OPTICAL
SYSTEMS
DESIGN

OPERATOR MANUAL

OSD2244 SERIES

5-PORT REDUNDANT RING

GIGABIT ETHERNET SWITCH

INDEX 1

1 TECHNICAL SUMMARY

1.1 BRIEF DESCRIPTION

1.1.1 OVERVIEW

The OSD2244 is a 5-port Ethernet switch with simple network management designed to operate in tough industrial applications providing real-time redundant performance. It has two 10/100/1000Base-T RJ45 copper ports, two SFP ports for the ring and one SFP port which can be specified by the user for 1000Base-Lx fiber mode or as 1000Base-T RJ45 copper.

The OSD2244 incorporates redundant ring technology providing maximum reliability on critical networks. In the event of device or fiber failure the data path will automatically switch to a secondary path in less than 5ms per hop to maintain ring network integrity.

The unit will operate on either singlemode or multimode fiber. Operation over at least 50km of singlemode fiber is possible by use of the appropriate optical devices. It normally requires two fibers but is optionally available for one fiber operation.

A major benefit of the OSD2244 is its reliable and consistent performance over the -20°C to +75°C temperature range that allows it to be used in uncontrolled environments such as roadside cabinets, mine sites and factories.

1.1.2 APPLICATIONS

- Any network utilising a mix of copper and fiber
- Industrial IP communications
- Self-healing Gigabit Ethernet backbone networks

1.1.3 FEATURES AND BENEFITS

- Complies with IEEE802.3i/802.3u/ 802.3ab 10/100/1000Base-T, IEEE802.3u/802.3z 100Base-Fx or 1000Base-LX standards.
- Has a total of five ports: two fixed copper ports for 10/100/1000Base-T, two SFP ports for the ring and one SFP port which may be either copper or fiber
- A network diameter of hundreds of kilometers is practical
- Ring reconfiguration in the case of cable or modem failures takes less than five milliseconds per hop
- Can be used with either singlemode or multimode fiber over a variety of link budgets
- Available for operation over 1 or 2 fibers
- Supports network traffic of 1Gbps
- MDI/MDX Crossover: no need for crossover cables
- Auto-Negotiation for half or full duplex operation
- Powered by non critical $12V_{DC}$ supplies / Dual power supply inputs
- Operates over the temperature range of -20°C to +75°C
- SFP module sold separately
- Lite Network Management System
- IEEE 802.1Q VLAN Tag with up to 64VIDs (OSD2244V only)
- Dual Power Supply Inputs

1.2 TYPICAL CONFIGURATION

Figure 1 below indicates a possible set-up for an OSD2244 system.

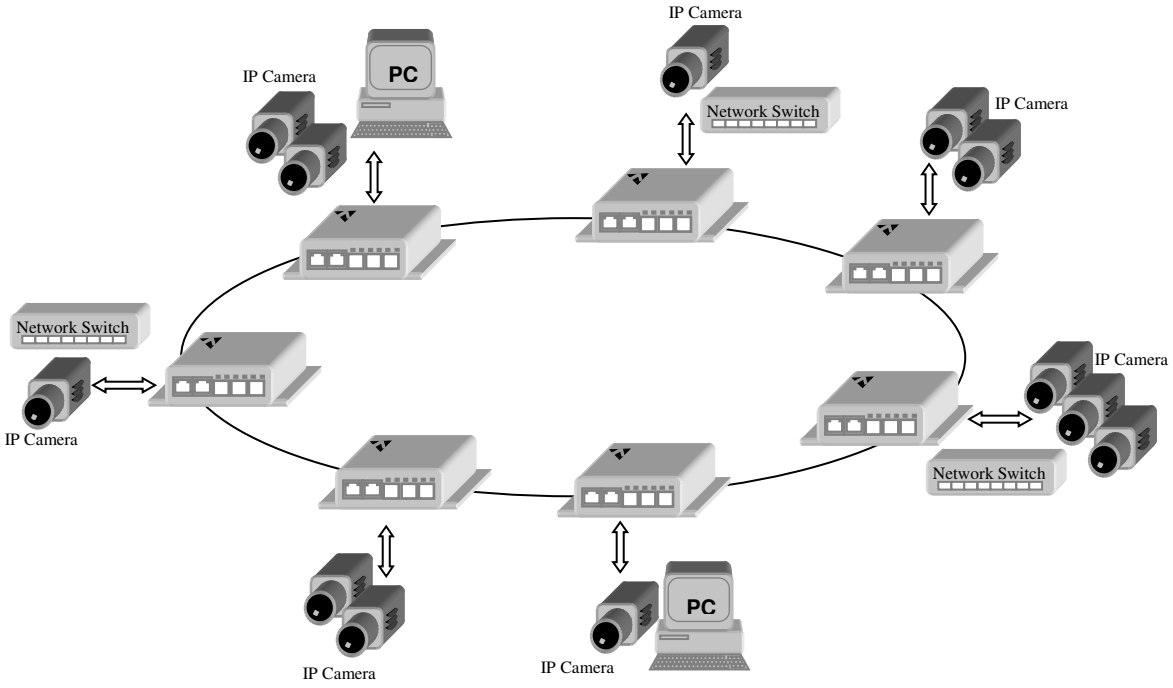

FIGURE 1: OSD2244 TYPICAL RING CONFIGURATION

1.3 TECHNICAL SPECIFICATIONS

TABLE 1: TECHNICAL SPECIFICATIONS

SPECIFICATION	PERFORMANCE
Electrical Data Interface	IEEE802.3ab IEEE802.3u, IEEE802.3i, Base-T Ethernet at 10, 100 or 1000Mbps
Electrical Data Connector	RJ45 on the two fixed copper ports 1 and 2 and for SFP modules
NMS Serial Data Interface	USB 2.0
NMS Serial Data Connector	USB Type B
Service Port Interface	USB 2.0
Service Port Connector	USB Type A
Optical Data Interface	IEEE802.3u, IEEE802.3z 100Base-Fx or 1000Base-Lx
Optical Connector	LC
SFP Port 3, 4 and 5 Options	100Base-Fx, 1000Base-Lx, 10/100/1000Base-T
Operating Mode	Half or full duplex for 10/100 Full duplex for 1000 Pause frames for flow control
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
Indicators	1x Power 2x Copper Speed/Activity/Link on 2 x RJ45 2x Copper Duplex on 2x RJ45 3x SFP Speed/Activity/Link for copper or fiber 1x Initialise/Ring/Bus 1x Ring Port Forward/Revere 1x Ring Partner 1x Ring Master (by auto selection)
Dimensions (mm)	114W x 173D x 31H (module) 25W x 208D x 100H (card)
Weight	0.5kg (module), 0.3kg (card)
Power Requirements	+8V to +35V_{DC} or 22 to 28V_{AC} @ 10VA (with 3x SFPs loaded)
Operating Temperature	-20°C to +75°C
Relative Humidity	0 to 95% non-condensing

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1.4 OSD2244 FRONT AND REAR PANELS

There are two fixed copper ports for 10/100/1000Base-T and three optional SFP ports which can be either copper or fiber on the front panel. The rear panel consists of a 6-way terminal block power connector, 4-Way DIP switch, Type-A USB connector and a Type-B USB connector. Each section will be described further throughout this manual.

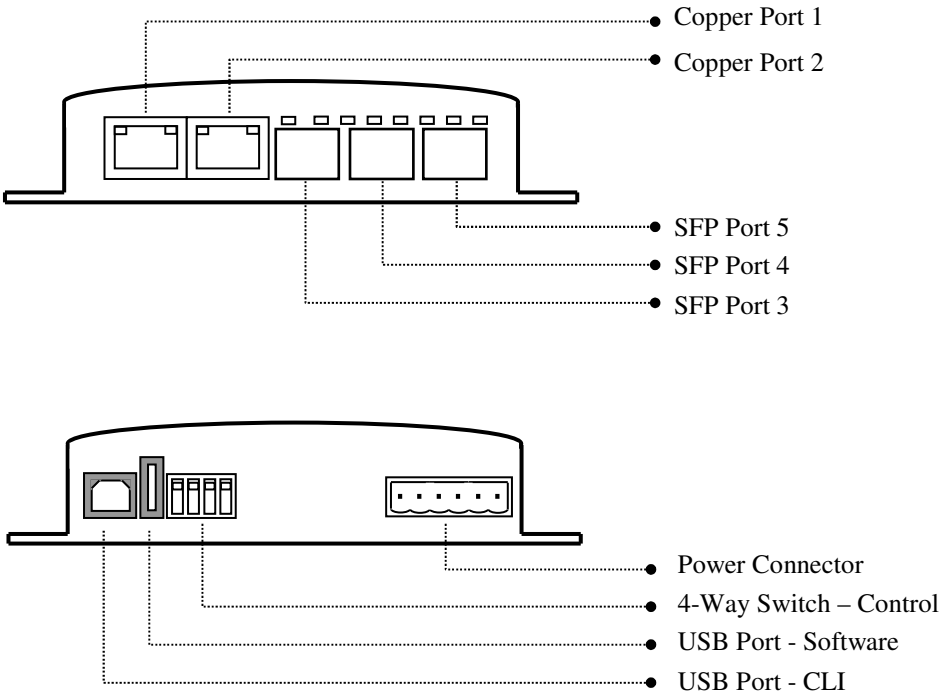


FIGURE 2: OSD2244 CONNECTORS

2 INSTALLATION AND OPERATION

2.1 INTRODUCTION

This section outlines the methods required to install and operate the OSD2244 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.

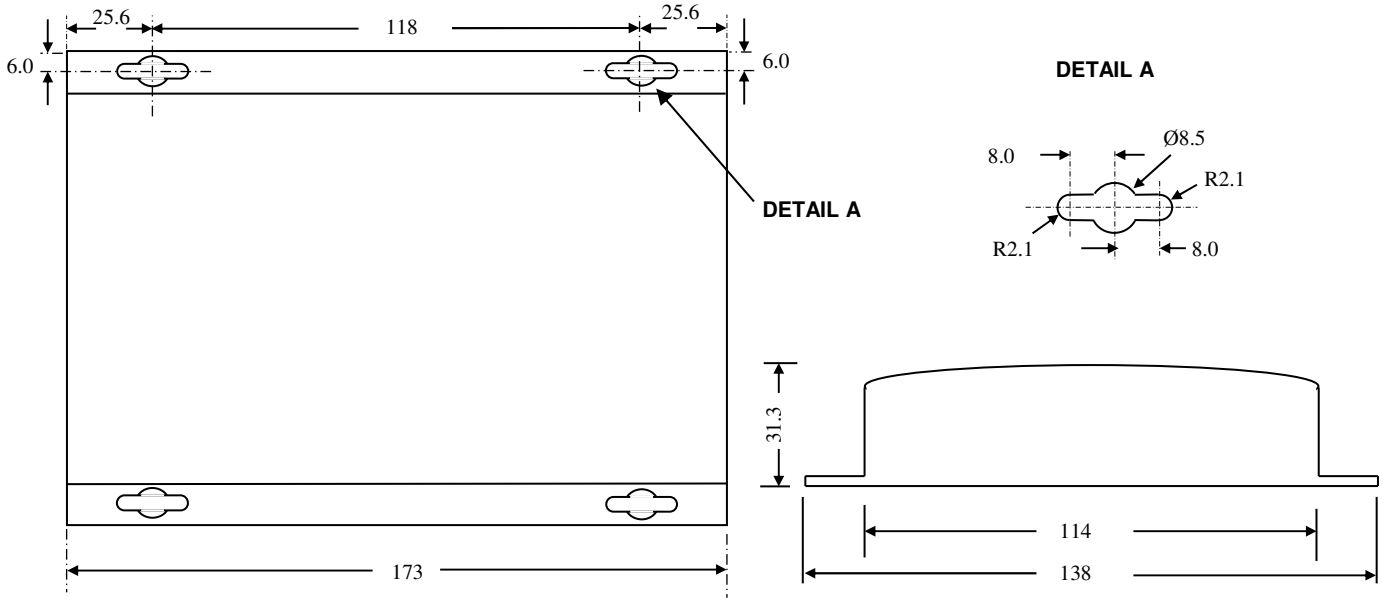
Class 1
The OSD2244 is a **Class 1 laser product.**


PRECAUTIONS

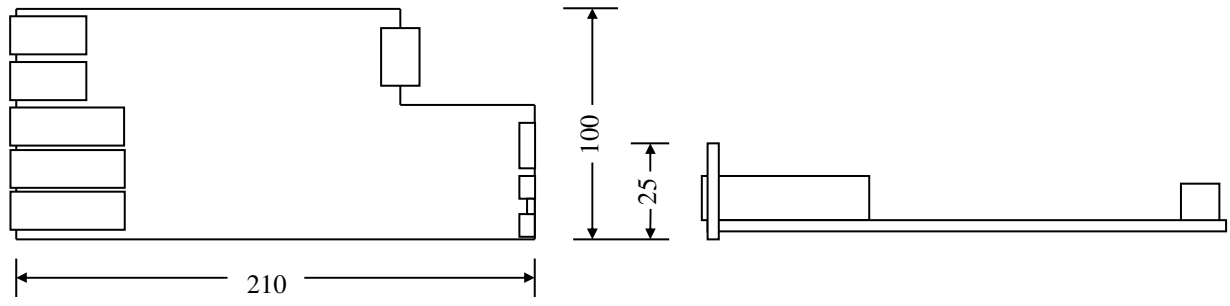
- ▲ All service personnel should be provided training as to the hazards of direct viewing of laser radiation and of the precautionary measures during servicing of equipment
- ▲ Areas where laser products are installed should be restricted in access to trained service personnel only and appropriate warning 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.

2.2.2 OSD2244 DRAWINGS AND DIMENSIONS

The OSD2244 standalone module is designed to be mounted on an even surface and to be secured by means of M4 or smaller screws. The OSD2244 card version is designed to be inserted into a chassis and secured by means of captivated screws.



(a) Module Version



(b) Card Version

FIGURE 3: OSD2244 MOUNTING DIMENSIONS

2.2.3 POWER SUPPLY CONNECTIONS

The OSD2244 card version is powered from the OSD370 or OSD350 chassis. DC power on the OSD2244 card version is connected via the DB9 connector. The card version of the OSD2244 should be fixed into the OSD370 (or OSD350) chassis using the captivated screws. The card can be plugged in or out of the OSD370 (or OSD350) chassis with power on or off.

The OSD2244 module requires external 8 to $35V_{DC}$ or 22 to $28V_{AC}$ @ 10VA. The OSD2244 features a second input voltage channel for redundant power operation. Power should be connected to the power socket located at the back of the case as indicated in Table 2.

TABLE 2: DC OR AC POWER CONNECTION

External Power Pin	Specification
Pin 1 and/or 5	$+8V_{DC}$ to $+35V_{DC}$ or 22 to $28V_{AC}$ @ 10VA
Pin 2 and/or 6	Ground – 0V
Pin 3 & 4	Not Used

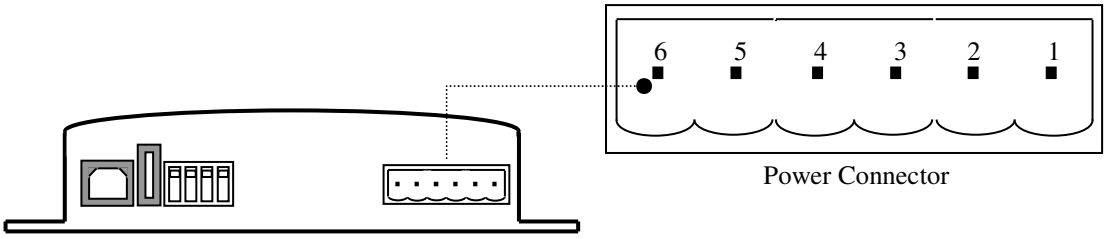
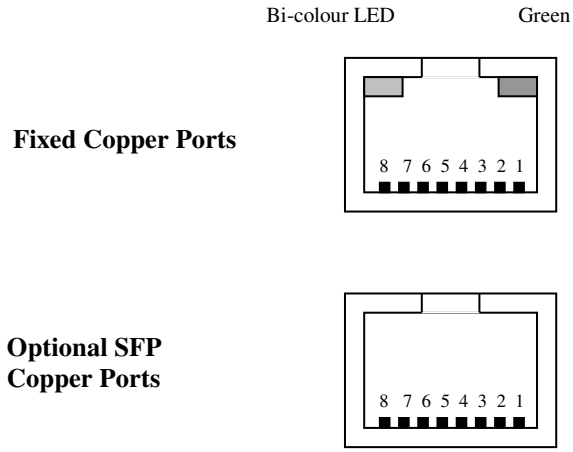


FIGURE 4: 2244 POWER SUPPLY CONNECTIONS

2.2.4 RJ45 COPPER PIN ASSIGNMENTS

Figure 5 shows the pin configuration for both the fixed copper ports or the optional SFP ports fitted with RJ45 copper port



Pin No	10Base-T 100Base-T	1000Base-T
1	Tx+	BI_DA+
2	Tx-	BI_DA-
3	Rx-	BI_DB+
4	Unused	BI_DC+
5	Unused	BI_DC-
6	Rx-	BI_DB-
7	Unused	BI_DD+
8	Unused	BI_DD-

FIGURE 5: FIXED 10/100/1000BASE-T ETHERNET RJ45 CONNECTORS

2.2.5 USB CONNECTOR

The OSD2244 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 OSD2244 via the PC's USB connector. See section 2.5 for further CLI information.

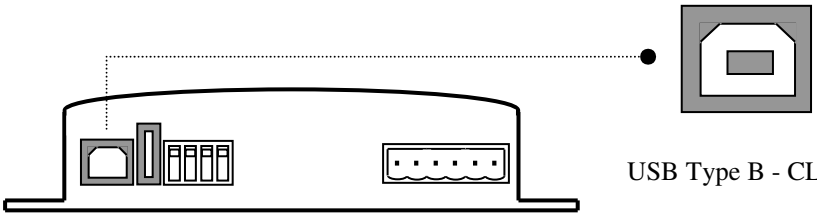


FIGURE 6: USB TYPE B CLI PORT

To operate and control the OSD2244 using the CLI an OSD2244 driver will be required to be installed onto the PC being used. 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

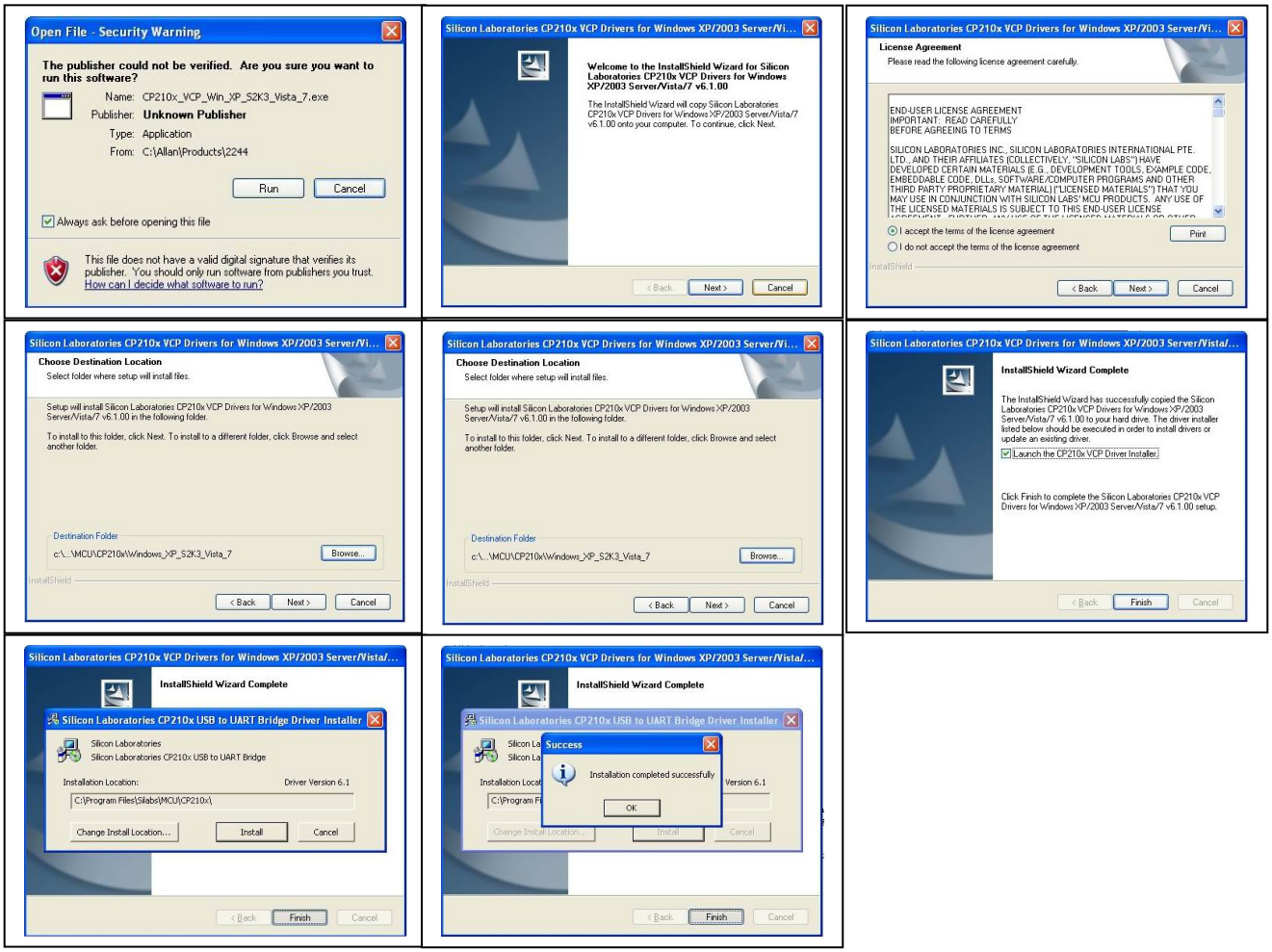


FIGURE 7: WIN XP INSTALLATION

2.2.6 PORT ALLOCATION AND LED INDICATORS

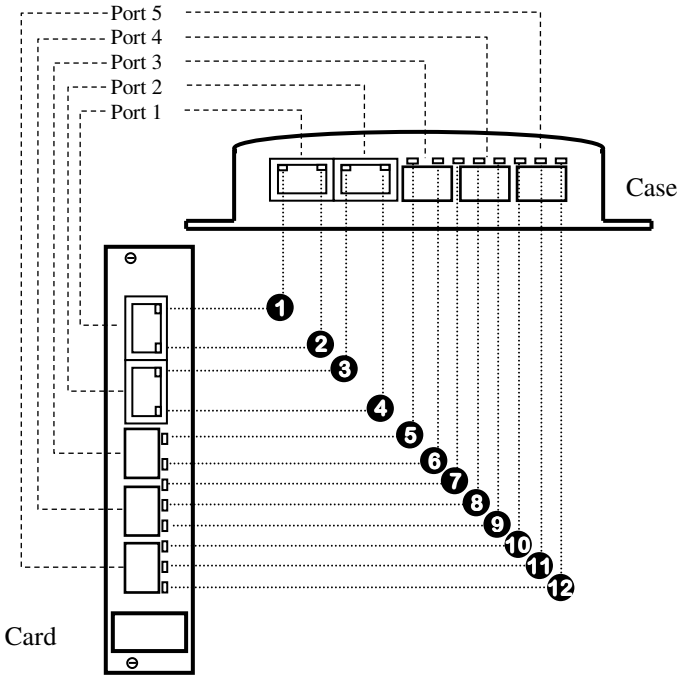


FIGURE 8: PORT/LED

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	Ring/Bus Master	-	Ring/Bus Slave	On	-	-
7	No Activity	Activity	No Link	1Gbps	100Mbps	10Mbps
8	Forward	Backup	-	On	-	-
9	No Activity	Activity	No Link	1Gbps	100Mbps	-
10	Established Ring/Bus	Initializing	-	Ring	Init	Bus
11	Forward	Backup	-	On	-	-
12	No Activity	Activity	No Link	1Gbps	100Mbps	-

2.2.7 CONTROLS

The OSD2244 has a 4-way DIP switch to control a number of functions. Table 4 outlines the function of each switch.

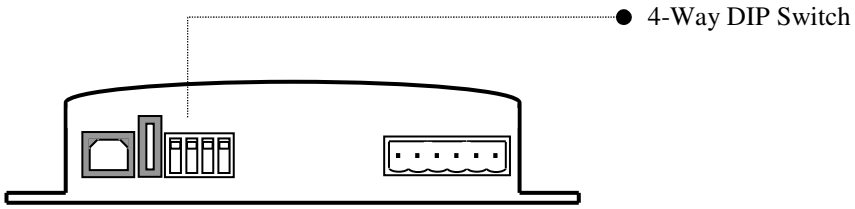


FIGURE 9: OSD2244 CONTROLS

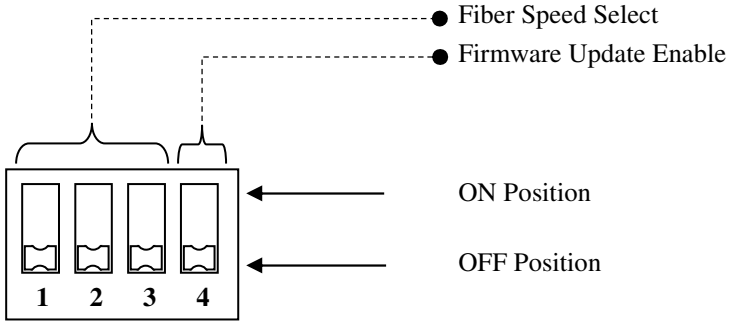


FIGURE 10: OSD2244 4-WAY DIP SWITCH

TABLE 4: OSD2244 4-WAY DIP SWITCH SETTINGS

SWITCH NUMBER	DESCRIPTION	FUNCTION	SWITCH POSITION
1	Port 5 Fiber Speed	1000Mbps 100Mbps	OFF* ON
2	Port 4 Fiber Speed	1000Mbps 100Mbps	OFF* ON
3	Port 3 Fiber Speed	1000Mbps 100Mbps	OFF* ON
4	Firmware Update	Disable Enable	OFF* ON

* Default settings. Firmware update switch should remain in OFF position unless updating firmware.

2.2.8 FITTING SFP CONNECTORS

Care should be taken when inserting/removing the SFP connectors from SFP port 3,4 and 5 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.

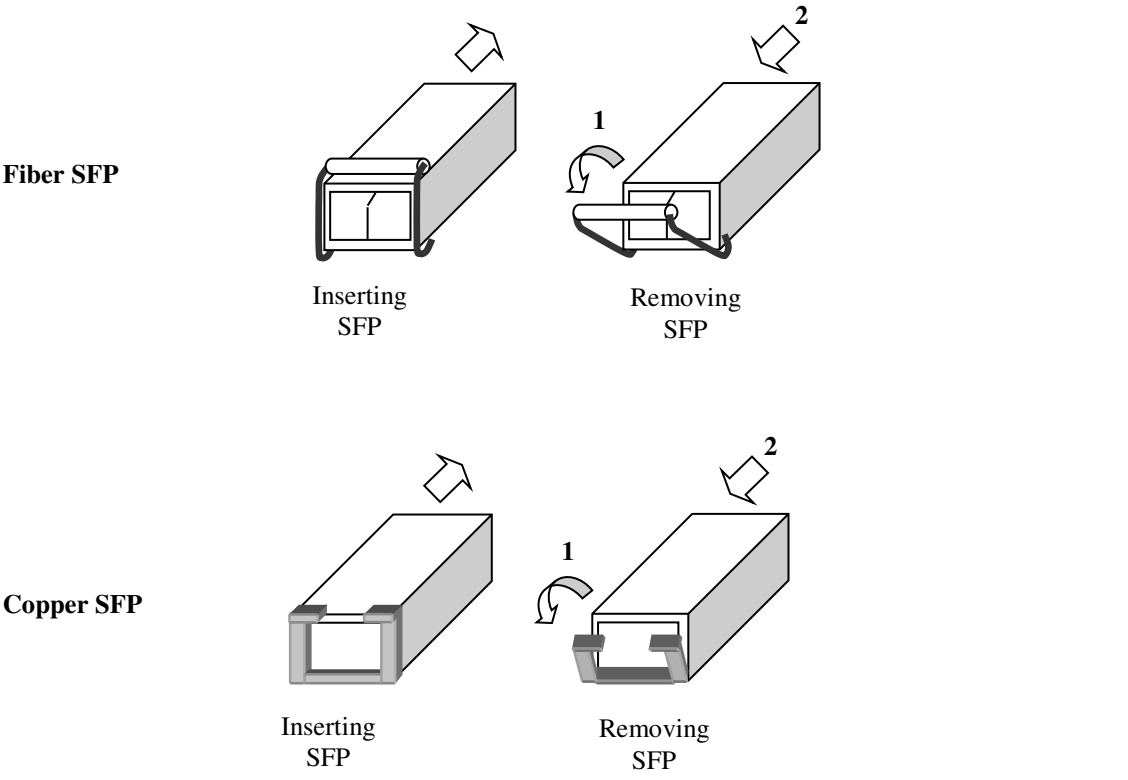


FIGURE 11: FITTING/REMOVING SFP CONNECTORS

2.3 OSD2244 OPERATION

When using the OSD2244 for the first time, check that the unit is in good condition with no visible damage.

If a card version is used, insert it in an appropriate slot on the OSD370 or OSD350 chassis and check that the indicators illuminate accordingly on power up (see Table 3). If a module version (OSD2244C) is used, connect the unit to an appropriate power source 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 9/125µm singlemode fiber.

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

Redundant Ring Operation

The OSD2244 connected in a redundant ring topology providing maximum reliability on critical networks. In the event of device or fiber failure the data path will automatically switch to a secondary path in less than 5ms per node to maintain ring network integrity.

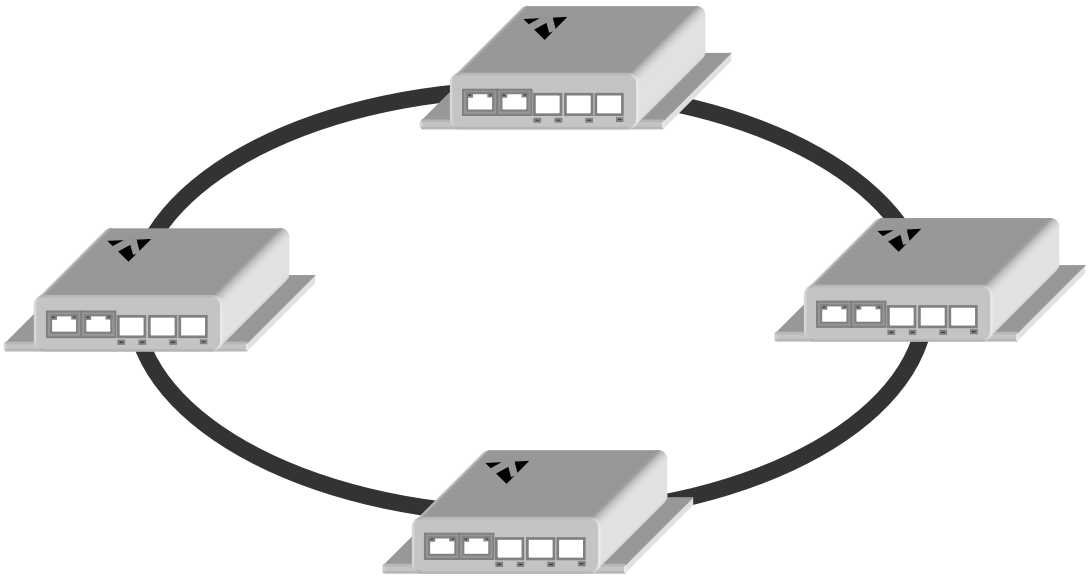


FIGURE 12: REDUNDANT RING CONFIGURATION

To connect the OSD2244 in a redundant ring configuration ports 4 and 5 must be used together with fiber SFPs. The non-ring ports (ports 1,2, &3) should be used to connect to your Ethernet devices (eg. Cameras, PLCs, computers, etc.)

Figure 13 shows the connection method. Typically the SFP used would be a fiber SFP with duplex LC connectors. The dashed line indicates the closed loop, but more OSD2244 units can be connected to the ring as required using this topology. Ensure that the switch settings for port 4 and 5 are set to 1000Mbps (1Gbps) – see Table 4.

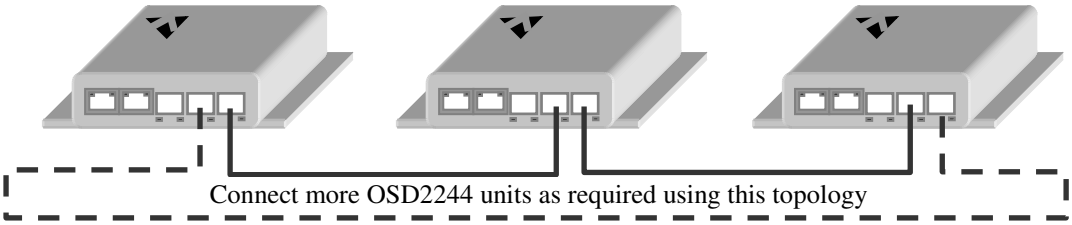


FIGURE 13: REDUNDANT RING CONNECTION

Each OSD2244 has it's own unique MAC address. The MAC address of each unit is labelled on the OSD2244. When the unit is connected in a ring configuration, one of the OSD2244 units will be allocated the 'ring master'. The ring master will be automatically configured by 'searching' for the unit with the lowest MAC address. Furthermore, the ring master will be identified by the LED indicator (see Figure 8 and Table 3). The ring master determines which local ring ports are to be in the forwarding or backup state.

Bus Operation

To connect the OSD2244 in a bus configuration ports 4 and 5 must be used together with fiber SFPs. The remaining ports (ports 1,2, &3) should be used to connect to your Ethernet devices (eg. Cameras, PLCs, computers, etc.)

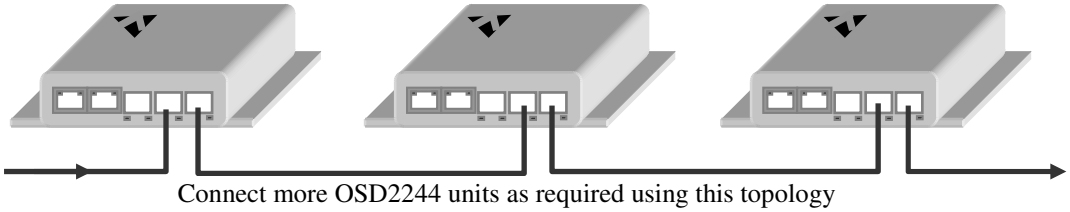


FIGURE 14: BUS CONNECTION

2.4 FIRMWARE UPDATES

All OSD2244 units will be shipped with the latest firmware already installed. The Type- A USB port is used for any firmware updates. To enable the OSD2244 for firmware updates, switch 4 will need to be toggled to the 'on' position before unit is powered on. Upon completion of firmware updating, toggle switch 4 to the 'off' position and power the unit on again.

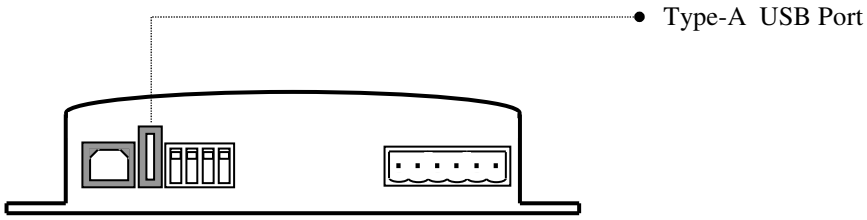


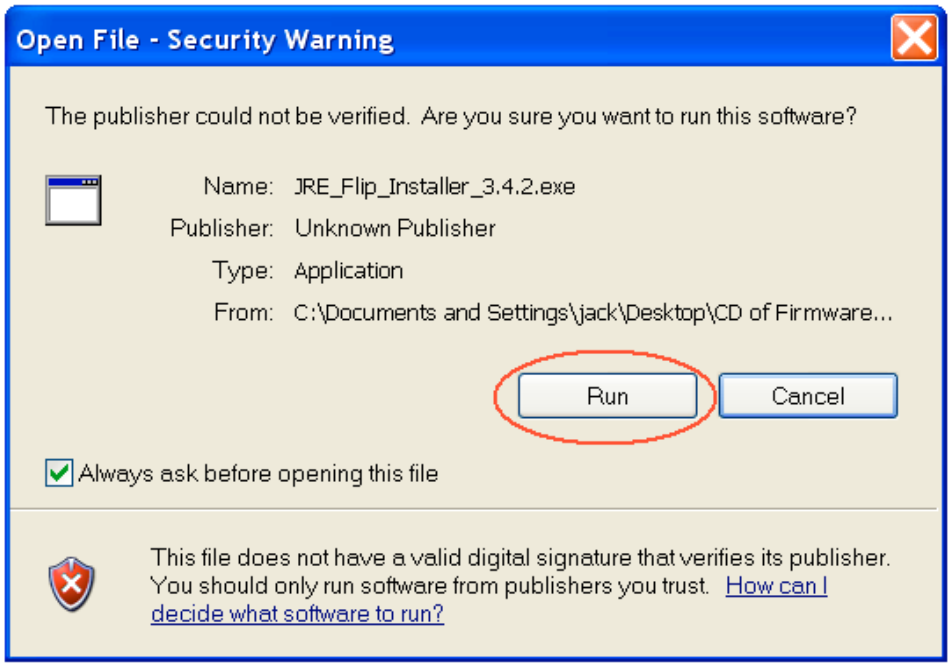
FIGURE 15: OSD2244 USB CONNECTOR

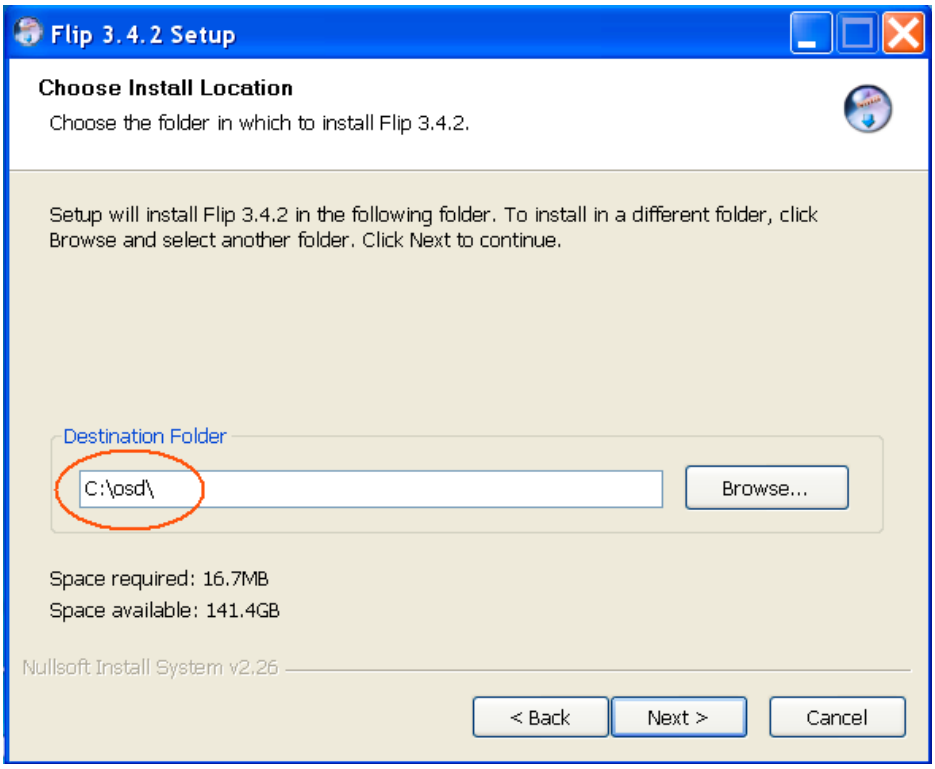
Upgrading the OSD2244 latest firmware consists of three steps;

1. Install FLIP (Flexible In-System Programmer) on user PC
2. Install the driver on user PC for the USB port of OSD2244 target unit
3. Copy firmware (from CD or other multimedia) to local disk and program new firmware to target unit.

2.4.1 INSTALLING FLIP

- Create a new folder : ***c:\osd*** on users PC as the destination folder for FLIP.
- Execute JRE_Flip_Installer_3.4.2.exe from CD and follow steps outlined below;





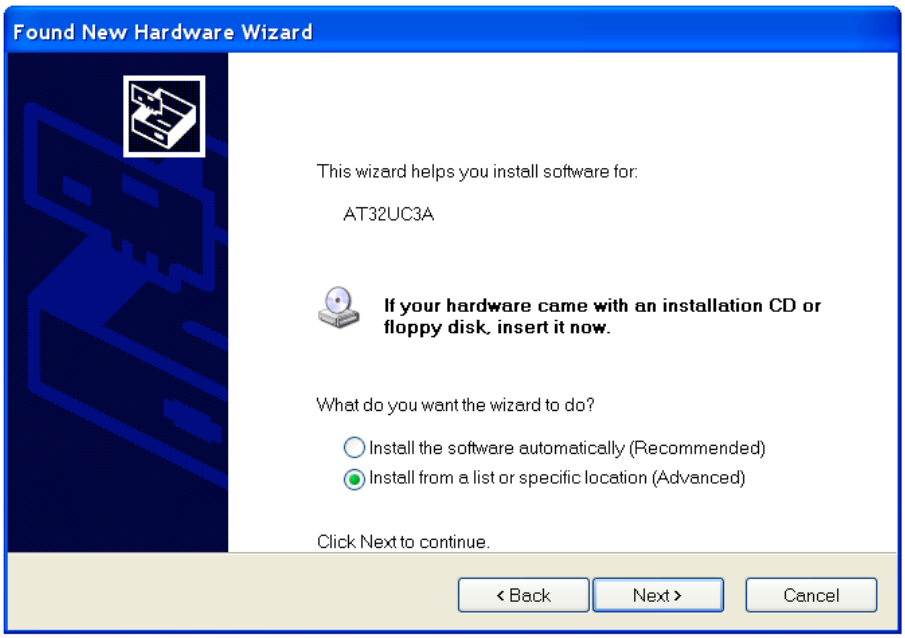
- Disable ***Create desktop shortcut*** and ***Show readme*** and click ***Finish***.

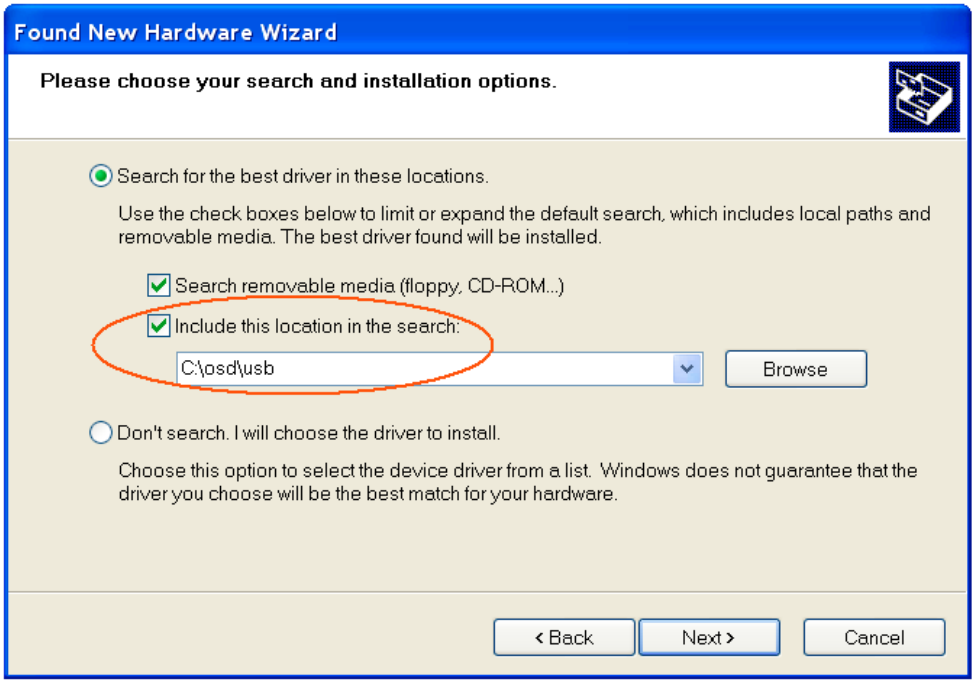
2.4.2 INSTALLING USB DRIVER

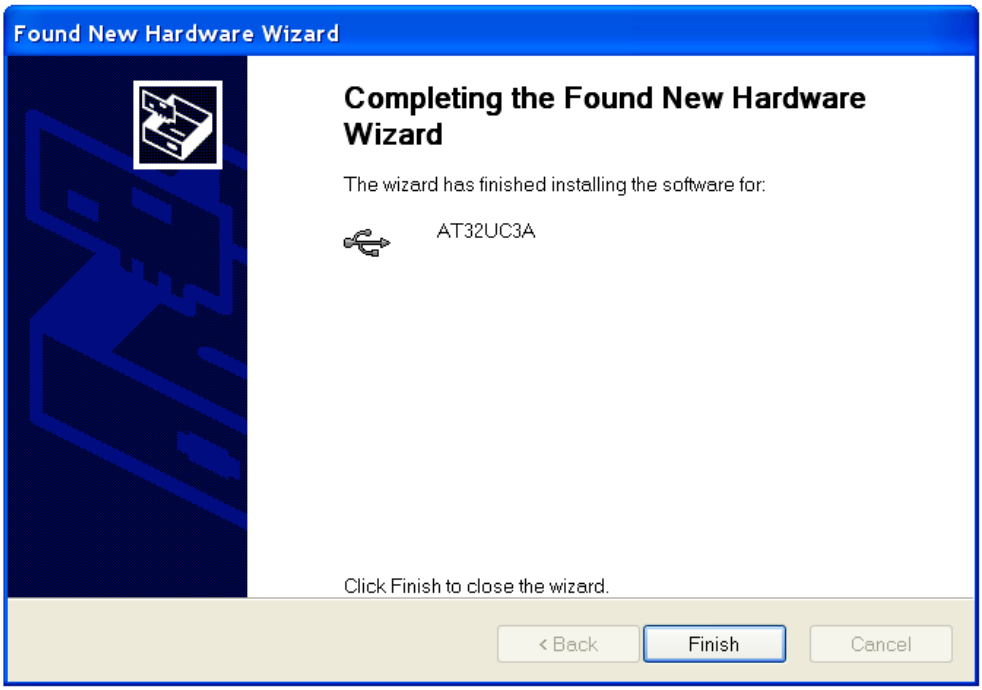
- Toggle switch 4 to ‘on’ position (see Figure 10) before unit is powered on.
- Connect USB cable between target unit and PC with FLIP installed.
- Power the OSD2244 unit and follow steps outlined below;

1. DRIVER FOR WINDOWS XP

Install driver file manually on a Windows XP PC as shown below;

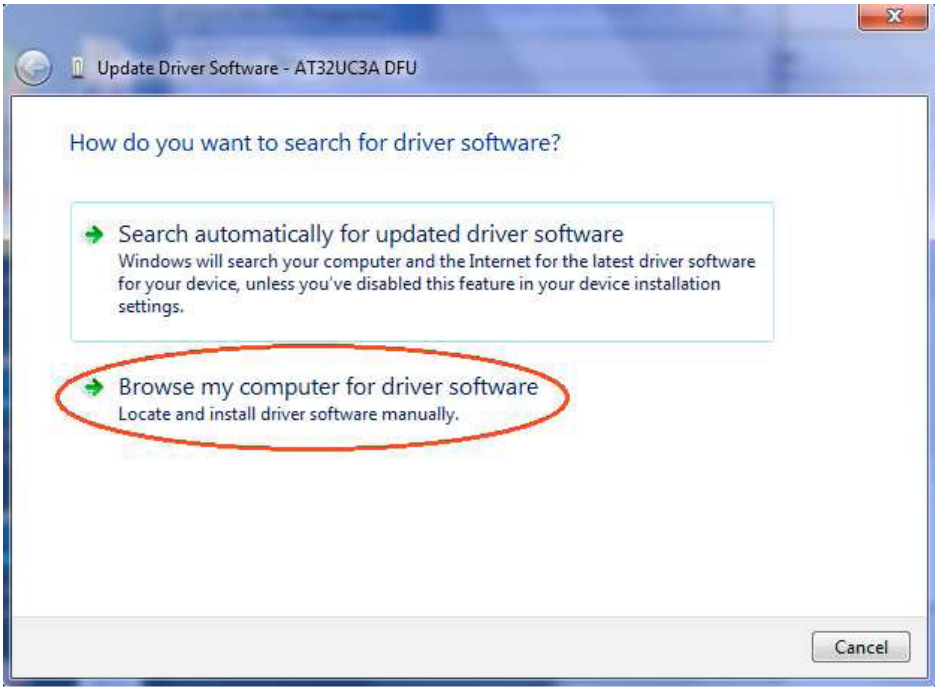



Found New Hardware Wizard
Please choose your search and installation options.
Search for the best driver in these locations.
Use the check boxes below to limit or expand the default search, which includes local paths and removable media. The best driver found will be installed.
Search removable media (floppy, CD-ROM...)
Include this location in the search:
C:\osd\usb
Browse
Don't search. I will choose the driver to install.
Choose this option to select the device driver from a list. Windows does not guarantee that the driver you choose will be the best match for your hardware.
< Back
Next >
Cancel


Found New Hardware Wizard
Completing the Found New Hardware Wizard
The wizard has finished installing the software for:
AT32UC3A
Click Finish to close the wizard.
< Back
Finish
Cancel

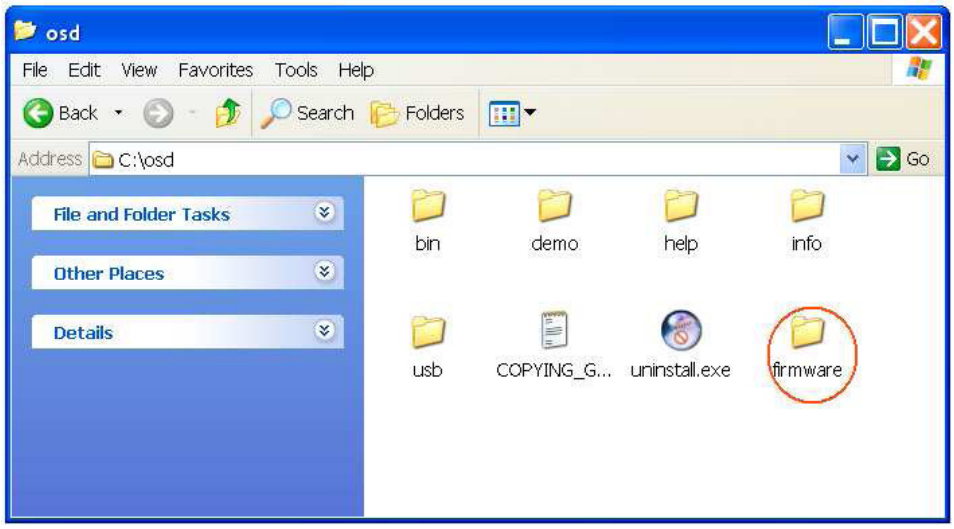
2. DRIVER FOR WINDOWS 7 64bit

For 64bit operating systems use directory named ***win7 driver*** on CD as destination location for driver file.



2.4.3 UPGRADE FIRMWARE

1. Copy **firmware** directory from CD to ***c:\osd*** as shown below



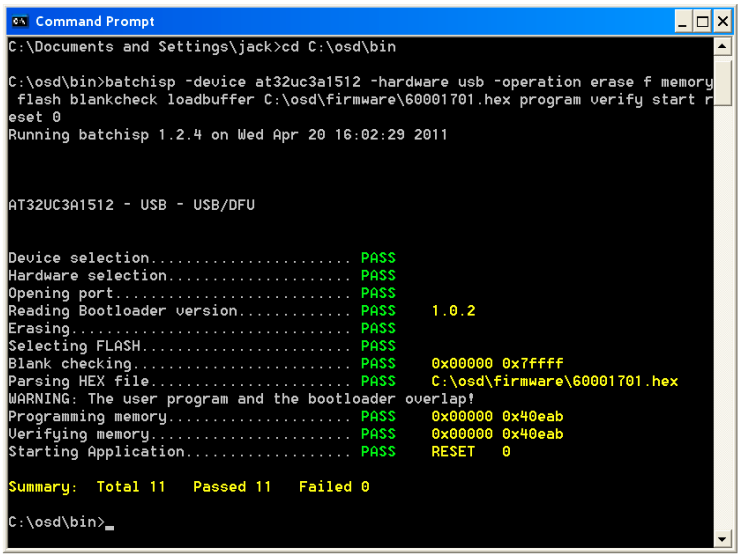
2. Upgrade Firmware

Click the OSD2244RevXX Firmware.bat file supplied on the CD. *Note: XX denotes revision number of firmware.* The batch file contains a small command to install the firmware. The main command is as follows;

batchisp -device at32uc3a1512 -hardware usb -operation erase f memory flash blankcheck loadbuffer c:\osd\firmware\60001701.hex program verify start reset 0

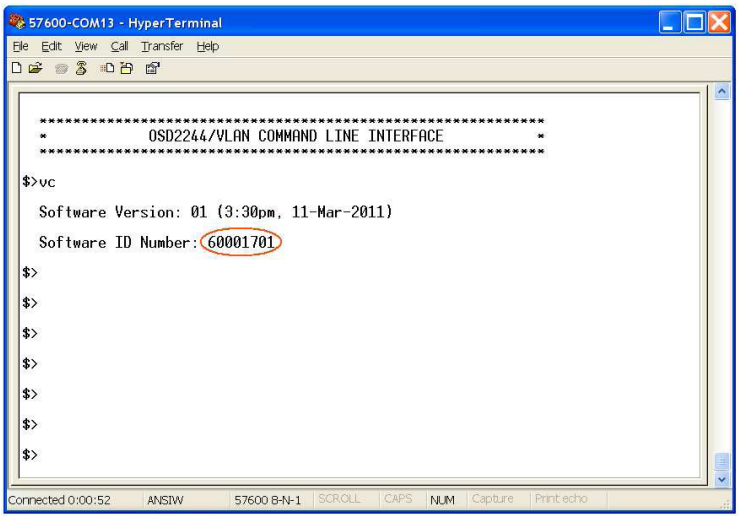
⚠ **NOTE:** 60001701.hex used in the command line above is just an example. Use the latest firmware number supplied.

The final result on command prompt window when installation is complete should be as shown below;



2.4.4 INSTALLATION CHECK

Using CLI as described in section 2.5, use command ***vc*** and confirm that the latest/new OSD2244 firmware has been installed.



2.5 COMMAND LINE INTERFACE

The Command Line Interface (CLI) is a useful tool for checking link status and debugging link connections. To enable the use of CLI the OSD2244 must be connected to a PC with a serial port and an appropriate cable as specified in section 2.2.5. Using a terminal emulation program such as Hyperterminal, a number of command lines specific to the OSD2244 can be implemented to check link/node status, ring/bus topology and enable/diable float backup.

2.5.1 TERMINAL EMULATION SETUP

Using a terminal emulation program such as hyperterminal the following parameters should be set up for correct command line operation. Select the appropriate "COM port" set up for the serial port.

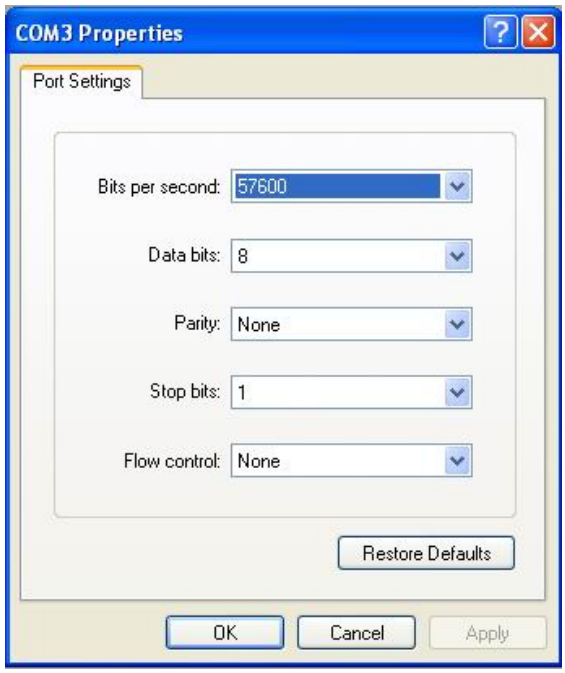


FIGURE 16: SERIAL PORT SETTINGS

2.5.2 COMMAND LINE FUNCTIONS

There are a number of command line functions that enables the user to obtain running information of a single OSD2244 unit or the complete topology of the ring/bus network. This section explains the command lines and its functions.

When the terminal emulation program is operating, connect the USB cable to any one of the OSD2244 units on the ring/bus network – or alternatively, the OSD2244 unit which the user wishes to interrogate. Note: A message will be displayed on the terminal emulation program when the unit is powered after USB connection. This message will not open when the unit is switched on while plugging in the USB cable, however the command lines are functional.

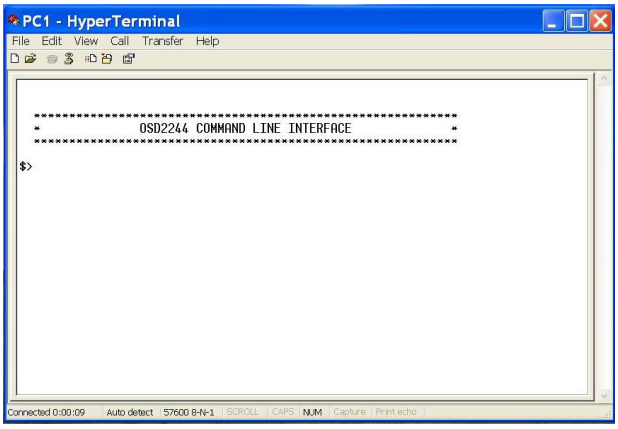


FIGURE 17: INITIAL COMMAND LINE SCREEN

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

TABLE 5: TERMINAL COMMAND LINES

TERMINAL COMMAND LINE	SPECIFICATION	FUNCTION	FIGURE
help	help	Displays all user available CLI commands	-
tc	Topology Check	Displays the topology status of the established ring/bus	Figure 18
nc	Node Check	Displays the running status of the node with given MAC address	Figure 20
lnc	Local Node Check	Gets running status of the local node	Figure 21
fbe	Float Backup Enable	Enables float backup function for all nodes on the ring/bus	Figure 22
fbd	Float Backup Disable	Disables float backup function for all nodes on the ring/bus	Figure 26
vc	Version Check	Displays the current software version and revision installed on the unit	-

TOPOLOGY CHECK - <tc> Command Line

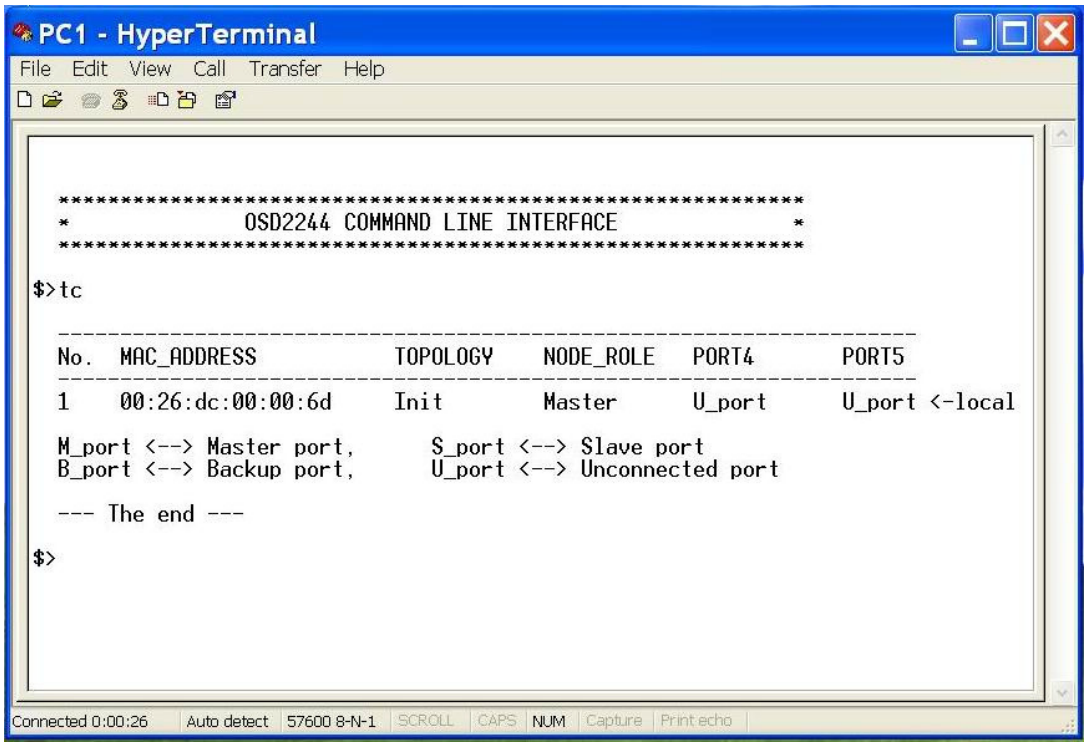


FIGURE 18: TOPOLOGY CHECK

In this case, only one OSD2244 is connected to the USB cable. The display indicates the following;

No: 1 – Number of units connected on the ring/bus (in this case only one unit)

MAC_ADDRESS: 00:26:dc:00:00:6d – Displays all the MAC addresses of the units connected on the ring/bus

TOPOLOGY: Init – Displaying type of connection (in this case "Init" as there is only one unit)

NODE_ROLE: MASTER – Displays whether the unit is either the Master or Slave on the ring/bus (in this case only one unit is connected thus displaying master)

PORT4: U_port. Indicates the function of port 4 and its relation to the ring/bus. There are four possibilities;

1. M_port – Master Port
2. S_port – Slave Port
3. B_Port – Backup Port
4. U_Port – Unconnected Port

PORT5: U_port. Indicates the function of port 5 and its relation to the ring/bus. There are four possibilities;

1. M_port – Master Port
2. S_port – Slave Port
3. B_Port – Backup Port
4. U_Port – Unconnected Port

<-local: This points to the unit that the USB cable is plugged into on the ring/bus.

In the example below there are four OSD2244 connected in a ring configuration.

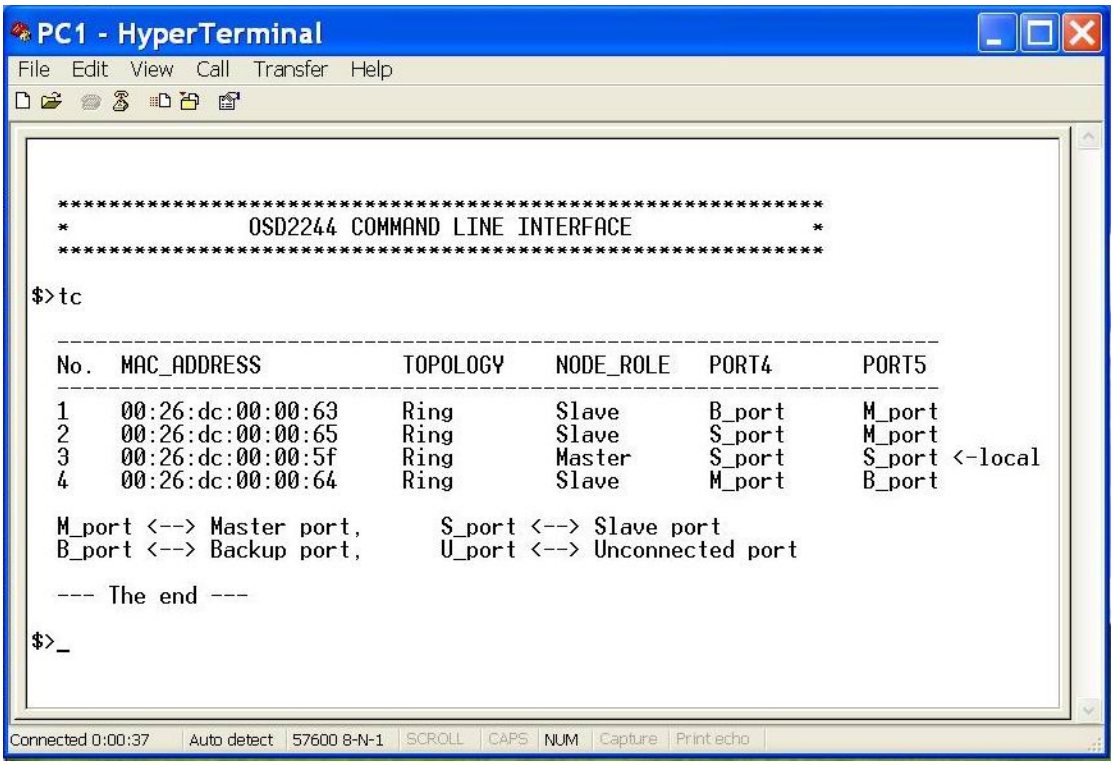


FIGURE 19: TOPOLOGY CHECK

No: 4 – Four units connected

MAC_ADDRESS:– Displaying all the MAC addresses of the units connected on the ring/bus

TOPOLOGY: Ring – Displaying type of connection.

NODE_ROLE: MASTER – Displays if the unit is either the Master or Slave on the ring/bus. Master is determined by the lowest MAC address

PORT4: U_port. Indicates the function of port 4 and its relation to the ring/bus. There are four possibilities;

1. M_port – Master Port
2. S_port – Slave Port
3. B_Port – Backup Port
4. U_Port – Unconnected Port

PORT5: U_port. Indicates the function of port 5 and its relation to the ring/bus. There are four possibilities;

1. M_port – Master Port
2. S_port – Slave Port
3. B_Port – Backup Port
4. U_Port – Unconnected Port

<-local: This points to the unit that the USB cable is plugged into on the ring/bus.

NODE CHECK - <nc> Command Line

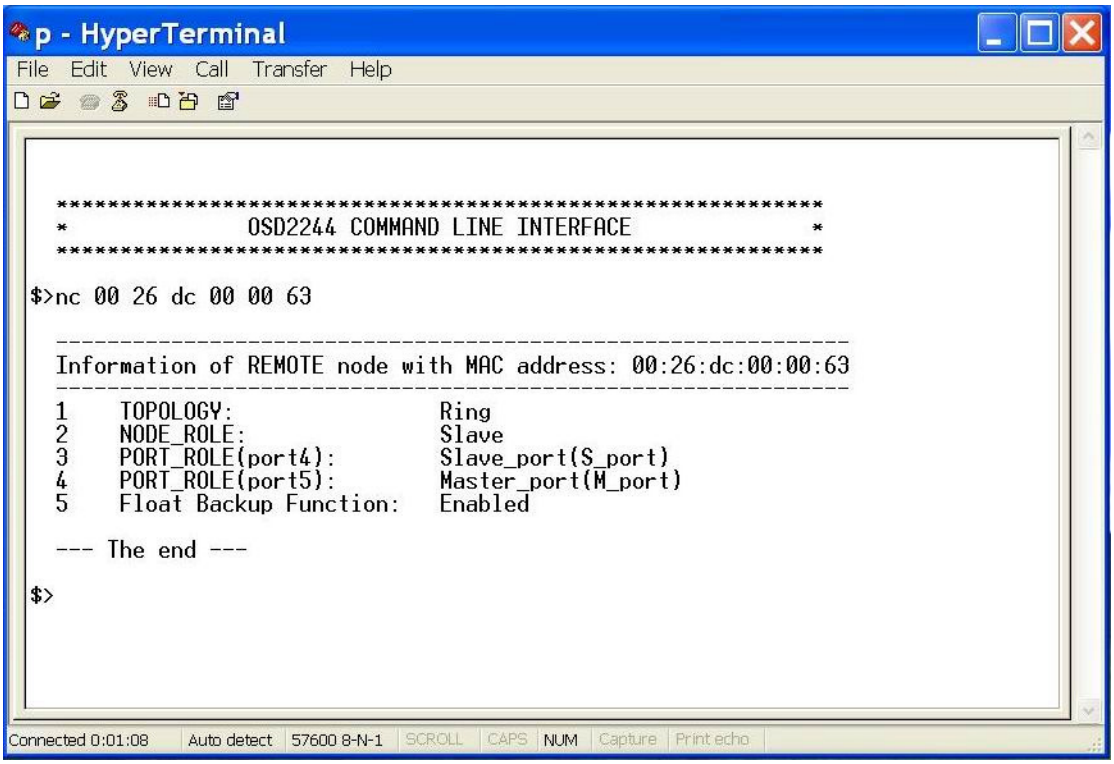


FIGURE 20: NODE CHECK

The Node Check command line is a useful command for checking the running status of any remote node connected to the ring/bus topology from any particular node that the USB cable is plugged into. This enables the user to perform a node check on any OSD2244 unit from one location on the ring/bus network.

The Node Check command requires the MAC address number for the node being interrogated. The command line format is as follows;

nc 00 26 dc xx xx xx

Notes: When entering the MAC address, leave one space between every two hex digits as shown in the example in Figure 20.

The information displayed is the remote MAC address, Topology, Node Role, Port Role and Float Backup status.

LOCAL NODE CHECK - <lnc> Command Line

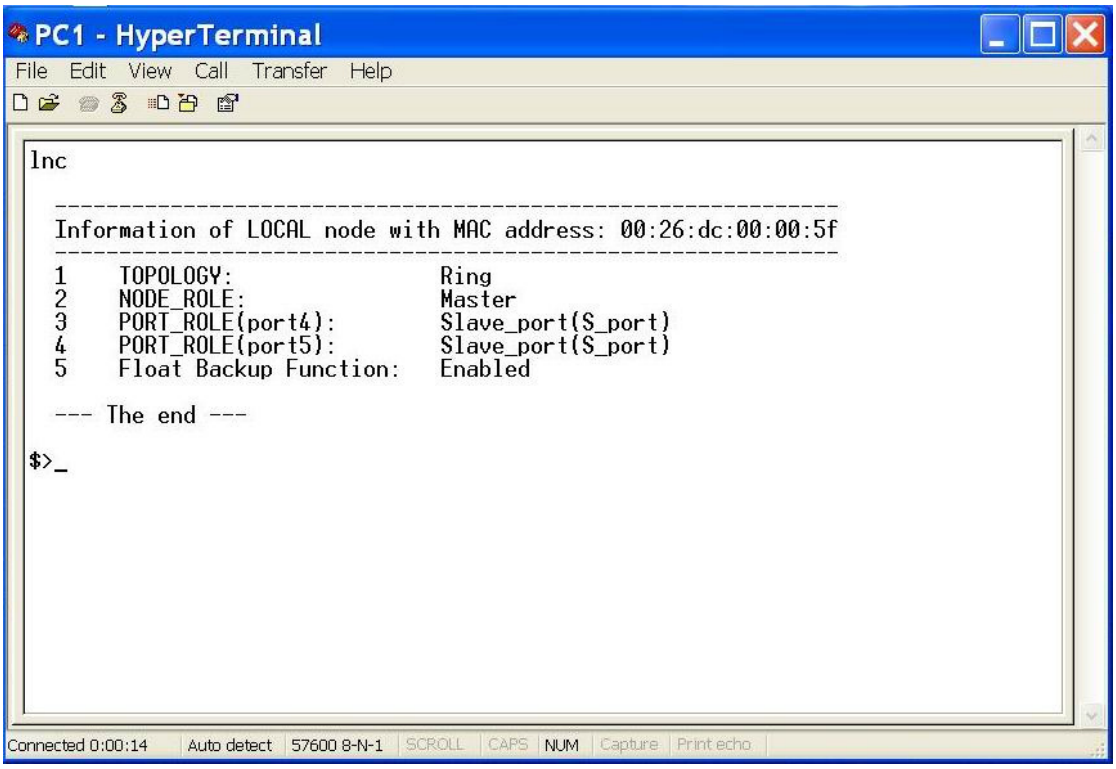


FIGURE 21: LOCAL NODE CHECK

This command line displays the running status of the local node that the USB cable is plugged into. The information provided is the MAC address, Topology, Node Role, Port Role and Float Backup status.

FLOAT BACKUP ENABLE <fbe> Command Line

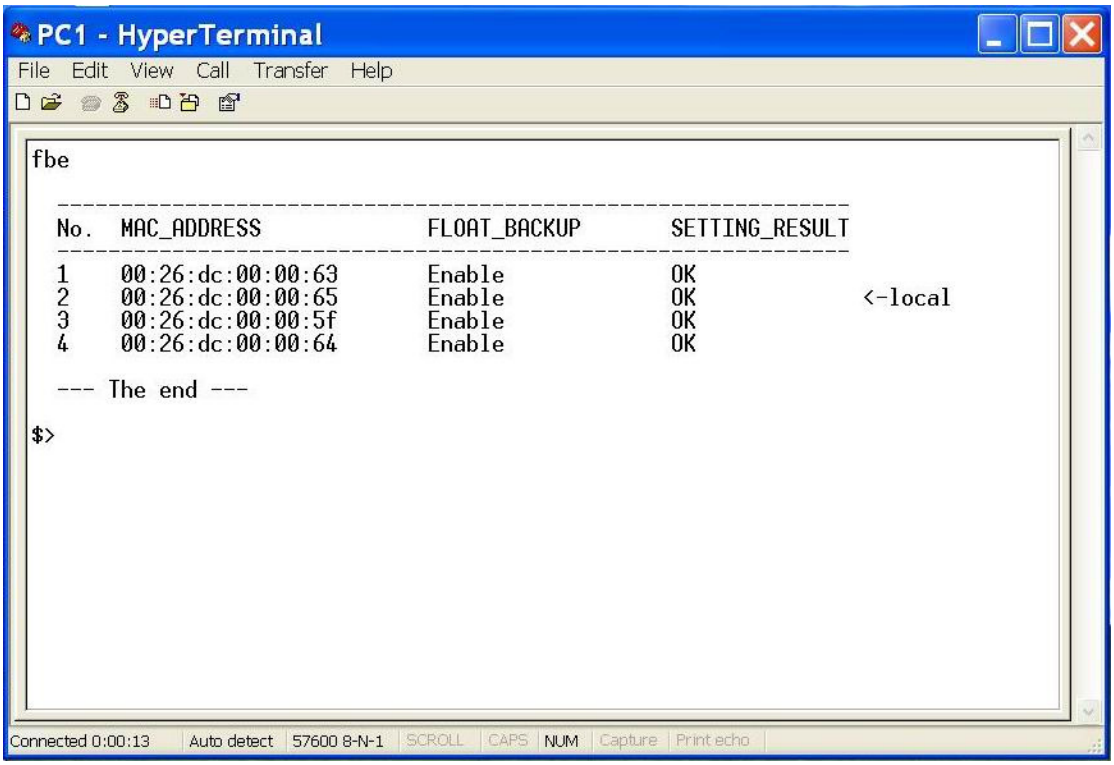


FIGURE 22: FLOAT BACKUP ENABLED 1

No: 4 – Lists number of units connected (in this case 1,2,3,4)

MAC_ADDRESS:– Displaying all the MAC addresses of the units connected on the ring/bus

FLOAT_BACKUP: Enable – Displays all the units connected to the ring/bus having Float Backup enabled.

SETTING_RESULT: OK – Displays the Float Backup enable has been successfully implemented.

<-local: This points to the unit that the USB cable is plugged into on the ring/bus.

The link furthest from the smallest MAC addressed unit in a ring configuration is automatically selected as the backup branch. In the case of even units on a ring the fiber link on port 4 will always be the backup branch – indicated by a dashed line on a ring topology.

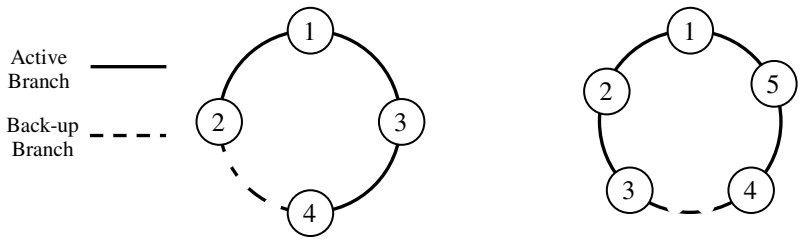


FIGURE 23: RING TOPOLOGY

In Figure 23, node 1 will communicate with node 2, node 3 and node 4 via node 3. Node 2 will communicate to node 4 only via node 1 and 3.

In the event of a fiber link being broken or disconnected (indicated by a cross) the backup branch will become the active branch. If the link between node 1 and 3 is broken (see Figure 24), node 1 will communicate with node 3 via node 2 and node 4.

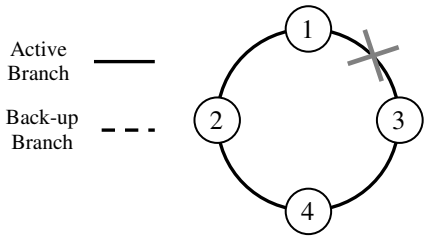


FIGURE 24: FLOAT BACKUP ENABLED 2

When the float backup is in enabled mode, if the broken or disconnected branch is re-established, the backup branch will now be the last broken/disconnected branch as shown in Figure 25.

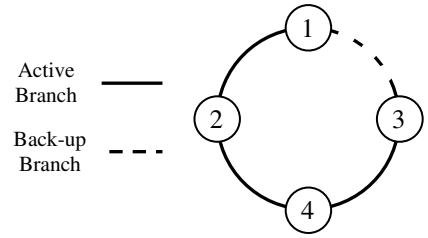


FIGURE 25: FLOAT BACKUP ENABLED 3

Note: When configuring the float backup function ***all*** units on the ring/bus network ***must*** have the same float backup configuration for correct operation.

All OSD2244 are set to **enabled** float backup upon shipment.

FLOAT BACKUP DISABLE - <fbd> Command Line

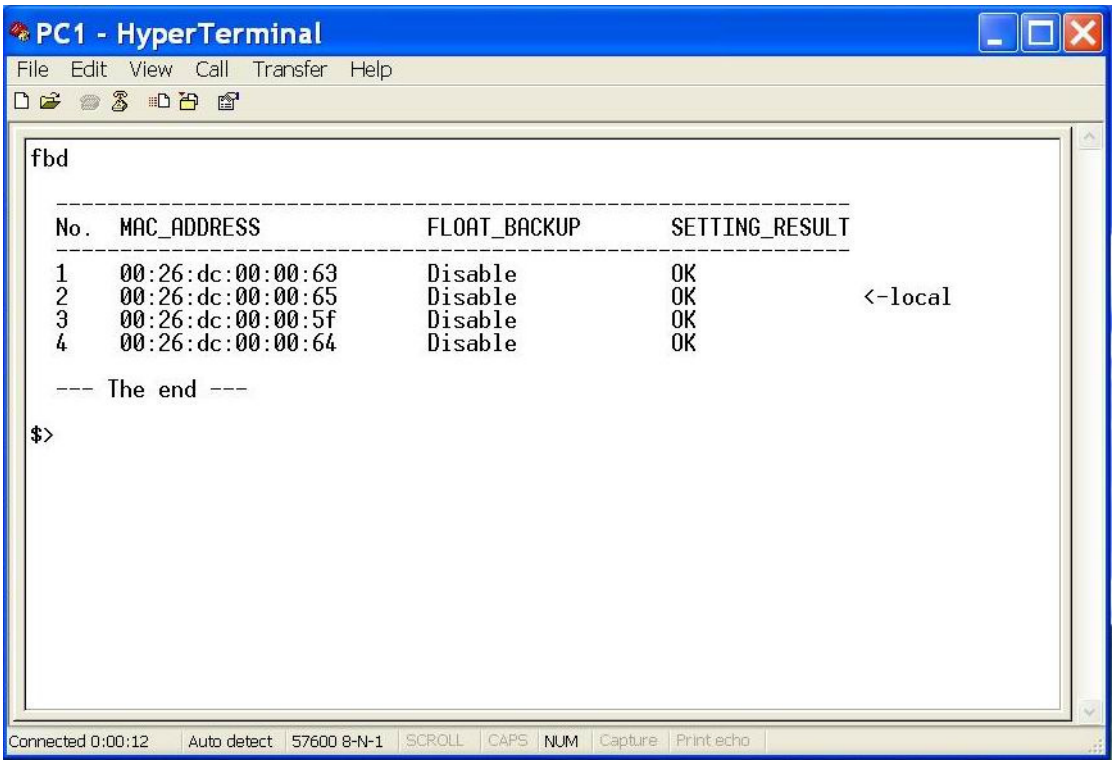


FIGURE 26: FLOAT BACKUP DISABLED 1

No: 4 – Lists number of units connected (in this case 1,2,3,4)

MAC_ADDRESS:– Displaying all the MAC addresses of the units connected on the ring/bus

FLOAT_BACKUP: Disable – Displays all the units connected to the ring/bus having Float Backup disabled.

SETTING_RESULT: OK – Displays the Float Backup disable has been successfully implemented.

<-local: This points to the unit that the USB cable is plugged into on the ring/bus.

The link furthest from the smallest MAC addressed unit in a ring configuration is automatically selected as the backup branch. In the case of even units on a ring the fiber link on port 4 will always be the backup branch – indicated by a dashed line on a ring topology.

In the event of a fiber link being broken or disconnected (indicated by a cross) the backup branch will become the active branch.

If the link between node 1 and 3 is broken (see Figure 27) , node 1 will communicate with node 3 via node 2 and node 4.

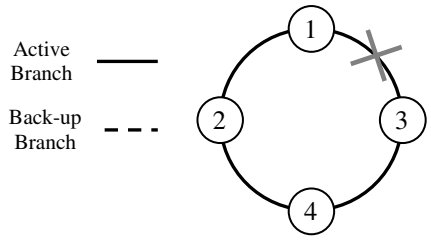


FIGURE 27: FLOAT BACKUP DISABLED 2

When the float backup is in disabled mode, if the broken or disconnected branch is re-established, the backup branch will again be the furthest link from the smallest MAC addressed unit as shown in Figure 28.

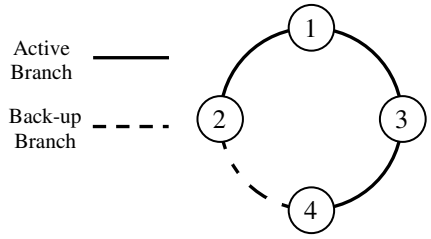


FIGURE 28: FLOAT BACKUP DISABLED 3

Note: When configuring the float backup function ***all*** units on the ring/bus network ***must*** have the same float backup configuration for correct operation.

All OSD2244 are set to **enabled** float backup upon shipment.

3 MAINTENANCE

3.1 INTRODUCTION

The following section outlines the fault-finding procedure for the OSD2244 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 OSD2244 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 OSD2244.

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.

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