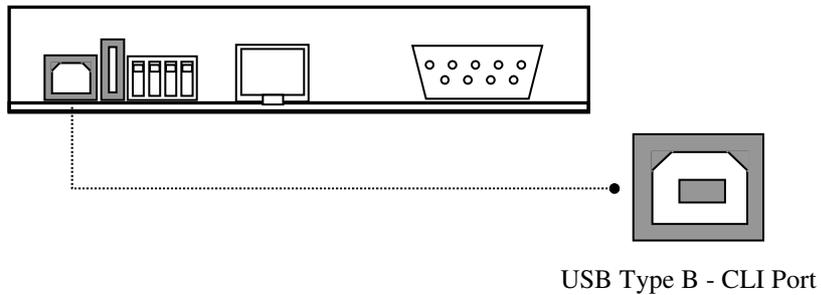


FIGURE 9: USB TYPE B CLI PORT

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To operate and control the OSD8020 using the CLI over USB an OSD8020 driver will be required to be installed onto the PC being used (NOTE: Only if using USB based CLI). The driver can be found on the included CD or available on the OSD website. Please contact OSD sales if the driver cannot be found or installed. For Windows XP, Vista and Windows 7:

CP210x_VCP_Win_XP_S2K3_Vista_7.exe. For Windows 2000: CP210x_VCP_Win2K.exe

For Ethernet/SSH based CLI, the driver is not required to be installed.

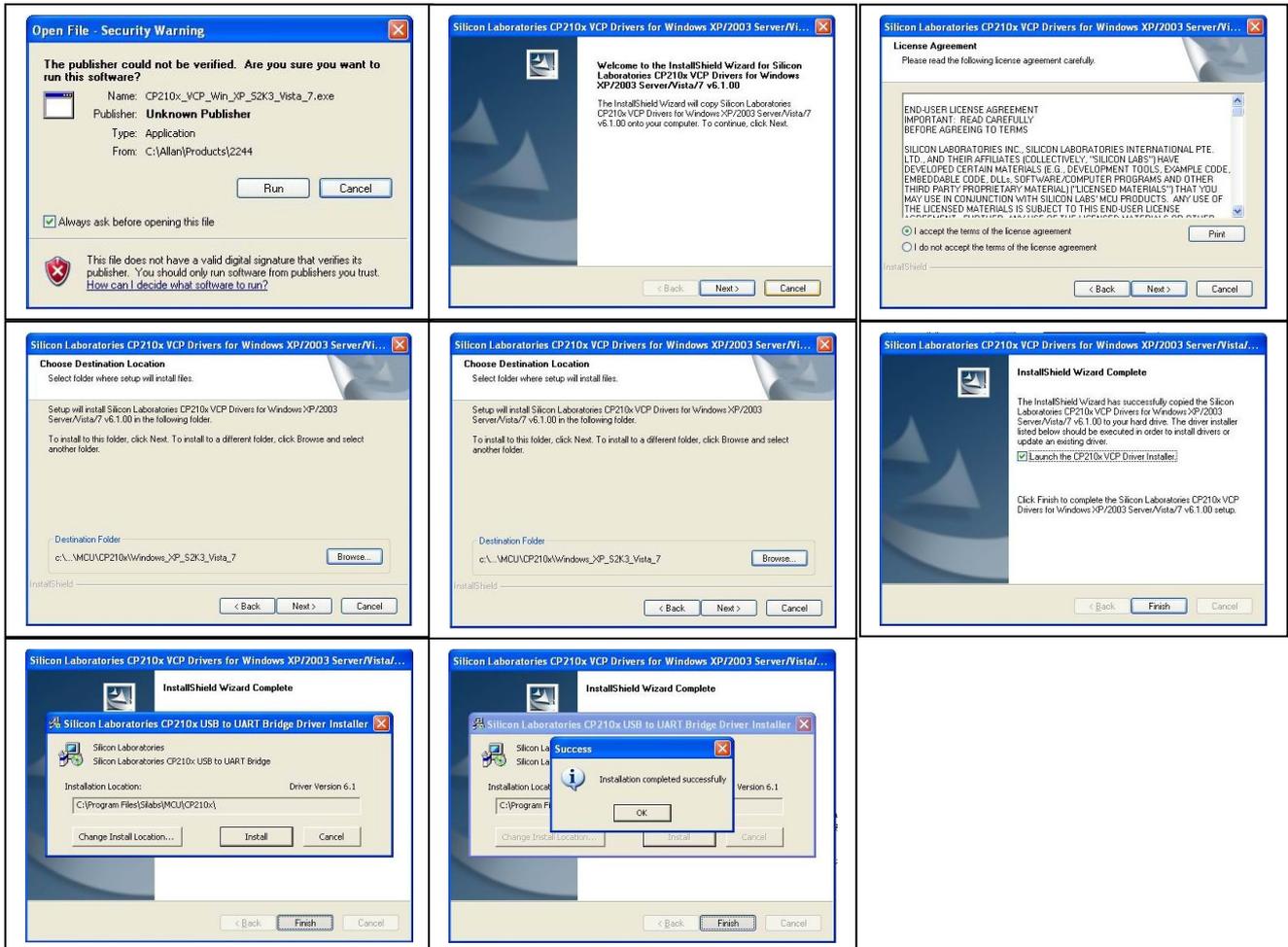


FIGURE 10: WIN XP INSTALLATION

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2.2.7 PORT ALLOCATION AND LED INDICATORS

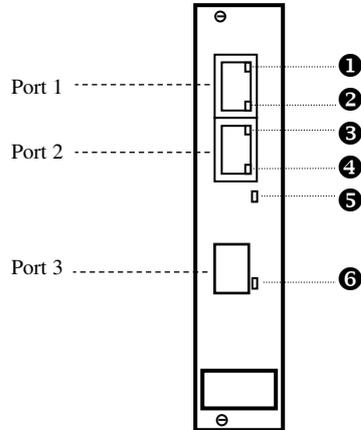


FIGURE 11: PORT/LED

TABLE 3: LED FUNCTION

* Note On LED could be either Green or Amber

No	Function			LED Colour Function		
	On	Blink	Off	Green	Gr/Am	Amber
①	No Activity	Activity	No Link	1Gbps	100Mbps	10Mbps
②	Full Duplex	-	Half Duplex	On*	-	On*
③	No Activity	Activity	No Link	1Gbps	100Mbps	10Mbps
④	Full Duplex	-	Half Duplex	On*	-	On*
⑤	Power On	-	Power Off	On	-	-
⑥	No Activity	Activity	No Link	-	-	100Mbps

2.2.8 UNUSED CONTROLS

The OSD8020 has a 4-way DIP switch and USB-A connector which are currently not used.

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2.2.9 FITTING SFP CONNECTORS

Care should be taken when inserting/removing the SFP connectors from SFP port 3 as SFP modules are Electrostatic (ES) sensitive and Electrostatic Discharge (ESD) precautions should be taken when installing. Ensure that the SFP is fully engaged and latched into position.

Inserting SFP – Ensure that the SFP lever is in the locked position and insert into appropriate SFP port. Gently push the SFP until it locks into place. Remove plastic/rubber dust cap and fit fiber cable or RJ45 plug.

Removing SFP – Remove fiber connector or RJ45 plug. Pull the SFP lever down to unlock SFP from housing. Using the lever, gently pull the SFP out.

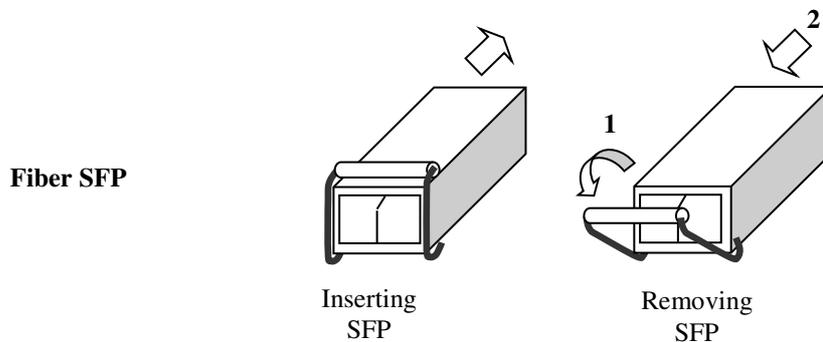


FIGURE 12: FITTING/REMOVING SFP CONNECTORS

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2.3 OSD8020 OPERATION

When using the OSD8020 for the first time, check that the unit is in good condition with no visible damage.

Insert the OSD8020 card into the first slot (Slot 12 – closest to the OSD921 PSU) on the OSD370N or OSD350N chassis and check that the indicators illuminate accordingly on power up (see Table 3).

2.3.1 CONNECTIONS

For RJ45 connection use Category 5 (CAT5) or higher. Length should be no more than 100 meters.

For singlemode fiber connections, fiber used must be 9/125 μ m singlemode fiber.

For multimode fiber connections, fiber used must be 50 or 62/ 125 μ m multimode fiber.

Plug in the appropriate connectors for system configuration;

- RJ45 cable to fixed copper ports (port 1 and 2) and copper SFP modules
- LC fiber cable to fiber SFP modules.

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2.4 COMMAND LINE INTERFACE

The Command Line Interface (CLI) is a useful tool for changing IP addresses, configure trap receivers, etc. To enable the use of CLI the OSD8020 should be connected to a PC with either a USB port cable or Ethernet cable. Using a terminal emulation program such as Hyperterminal or PuTTY, a number of command lines specific to the OSD8020 can be implemented.

2.4.1 TERMINAL EMULATION SETUP

Using a terminal emulation program such as hyperterminal or PuTTY (www.putty.org) the following parameters should be set up for correct command line operation. Select the appropriate “COM port” set up for the serial port.

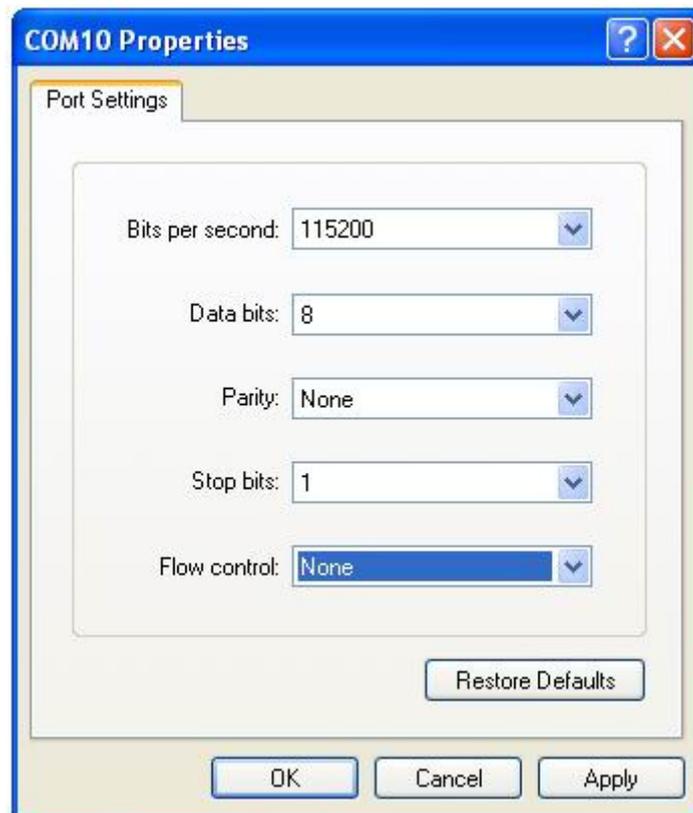


FIGURE 13: SERIAL PORT SETTINGS

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2.4.2 COMMAND LINE FUNCTIONS

There are a number of command line functions that enables the user to configure the OSD8020 unit. This section explains the command lines and its functions.

When the terminal emulation program is operating, connect the USB or Ethernet cable to the OSD8020 unit. Note: A home message will be displayed on the terminal emulation program when the user hits 'Enter' key.

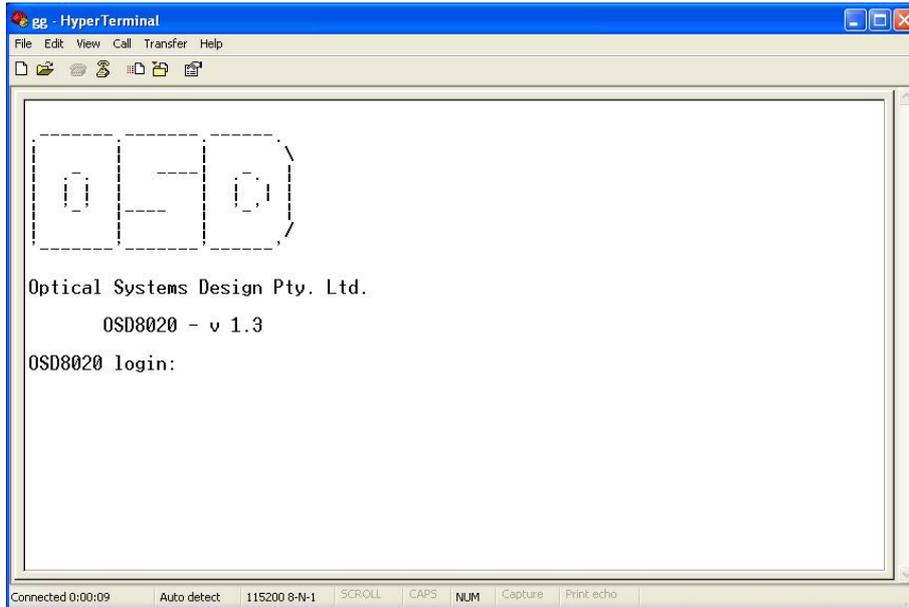


FIGURE 14: INITIAL COMMAND LINE SCREEN

The following table outlines the user available command line commands and their functions

TABLE 4: TERMINAL COMMAND LINES

TERMINAL COMMAND LINE	FUNCTION	FIGURE
passwd	Set up a password	-
rstpass	Reset the 'admin' password	Figure 15
reboot	Reboots the Linux operating system	Figure 17
ifconfig	View network configuration	Figure 18
netconfig	Change network configuration	Figure 19
trapconfig	Install/remove trap receivers	Figure 21
vi	Basic text editor	-
sed-I'/com2sec mynetwork/d' snmpd-conf.conf	Delete previous access point	
sed-I'/com2sec/a\com2sec mynetwork 172.16.0.0/16 osd' snmpd-conf.conf	Add new access point	-

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LOGIN - <ADMIN> COMMAND LINE

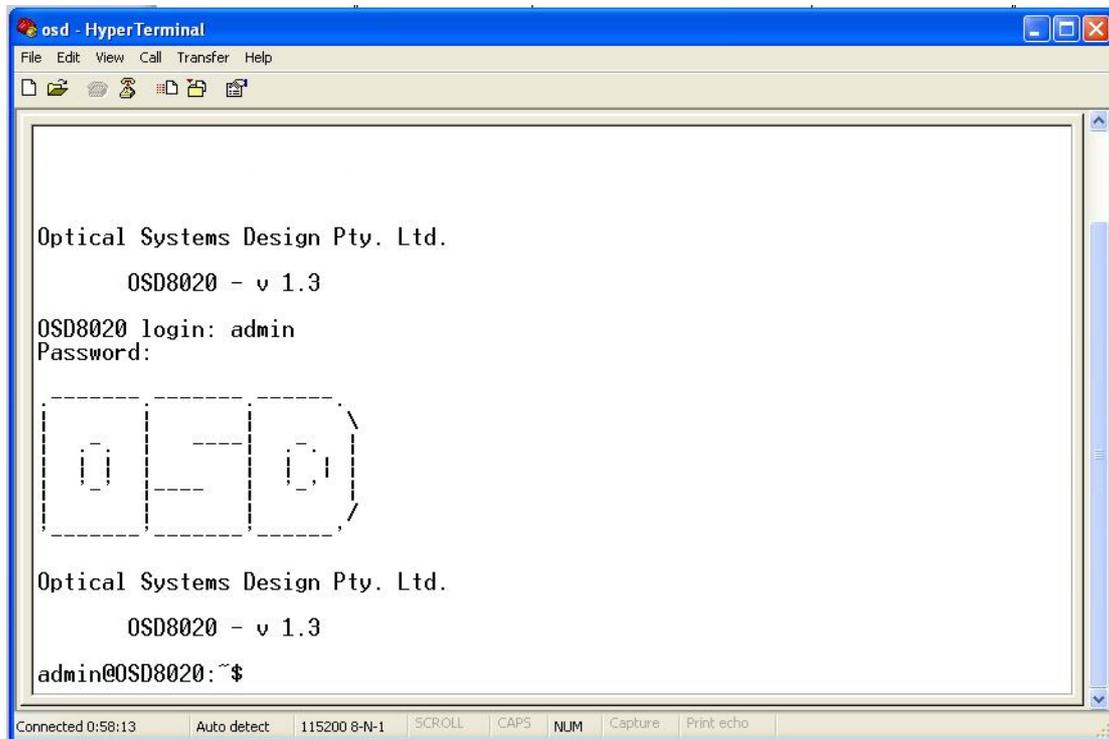


FIGURE 15: PASSWORD SETUP

To login enter **admin**
Password: hit <Enter>

An admin@OSD8020 prefix is displayed showing that the access has been granted.

To establish a remote CLI connection with the OSD8020, follow these steps;

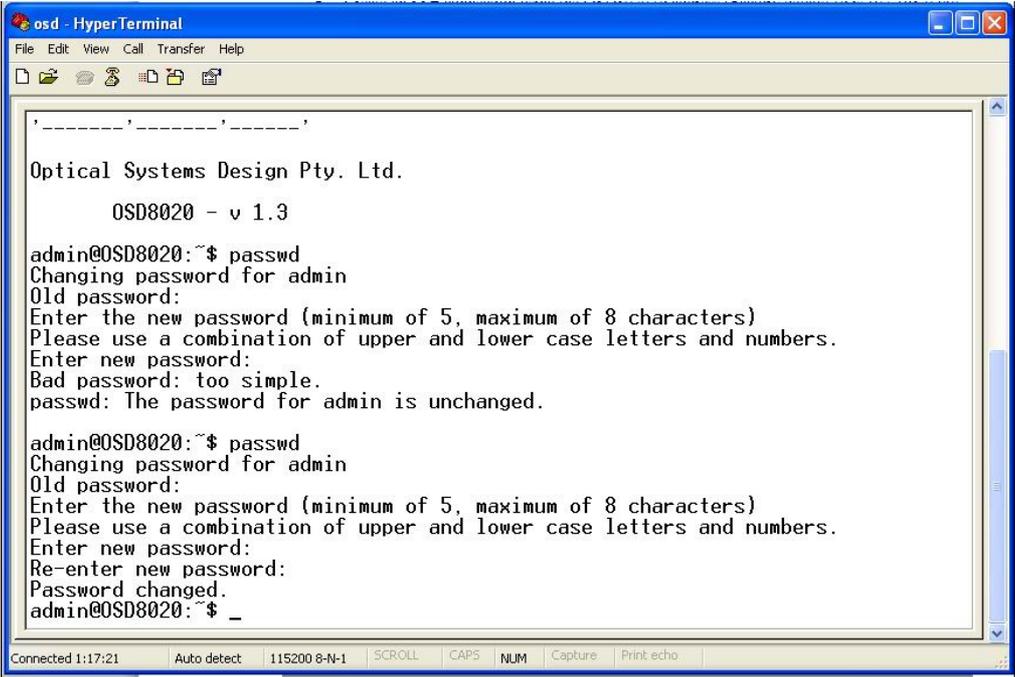
- Open SSH client (eg PuTTY, HyperTerminal, etc) from the desktop PC
- Create an SSH connection using the OSD8020 IP address (Factory default IP is 192.168.0.99). The default SSH port is 22

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ADMINISTRATOR PASSWORD -<passwd> Command line

To setup a new password other than the OSD default follow these steps;

- Establish connection between PC and OSD8020 using either Ethernet or USB
- Login as admin with password blank (hit <enter>)
- Type **passwd**
- A prompt to enter old password appears (Initially this is blank ie hit <enter>)
- The user will be prompted to then enter the password and re-enter the password. Password must be a combination of upper and lower case and contain at least one number (see Figure 16). If the password does not contain the minimum requirement, password will remain unchanged.



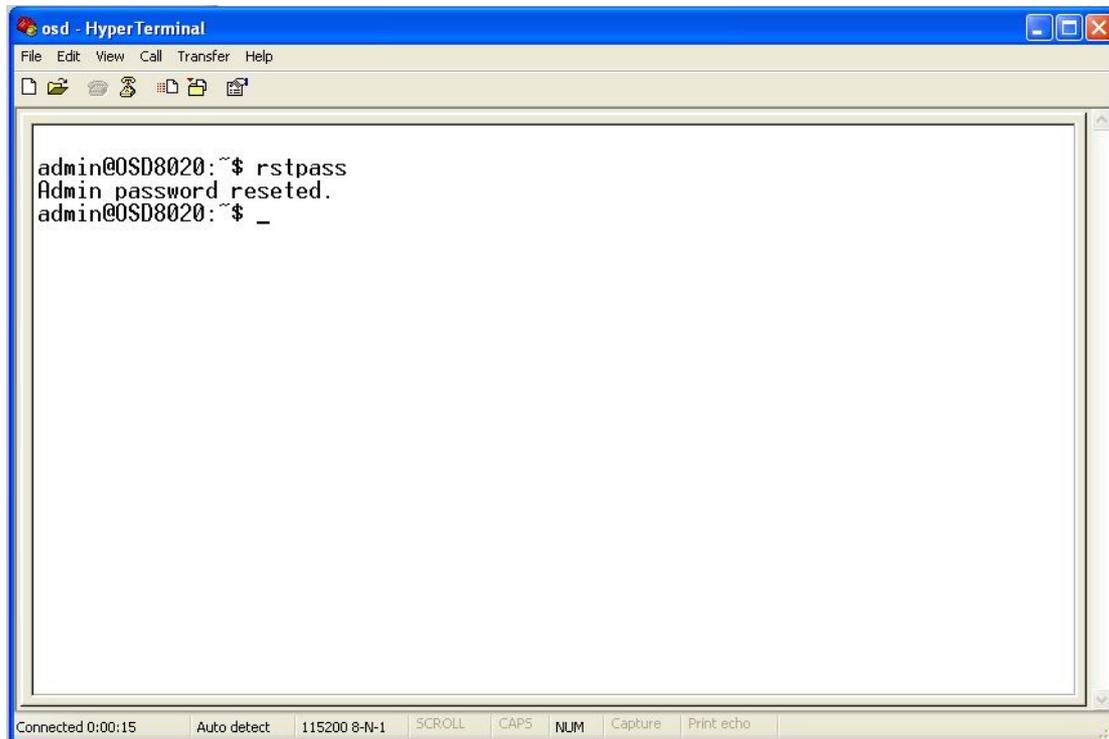
```
osd - HyperTerminal
File Edit View Call Transfer Help
'-----'-----'-----'
Optical Systems Design Pty. Ltd.
OSD8020 - v 1.3
admin@OSD8020:~$ passwd
Changing password for admin
Old password:
Enter the new password (minimum of 5, maximum of 8 characters)
Please use a combination of upper and lower case letters and numbers.
Enter new password:
Bad password: too simple.
passwd: The password for admin is unchanged.

admin@OSD8020:~$ passwd
Changing password for admin
Old password:
Enter the new password (minimum of 5, maximum of 8 characters)
Please use a combination of upper and lower case letters and numbers.
Enter new password:
Re-enter new password:
Password changed.
admin@OSD8020:~$ _
Connected 1:17:21 Auto detect 115200 8-N-1 SCROLL CAPS NUM Capture Print echo
```

FIGURE 16: SETTING NEW PASSWORD

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PASSWORD RESET - <RSTPASS> COMMAND LINE



The screenshot shows a HyperTerminal window titled "osd - HyperTerminal". The window contains a terminal session with the following text:

```
admin@OSD8020:~$ rstpass
Admin password reseted.
admin@OSD8020:~$ _
```

The window also shows a menu bar (File, Edit, View, Call, Transfer, Help) and a status bar at the bottom with connection details: "Connected 0:00:15", "Auto detect", "115200 8-N-1", "SCROLL", "CAPS", "NUM", "Capture", and "Print echo".

FIGURE 17: PASSWORD RESET

The `rstpass` command line is a useful command for resetting a password if required. You will need to login as admin and enter current password.

Type in **rstpass** to reset the admin password (ie default password is blank)
Type in **exit** to end current session.

In the case where the password cannot be recalled login with the following credentials:

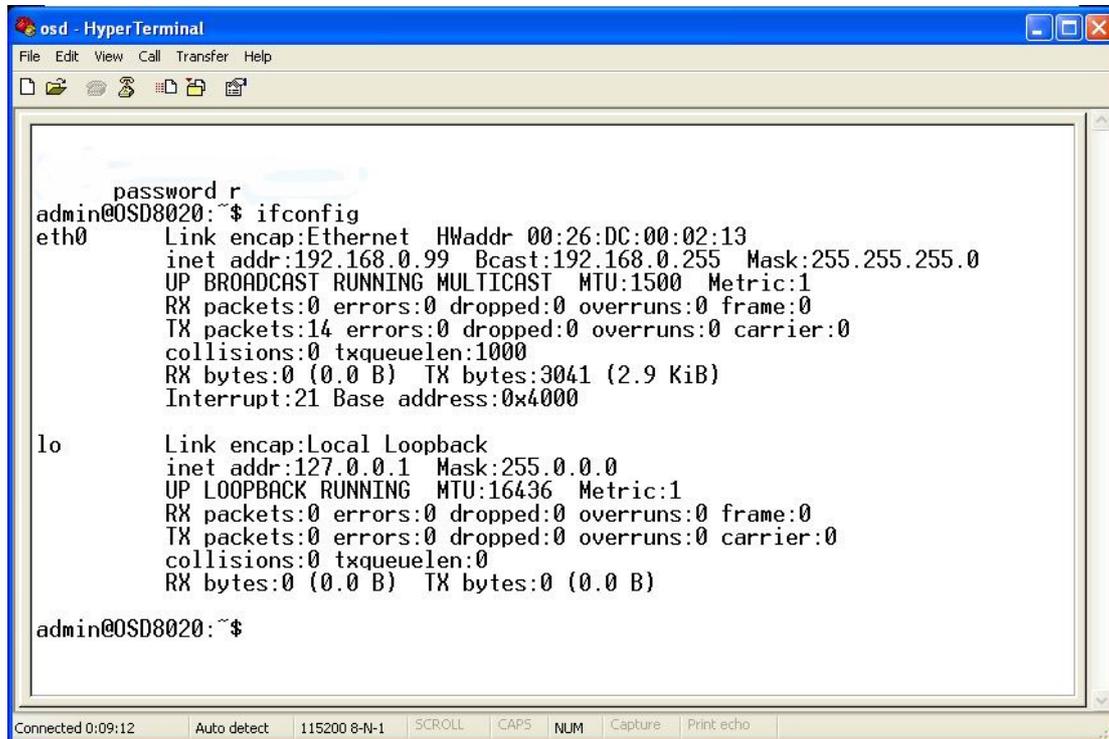
User: rst_admin
Password: A;7KLm

Then enter the following command to reset the password;

`rstpass`

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NETWORK CONFIGURATION - <ifconfig> Command Line



```
osd - HyperTerminal
File Edit View Call Transfer Help
password r
admin@OSD8020:~$ ifconfig
eth0      Link encap:Ethernet  HWaddr 00:26:DC:00:02:13
          inet addr:192.168.0.99  Bcast:192.168.0.255  Mask:255.255.255.0
          UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1
          RX packets:0 errors:0 dropped:0 overruns:0 frame:0
          TX packets:14 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:1000
          RX bytes:0 (0.0 B)  TX bytes:3041 (2.9 KiB)
          Interrupt:21 Base address:0x4000

lo        Link encap:Local Loopback
          inet addr:127.0.0.1  Mask:255.0.0.0
          UP LOOPBACK RUNNING  MTU:16436  Metric:1
          RX packets:0 errors:0 dropped:0 overruns:0 frame:0
          TX packets:0 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:0
          RX bytes:0 (0.0 B)  TX bytes:0 (0.0 B)

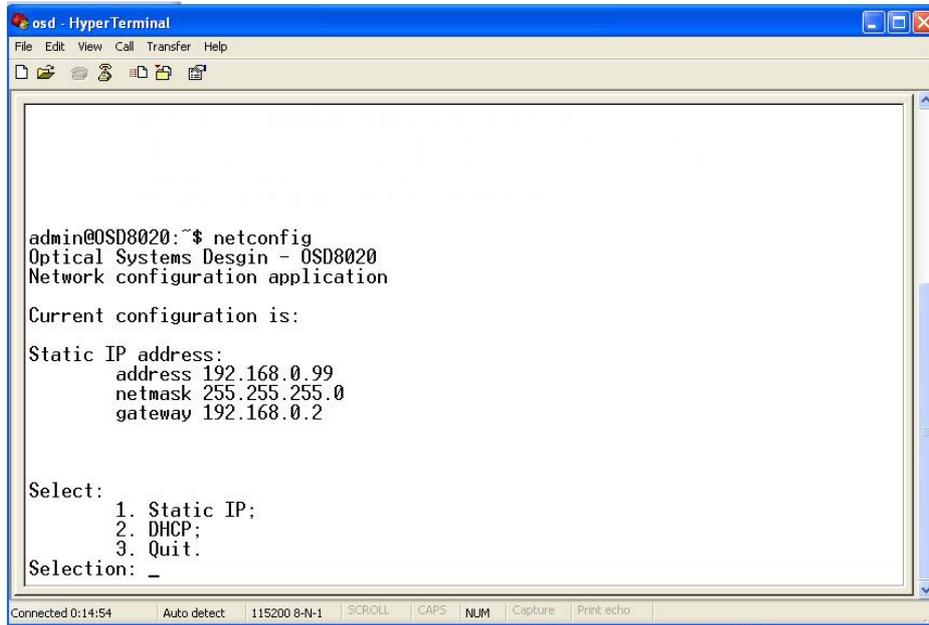
admin@OSD8020:~$
```

FIGURE 18: NETWORK CONFIGURATION

This command line displays the current configuration of the OSD8020 displaying information such as IP address, MAC address etc.

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CHANGE CONFIGURATION <netconfig> Command Line



```
osd - HyperTerminal
File Edit View Call Transfer Help
admin@OSD8020:~$ netconfig
Optical Systems Desgin - OSD8020
Network configuration application

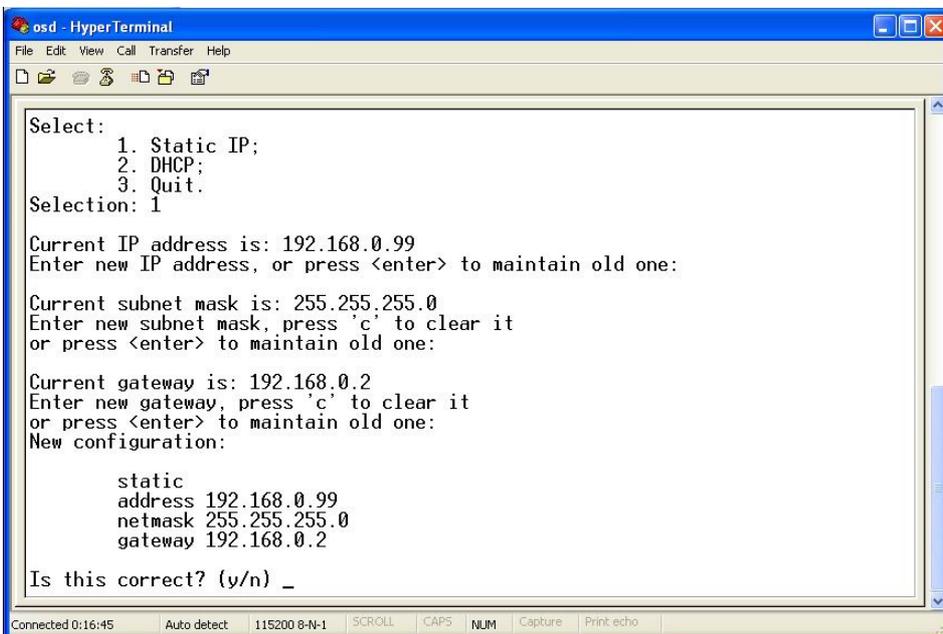
Current configuration is:

Static IP address:
  address 192.168.0.99
  netmask 255.255.255.0
  gateway 192.168.0.2

Select:
  1. Static IP;
  2. DHCP;
  3. Quit.
Selection: _
```

FIGURE 19: CHANGE CONFIGURATION

The netconfig command line displays the IP address, netmask and gateway settings. To change the static IP or DHCP, enter either <1> or <2>. Enter <3> to exit. After entering <1> to change the Static IP, the user will be shown the current settings and opportunity to change these settings. Follow screen prompts.



```
osd - HyperTerminal
File Edit View Call Transfer Help
Select:
  1. Static IP;
  2. DHCP;
  3. Quit.
Selection: 1

Current IP address is: 192.168.0.99
Enter new IP address, or press <enter> to maintain old one:

Current subnet mask is: 255.255.255.0
Enter new subnet mask, press 'c' to clear it
or press <enter> to maintain old one:

Current gateway is: 192.168.0.2
Enter new gateway, press 'c' to clear it
or press <enter> to maintain old one:
New configuration:

  static
  address 192.168.0.99
  netmask 255.255.255.0
  gateway 192.168.0.2

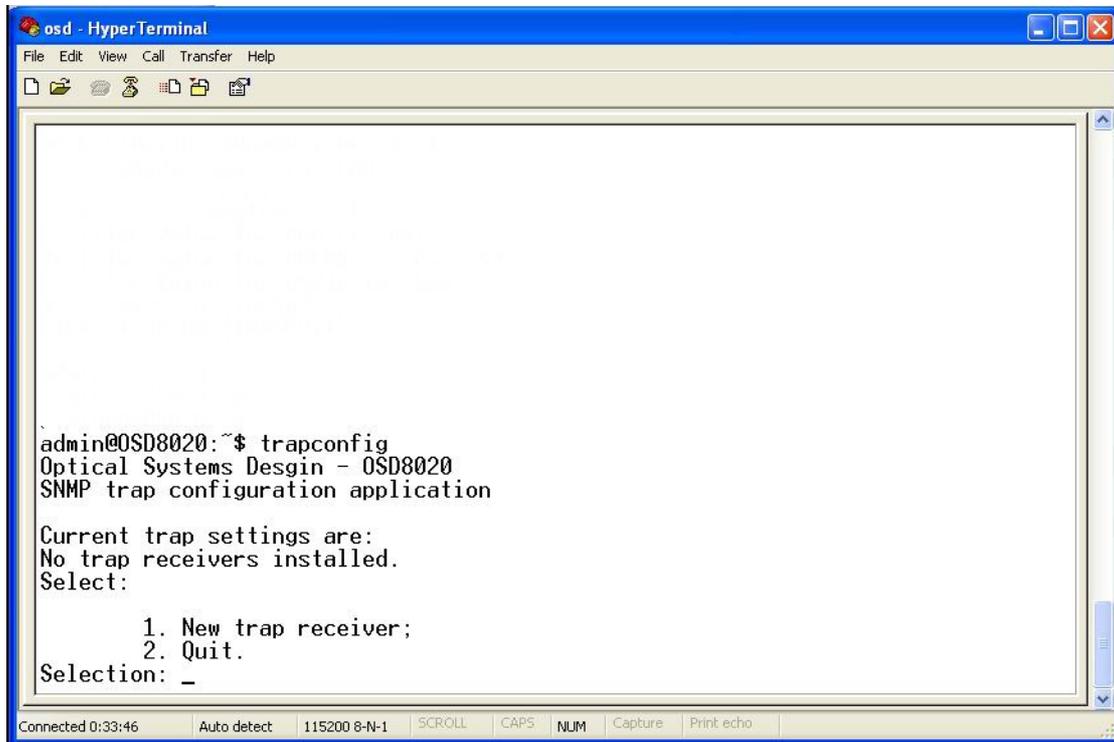
Is this correct? (y/n) _
```

FIGURE 20

Note: If using remote CLI, the connection will be interrupted before exiting. If the DHCP configuration is changed the user will need to discover the new IP address before connecting through SSH (use CLI via USB or external software)

OPTICAL SYSTEMS DESIGN

CONFIGURE TRAP RECEIVERS <trapcnfig> Command Line



```
osd - HyperTerminal
File Edit View Call Transfer Help
admin@OSD8020:~$ trapcnfig
Optical Systems Desgin - OSD8020
SNMP trap configuration application

Current trap settings are:
No trap receivers installed.
Select:

    1. New trap receiver;
    2. Quit.
Selection: _

Connected 0:33:46  Auto detect  115200 8-N-1  SCROLL  CAPS  NUM  Capture  Print echo
```

FIGURE 21: TRAP CONFIGURATION

Type 1 to configure the new trap receiver and follow the screen prompts.

Note1: The community will be automatically set to 'public'

Note2: Default TRAP receiver port is 161

OPTICAL SYSTEMS DESIGN

DELETE PREVIOUS ACCESS POINT

The default Access Point (User) for the OSD8020 SNMP is “**192.168.0.0/24**”

To change the Access Point to another, for example a new IP range as “**172.16.0.0/16**” and a new Community is “**osd**”, first log in as admin then the old Access point requires deletion. To delete the previous Access Point

```
sed -i '/com2sec mynetwork/d' snmpd-conf.conf
```

ADD NEW ACCESS POINT

To change the Access Point to another, for example a new IP range as “**172.16.0.0/16**” and a new Community is “**osd**”, first log in as admin then delete previous Access Point. Then a new Access Point is required to be added.

```
sed -i '/com2sec/a\com2sec mynetwork 172.16.0.0/16 osd' snmpd-conf.conf
```

Reset the OSD8020 for changes to come into effect.

Note1: To change Access Point to another, modify the IP range in the example above (172.16.0.0/16) as required and substitute 'osd' in the example above to the required Community group.

*Note2: “192.168.0.0/24” is a CIDR notation, see details at:
http://en.wikipedia.org/wiki/CIDR_notation#CIDR_notation*

3 MAINTENANCE

3.1 INTRODUCTION

The following section outlines the fault-finding procedure for the OSD8020 modems. Please take note of the following:

- ▲ Personnel without appropriate training should not attempt any maintenance except that outlined below.
- ▲ If further maintenance is attempted you are warned that every care should be taken to ensure that internal measurements made while the equipment is operational are taken carefully as some components within the unit are expensive and may be damaged by failure of any portion of their support circuitry.
- ▲ Some components within the unit are Electrostatic (ES) sensitive and Electrostatic Discharge (ESD) precautions should be taken when performing maintenance upon the unit.

3.2 EXTERNAL INSPECTION

Visually check for the following:

- ▲ Check that the correct power source is connected to the power socket.
- ▲ Check that the Ethernet cables are connected to the modem correctly and that the distant OSD8020 modem has been connected correctly to any external equipment.
- ▲ Inspect the optical connectors (for fiber SFP option) for any contamination and clean using isopropyl alcohol and a lint free tissue if any contamination is detected.

3.3 ROUTINE MAINTENANCE

- ▲ There is no routine maintenance required with the OSD8020.

4 WARRANTY

Thank you for purchasing equipment designed, manufactured and serviced by Optical Systems Design (OSD). OSD warrants that at the time of shipment, its products are free from defects in material and workmanship and conforms to specifications. Our Warranty conditions are outlined below:

4.1 WARRANTY PERIOD

For warranty period, please contact your local OSD distributor.

4.2 REPAIRS

Optical Systems Design reserves the right to repair or replace faulty modules/units. Please obtain a "Return Material Authorisation" (RMA) form and number before returning goods.

Goods must be returned in adequate packing material to Optical Systems Design, Warriewood or its nominated authorised representative, for all repairs.

4.2.1 WARRANTY REPAIRS

Return shipments to OSD shall be at customer's expense and freight back to the customer will be at OSD expense.

4.2.2 OUT-OF-WARRANTY REPAIRS

OSD reserves the right to repair or replace any faulty goods. Freight costs and insurance for both journeys are met by the user. All equipment repaired by OSD will have a 3-Month Warranty from the date of dispatch.

4.2.3 SITE REPAIRS

By agreement site repairs may be undertaken for which out of pocket, hotel and travel expenses will be charged.

4.2.4 EXCLUSIONS

This warranty does not apply to defects caused by unauthorized modifications, misuse, abuse or transport damage to the equipment. All modifications to OSD's standard product will need written authorization and will be charged at normal repair rates. All modifications are to be carried out by OSD Technicians. Warranty is void if unauthorized removal and/or tampering with serial number and/or repair labels is evident.

5 APPENDIX 1

Connecting the OSD350N chassis to the OSD8020 with the provided alarm cable;

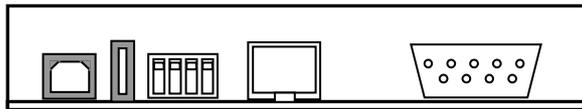
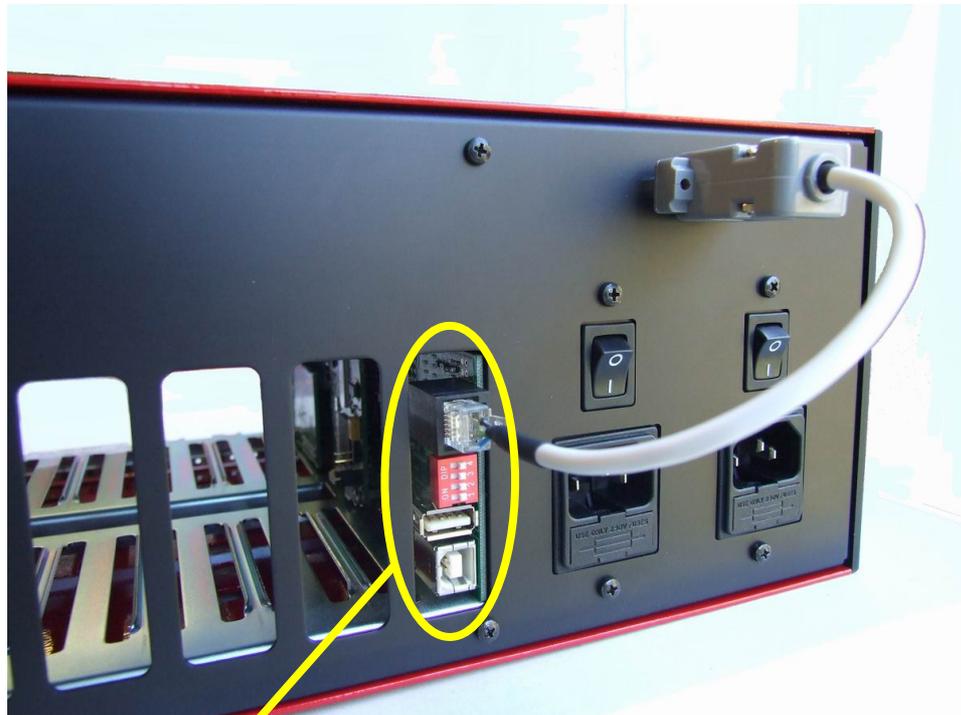


FIGURE 22: CONNECTING OSD350N TO OSD8020

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