OPERATOR MANUAL

OSD2258 SERIES

10-PORT REDUNDANT RING

GIGABIT ETHERNET SWITCH

INDEX 1

1	TECHNICAL SUMMARY	. 5
11	BRIEFDESCRIPTION	5
111	OVERVIEW	5
1.1.2	APPLICATIONS	6
1.1.3	FEATURES AND BENEFITS	6
1.2	TECHNICAL SPECIFICATIONS	7
1.3	PORTALLOCATION	. 8
-		
2	INSTALLATION AND OPERATION	10
2.1	INTRODUCTION	10
2.2	INSTALLATION	10
2.2.1	WARNING AND PRECAUTIONS	10
2.2.2	DRAWINGS AND DIMENSIONS	11
2.2.3	LOCATION	12
2.2.4	POWER SUPPLY CONNECTIONS	12
2.2.5	ALARM CONNECTION	13
2.2.6	USB CONNECTOR	14
2.2.7	LED INDICATORS	15
2.2.8	CONTROLS	16
2.2.9	FITTING SFP CONNECTORS	18
2.3	OPERATION	19
2.3.1	CONNECTIONS	19
2.4	MINI USB PORT	21
2.5	TYPE-B USB PORT	21
2.6	COMMAND LINE INTERFACE	22
2.6.1	TERMINAL EMULATION SETUP	22
2.6.2	COMMAND LINE FUNCTIONS	23
2.7	WEB GUI	36
2.7.1	LOGGING ON TO THE SWITCH	37
2.1.2	GUI MENU	38
3	MAINTENANCE	45
3.1	INTRODUCTION	45
3.1		45
3.2		45
5.5	KOUTINE MAINTENANCE	45
4	WARRANTY	46
41	WARRANTY PERIOD	46
4.1 4.2	REPAIRS	46
421	ΜΔΑΡΑΝΤΥ REPAIRS	46
4.2.2	OUT-OF-WARRANTY REPAIRS	46
4.2.3	SITE REPAIRS	46
4.2.4	EXCLUSIONS	46
FIGUE	E 1: TYPICAL RING CONFIGURATION	5
FIGUE	E 2: FRONT PANEL	8
FIGUE	E 3: TOP PANEL	. 9
FIGUE	E 4: BOTTOM PANEL	.9
FIGUE	E 5' MOUNTING DIMENSIONS	11
FIGUE	E 6: POWER SUPPLY CONNECTIONS	12
FIGUE	F 7' ALARM OUTPUTS	13
FIGUE	E & CONTACT CLOSURE OUTPUT	13
FIGUE	E 0. USB TVPF B CI I PORT	1/
FIGUE	E = 10 CI I SOFTWARE INSTALLATION	1/
FIGUE		15
FIGUE		1J 16
FIGUE	E 12. CONTROLO	10
TIOUP		10

PAGE 3

OSD2258 OPERATOR MANUAL

FIGURE 14: FITTING/REMOVING SFP CONNECTORS	18
FIGURE 15: REDUNDANT RING CONFIGURATION	19
FIGURE 16: REDUNDANT RING CONNECTION	20
FIGURE 17: BUS CONNECTION	20
FIGURE 18: MINI USB CONNECTOR	21
FIGURE 19: CONSOLE PORT	21
FIGURE 20: SERIAL PORT SETTINGS	22
FIGURE 21: VERSION CHECK	24
FIGURE 22: DEFAULT SETTING	25
FIGURE 23: IP CONFIGURATION	26
FIGURE 24: TOPOLOGY CHECK	27
FIGURE 25: TOPOLOGY CHECK	28
FIGURE 26: NODE CHECK	29
FIGURE 27: LOCAL NODE CHECK	30
FIGURE 28: FLOAT BACKUP ENABLED 1	31
FIGURE 29: RING TOPOLOGY	31
FIGURE 30: FLOAT BACKUP ENABLED 2	32
FIGURE 31: FLOAT BACKUP ENABLED 3	32
FIGURE 32: FLOAT BACKUP DISABLED 1	33
FIGURE 33: FLOAT BACKUP DISABLED 2	34
FIGURE 34: FLOAT BACKUP DISABLED 3	34
FIGURE 35: NODE IP SET	35
FIGURE 36: NODE ALL CHECK	35
TABLE 1: TECHNICAL SPECIFICATIONS	7
TABLE 2: DC OR AC POWER CONNECTION	12

TABLE 2. DU UK AU FUWER CUNNECTION	
TABLE 3: ALARM CONNECTIONS	
TABLE 4: LED FUNCTION	
TABLE 5: 8-WAY DIP SWITCH SETTINGS	
TABLE 6: TERMINAL COMMAND LINES	23

OSD2258 OPERATOR MANUAL

1 TECHNICAL SUMMARY

1.1 BRIEF DESCRIPTION

1.1.1 OVERVIEW

The OSD2258 is a 10-port industrial switch with redundant ring Gigabit Ethernet providing simple network management with real-time monitoring. It has eight 10/100/1000Base-T RJ45 copper ports and two SFP ports for ring/bus configuration.

The OSD2258 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 2ms per hop to maintain ring network integrity.

The unit will operate on either singlemode or multimode fiber. Operation over a network of hundreds of kilometers is possible by use of the appropriate optical devices. It normally requires two fibers but is optionally available for one fiber operation per port.

A major benefit of the OSD2258 is its reliable and consistent performance over the -40° C to $+75^{\circ}$ C temperature range that allows it to be used in uncontrolled environments such as roadside cabinets, mine sites and factories.



FIGURE 1: TYPICAL RING CONFIGURATION

OSD2258 OPERATOR MANUAL

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, IEEE802.3z 1000Base-Lx/Sx standards
- ▲ Has a total of 10 ports: eight fixed copper ports for 10/100/1000Base-T and two SFP ports for the fiber ring
- ▲ A network diameter of hundreds of kilometers is practical
- Ring reconfiguration in the case of cable or switch failures takes less than 2ms per hop
- MDI/MDIX Crossover: no need for crossover cables
- ▲ Can be used with either singlemode or multimode fiber over a variety of link budgets

▲ Networks using Power over Ethernet devices such as cameras, intercoms, access control, telephones, etc.

- ▲ Auto-Negotiation for half or full duplex operation
- ▲ Supports 10KB jumbo frames
- ▲ Powered by one or two non-critical 10 to 36V_{DC} or 24V_{AC} supplies, ie redundant power inputs
- ▲ Operates over the temperature range of -40°C to +75°C
- ▲ DIN rail or surface mounting
- ▲ OSDWeb Web browser GUI
- Compatible with all OSD22XX series or redundant ring Gigabit Ethernet switches
- ▲ SFP module sold separately

OSD2258 OPERATOR MANUAL

1.2 TECHNICAL SPECIFICATIONS

TABLE 1: TECHNICAL SPECIFICATIONS

SPECIFICATION	PERFORMANCE		
Electrical Data Interface	IEEE802.3i/802.3u/802.3ab, 10/100/1000Base-T Ethernet		
Electrical Data Rate	10, 100, 1000Mbps with energy detect, auto negotiate, auto MDIX		
Jumbo Frame Support	10KB		
Optical Data Interface	IEEE802.3z 1000Base-Lx/Sx		
Optical Data Rate	1000Mbps		
	Half or full duplex for 10/100		
Operating Mode	Full duplex for 1000		
	Pause frames for 1000Mbps flow control		
Electrical Data Connectors	RJ45		
Alarma	Ring to Bus		
Alarins	High Temperature		
Alarm Interface	Optoisolated MOSFET rated at 100mA @ 46V maximum		
Optical Port Connectors	SFP		
SED Options	Short haul, long haul, single fiber operation, etc.		
SFF Options	Please consult OSD DATASHEET #100210000x or contact OSD		
Standard Interfaces	Command Line Interface (CLI) for OSD Lite Network Management System		
Standard Interfaces	Web browser based Graphical User Interface (GUI)		
	Web GUI enable/disable		
Configuration Dipswitch	Ring Mode On/Off		
	Energy Efficient Ethernet On/Off		
	8x Copper Link		
	8x Copper Activity		
Indicators	2x Activity/Link on SFPs		
	2x Power		
	1x Initialise/Ring/Bus		
Dimensions (mm)	43W x 91D x 190H		
Weight	0.5kg		
Power Requirements	10 to 36V _{DC} or 22 to 28V _{AC} @ 10VA		
Power Connector	4 way 5.08mm terminal block		
Alarm Connector	4 way 3.5mm terminal block		
Operating Temperature	-40°C to +75°C		
Relative Humidity	0 to 95% non-condensing		

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PAGE 7

OSD2258 OPERATOR MANUAL

1.3 PORT ALLOCATION

Front Panel: There are eight fixed copper ports for 10/100/1000Base-T and two SFP ports.

Top Panel: The top panel consists of a 4-way 5.08mm terminal block power connector and a 4-way 3.5mm terminal block alarm connector.

Bottom Panel: 8-Way DIP switch, Mini USB connector and Type-B USB connector.

Each section will be described further throughout this manual.



FIGURE 2: FRONT PANEL

OSD2258 OPERATOR MANUAL



FIGURE 3: TOP PANEL



FIGURE 4: BOTTOM PANEL

PAGE 9

OSD2258 OPERATOR MANUAL

2 INSTALLATION AND OPERATION

2.1 INTRODUCTION

This section outlines the methods required to install and operate the OSD2258 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 60825-1:2014 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.
- A Protective eyewear should be worn in the vicinity of laser equipment.

PAGE 10

OSD2258 OPERATOR MANUAL

2.2.2 DRAWINGS AND DIMENSIONS

The OSD2258 is designed to be wall mounted onto a DIN-Rail (35mm top hat) fixture or by using 4 x M4 captivated screws (DIN Rail mount requires removal and flanges repositioned – see below). The unit dimensions (excluding connectors, SFPs, etc) is shown in Figure 5 below.



2.2.3 LOCATION

As with any electrical devices, the OSD2258 should be placed where it will not be subjected to extreme temperatures, humidity, or electromagnetic interference. Specifically, the site selected should meet the following requirements:

- The ambient temperature should be between -40° C to 75° C.
- The relative humidity should be less than 95 percent, non-condensing.
- Surrounding electrical devices should not exceed the electromagnetic field (RFC) standards.
- Make sure that the switch receives adequate ventilation. Do not block the ventilation holes on any side of the switch.

Note: Without proper cooling and control (lowering) of ambient temperature, the components within the OSD2258 can be subject to increased heat shortening the longevity and reliability. It is thus good engineering practice to ensure the unit is installed in a well ventilated area.

2.2.4 POWER SUPPLY CONNECTIONS

The OSD2258 requires external power to the Redundant DC Terminal Block Power Connector located at the top of the unit. Always ensure that the power is off before any installation.

Redundant DC Terminal Block Power Inputs

There are two pairs of power inputs for use with redundant power sources. Only one power input is required to be connected to run the switch.

Step 1: Connect the DC power to the appropriate power source, connect the plug-able terminal block on the OSD2258 switch and then turn power on.

Step 2: Disconnect the power if you want to shut down the switch.

TABLE 2: DC OR AC POWER CONNECTION

External Power Pin	Specification
Power 1 +	10 to 36V _{DC} or 22 to $28V_{AC}$ @ 10VA
Power 1 0V	Ground – 0V
Power 2 +	10 to $36V_{DC}$ or 22 to $28V_{AC}$ @ 10VA
Power 2 0V	Ground – 0V
	Earth Ground Connection



FIGURE 6: POWER SUPPLY CONNECTIONS

PAGE 12

OSD2258 OPERATOR MANUAL

2.2.5 ALARM CONNECTION

The OSD2258 has two monitoring alarm outputs: 1) Ring to Bus Alarm and 2) Temperature Alarm. The alarm connections and conditions for alarm outputs are as set out in Table 3. There are four pins on the 3.5mm terminal block used alarm output. Maximum ratings the OSD2258 relay can drive is 100mA @ $46V_{(max)}$. Note: Alarm output has no polarity.

Alarm Output	Alarm1 Ring /Bus Status	Alarm CH2 Temperature
Open	Ring	Less than 90°C
Closed	Bus*	Higher than 90°C

TABLE 3: ALARN	1 CONNECTIONS
----------------	----------------------

*Note: Bus alarm is only triggered *after* a ring connection is established.



FIGURE 7: ALARM OUTPUTS



FIGURE 8: CONTACT CLOSURE OUTPUT

OSD2258 OPERATOR MANUAL

2.2.6 USB CONNECTOR

The OSD2258 has a USB – Type B connector located on the bottom of the unit that is used for Command Line Interface (CLI) from the PC to the OSD2258 via the PC's USB connector. See section 2.6 for further CLI information.



FIGURE 9: USB TYPE B CLI PORT

To operate and control the OSD2258 using the CLI, a proprietary driver will be required to be installed onto the PC being used. The driver can be found and downloaded via the following site: <u>www.silabs.com</u> and searching for the CP210x driver. Download the relevant driver for your operating system, install and follow the installation instructions from your PC.

Download for Windows 10 Universal (v10.1.7)

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FIGURE 10: CLI SOFTWARE INSTALLATION

PAGE 14

OSD2258 OPERATOR MANUAL

2.2.7 LED INDICATORS



FIGURE 11: PORT/LED

PAGE 15

OSD2258 OPERATOR MANUAL

	LED		Function
•	Dower	Off	Unit is Off
v	Fower	Green	Unit is Powered On
		Off	Non-Ring Mode (SW6 On)
6	Ping	Green	Redundant Ring
U U	King	Amber	Bus
		Green/Amber	Initializing
	Link (speed) Copper Port	Off	10Mb or No Link
• Link (sj	Link (speed) Copper Fort	Blink Amber	100Mb
	1-8	Amber	1Gb
		Off	No Connection/No Activity
0	Act Copper Port 1-8	Green	Link Established
		Blink	Activity
B	SED Ports 0, 10	Off	No Link Established
U	514 10118 9-10	Blink	SFP Link OK/Activity
6	Padundant Dowar 1	Off	Power is Not Applied to Corresponding Input
J	Requireant Fower 1	Green	Power Connected to Corresponding Input
6	Padundant Dowar 2	Off	Power is Not Applied to Corresponding Input
Redundant Power 2	Green	Power Connected to Corresponding Input	

TABLE 4: LED FUNCTION

2.2.8 CONTROLS

The OSD2258 has an 8-way DIP switch to control a number of functions. Table 5 outlines the function of each switch.





FIGURE 13: 8-WAY DIP SWITCH

OSD2258 OPERATOR MANUAL

SWITCH NUMBER	DESCRIPTION	FUNCTION	SWITCH POSITION
		Enable WebGUI	On
1	GUI Mode	Disable WebGUI	Off*
	Not Used	-	On
2	Not Used	-	Off*
	Not Used	-	On
3	Not Used	-	Off*
	Not Used	-	On
4	Not Used	-	Off*
_	Not Used	-	On
5	Not Used	-	Off*
-	Ding/Non Ding	Ring Mode Disabled	On
6	King/Non-King	Ring Mode Enabled	Off*
_	EEET Dischla	Disable EEE Function	On
7	EEE. Disable	Enable EEE Function	Off*
_	Decerned	Programming Mode	On
8	KESEI VEU	User Mode	Off*

TABLE 5: 8-WAY DIP SWITCH SETTINGS

* Default settings. SW2-5,8 switch should remain in OFF position at all times.

[†] EEE- Energy Efficient Ethernet (IEE802.3az standard) - enabling this function lowers the power consumption around 10% on ports 1-8 only.

PAGE 17

OSD2258 OPERATOR MANUAL

2.2.9 FITTING SFP CONNECTORS

Care should be taken when inserting/removing the SFP connectors from SFP port 9 and 10 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 14: FITTING/REMOVING SFP CONNECTORS

PAGE 18

OSD2258 OPERATOR MANUAL

2.3 OPERATION

When using the OSD2258 for the first time, check that the unit is in good condition with no visible damage.

Upon power up check that the indicators illuminate accordingly on power up (see Table 4).

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 $9/125\mu m$ singlemode fiber.

For multimode fiber connections, fiber used must be $50/125\mu m$ or $62/125\mu m$ multimode fiber.

Plug in the appropriate connectors for system configuration;

- RJ45 cable to fixed copper ports (port 1 and 8) and copper SFP modules
- LC or SC fiber cable to fiber SFP modules.

Redundant Ring Operation

The OSD2258 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 2ms per node to maintain ring network integrity.



FIGURE 15: REDUNDANT RING CONFIGURATION

PAGE 19

OSD2258 OPERATOR MANUAL

To connect the OSD2258 in a redundant ring configuration ports 9 and 10 must be used together with fiber SFPs. The non-ring ports (ports 1 to 8) should be used to connect to your Ethernet devices (eg. Cameras, PLCs, computers, etc.)

Figure 16 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 OSD2258 units can be connected to the ring as required using this topology. Ensure that the switch settings for port 9 and 10 are set to 1000Mbps (1Gbps) – see Table 5. *Note: connection diagram is for illustrative purposes only. Port 9/10 can be connected to either port to achieve redundant ring configuration.*



FIGURE 16: REDUNDANT RING CONNECTION

Bus Operation

To connect the OSD2258 in a bus configuration ports 9 and 10 must be used together with fiber SFPs. The remaining ports (ports 1 to 8) should be used to connect to your Ethernet devices (eg. Cameras, PLCs, computers, etc.)



Connect more OSD2258 units as required using this topology

FIGURE 17: BUS CONNECTION

PAGE 20

OSD2258 OPERATOR MANUAL

2.4 MINI USB PORT

The Mini USB Port is currently not used. This port has no function for end user.



FIGURE 18: MINI USB CONNECTOR

2.5 TYPE-B USB PORT

The console port is a Type-B USB connector that is used to connect the OSD2258 to a PC for Command Line Interface (CLI) communication. The CLIs information and details are explained in section 2.6



FIGURE 19: CONSOLE PORT

PAGE 21

OSD2258 OPERATOR MANUAL

2.6 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 OSD2258 must be connected to a PC with a serial port and an appropriate cable as specified in section 2.2.6. Using a terminal emulation program such as Hyperterminal, a number of command lines specific to the OSD2258 can be implemented to check link/node status, ring/bus topology and enable/disable float backup.

2.6.1 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.

ort Settings		
Bits per second:	57600	~
Data bits:	8	~
Parity:	None	~
Stop bits:	1	~
Flow control:	None	~
	Re	estore Defaults

FIGURE 20: SERIAL PORT SETTINGS

2.6.2 COMMAND LINE FUNCTIONS

There are a number of command line functions that enables the user to obtain running information of a single OSD2258 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 OSD2258 units on the ring/bus network – or alternatively, the OSD2258 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.

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

TERMINAL COMMAND LINE	SPECIFICATION	FUNCTION	FIGURE
?	Help	Lists all CLI commands including input format information	_
vc	Version Check	Displays the current software version and revision installed on the unit	Figure 21
ds	Default Setting	Reset configuration to default	Figure 22
ipconfig	IP Configuration	Configure the IP address	Figure 23
tc	Topology Check	Displays the topology status of the established ring/bus	Figure 24
nc	Node Check	Gets running status of the node for given MAC address	Figure 26
lnc	Local Node Check	Gets running status of the local node	Figure 27
fbe	Float Backup Enable	Enable float backup function for all nodes in a Ring/Bus	Figure 28
fbd	Float Backup Disable	Disable float backup function for all nodes in a ring/bus	Figure 32
node_ip_set	Node IP Set	Setup IP of the node with given MAC address	Figure 35
node_all_set	Node All Set	Setup IP for all nodes on a ring/bus	Figure 36

TABLE 6: TERMINAL COMMAND LINES

PAGE 23

OSD2258 OPERATOR MANUAL

VERSION CHECK - <vc>

OSD - HyperTerminal							- 0	23
File Edit View Call Transfer He	elp							
🎦 🖆 🖏 🖏 🖏								
\$>vc Software Version: Software ID Number	02 ·: 6001220	02						*
\$>								= •
Connected 0:02:27 Auto detect	57600 8-N-1	SCROLL	CAPS	NUM	Capture	Print ech	D	æ

FIGURE 21: VERSION CHECK

Displays a number of quick reference information about the product. Software Version Number

Software ID Number

PAGE 24

OSD2258 OPERATOR MANUAL

DEFAULT SETTING - <ds>

SSD - HyperTerminal		
File Edit View Call Transfer Help		
D 🚔 👜 🔏 🗈 🎦 📸		
\$>ds		*
Do you wanted to ResetConfiguration	uration[y/n] ?y	
No. MAC_ADDRESS	FLOAT_BACKUP	SETTING_RESUL
1 00:26:dc:00:33:aa	Enable	ОК
The end		
\$> Finished. Reboot the board to take the	effect_	E
<		•
Connected 0:06:03 Auto detect 57600 8-N-1	SCROLL CAPS NUM Capture	Print echo

FIGURE 22: DEFAULT SETTING

Resets the OSD2258 to its default factory setting. A prompt question will appear "Do you want to Reset Configuration [y/n]?

 $\boldsymbol{n}-Exits$ the default configuration setting and returns to the home prompt.

y – Resets to default configuration sequence.

The unit will require a reboot (see Page 44) for changes to take effect.

OSD2258 OPERATOR MANUAL

IP CONFIGURATION - <ipconfig>

💽 OSD - HyperTerminal	x
File Edit View Call Transfer Help	
<pre>\$>ipconfig IP address: 192.168.0.99 Net mask: 255.255.0 Gateway: 192.168.0.1 To change settings, type: ipconfig <ip address=""> <net mask=""> <gateway address=""> For example: ipconfig 192.168.0.2 255.255.0 192.168.0.1 .</gateway></net></ip></pre>	*
\$>	
Connected 0:07:39 Auto detect 57600 8-N-1 SCROLL CAPS NUM Capture Print echo	.ei

FIGURE 23: IP CONFIGURATION

Displays the current IP address, Net mask and Gateway settings. To make changes to the IP address, Net mask and Gateway, at the prompt enter the new details in the following format;

ipconfig <ip address> <netmask> <gateway address>

PAGE 26

OSD2258 OPERATOR MANUAL

TOPOLOGY CHECK - <tc> Command Line

OSD - HyperTerm	inal				
File Edit View	Call Transfer Help				
D 🗳 🛯 🕉 🗉	0 🍎 😭				
					*
\$>tc					
				DINC DO	DTNC D1
110. PIHC			NUDL_RULL	КТИО_ГО	NTHO_F1
1 00.		T., 34	01	11	II
T 00:	26:dC:00:33:aa	1011	STave	U_port	U_port <-local
M_port <	<> Master port,	S_port <	> Slave po	ort	
B_port≺	<≻ Backup port,	U_port <	(> Unconnec	ted port	
The mast	ter communicates wi	th the local	node via '*	' marked por	·t.
The					
The	end				E
\$>_					
•		III			
Connected 0:08:38	Auto detect 57600 8-N-1	SCROLL CAPS	NUM Capture Pr	int echo	

FIGURE 24: TOPOLOGY CHECK

In this case, only one OSD2258 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: Displays all the MAC addresses of the units connected on the ring/bus

TOPOLOGY: 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). The Master unit is determined by the unit with the lowest MAC address

RING_P0: Indicates the function of port 3 and its relation to the ring/bus. There are four possibilities;

- 1. M_port Master Port (port facing the master)
- 2. S_port Slave Port (port back to the master)
- 3. B_Port Backup Port
- 4. U_Port Unconnected Port

RING_P1: 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

<-local: This points to the unit that the USB cable is plugged into on the ring/bus. Also displays IP address, Device and Location

In the example below there are four OSD2258 connected in a ring configuration.

PAGE 27

OSD2258 OPERATOR MANUAL

PC1 - ile Edit	· HyperTerminal : View Call Transfer Hel 중 = 다 꿈 때	p				
\$>tc No.	MAC ADDRESS	TOPOLOGY	NODE ROLE	RING PØ	RING P1	
1 2 3 4	00:26:dc:00:00:63 00:26:dc:00:00:65 00:26:dc:00:00:5f 00:26:dc:00:00:5f 00:26:dc:00:00:64	Ring Ring Ring Ring Ring	Slave Slave Master Slave	B_port S_port S_port M_port	M_port M_port S_port B_port	<-local
M_po B_po 	ort <> Master port, ort <> Backup port, The end	S_port U_port	<> Slave p <> Unconne	ort cted port		

FIGURE 25: TOPOLOGY CHECK

No: 4 – Four units connected

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

TOPOLOGY: Displaying type of connection (In this case a Ring connection is established)

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

RING_P0: Indicates the function of port 3 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

RING_P1: 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

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

OSD2258 OPERATOR MANUAL

NODE CHECK - <nc> Command Line

SSD - HyperTerminal	
File Edit View Call Transfer Help	
D 🚅 💿 🐉 🗈 🎦 🖆	
\$>nc 00:26:dc:00:33:aa	^
Information of LOCAL node with M	AC address: 00:26:dc:00:33:aa
1 TOPOLOGY: In: 2 NODE BOLE:	it
3 PORT3: Und	connected_port(U_port)
4 PURI4: Und 5 Float Backup Function: End	connected_port(U_port) abled
The end	
ine enu	
<mark> \$>_</mark>	
· · · · · · · · · · · · · · · · · · ·	4
Connected 0:11:52 Auto detect 57600 8-N-1 SCROLL	CAPS NUM Capture Print echo

FIGURE 26: NODE CHECK

Node check obtains the running status of the node for the specific MAC address requested within the Ring/Bus.

Correct entry format is as follows (MAC address specified below is an example);

nc 00:26:dc:00:30:fe

LOCAL NODE CHECK - < Inc> Command Line

OSD - HyperTerminal File Edit View Call Transfer Help	
C 🛎 🐵 🕉 🗈 🎦	
\$>1nc 	•
1 TOPOLOGY: Init 2 NODE_ROLE: 3 PORT3: Unconnected_port(U_port) 4 PORT4: Unconnected_port(U_port) 5 Float Backup Function: Enabled The end The end	
\$>_	
Connected 0:12:50 Auto detect 57600 8-N-1 SCROLL CAPS NUM Capture Print echo	•

FIGURE 27: 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.

PAGE 30

OSD2258 OPERATOR MANUAL

FLOAT BACKUP ENABLE <fbe>

OSD - HyperTerminal			
File Edit View Call Transfer Help			
요 🚔 👜 🔏 💷 🎦 🖆			
\$>fbe			•
No. MHC_HDDRESS	FLOHI_BHCKOP	SETTING_RESULT	
1 00:26:dc:00:33:aa	Enable	ОК	<-local
The end			
\$>_			
	Ш		- F
Connected 0:14:28 Auto detect 57600 8-N-1	SCROLL CAPS NUM Capture	Print echo	

FIGURE 28: FLOAT BACKUP ENABLED 1

No: 1 – Lists number of units connected (in this case 1)

MAC_ADDRESS:- Displaying all the MAC addresses of the units connected on the ring/bus FLOAT_BACKUP: Displays all the units connected to the ring/bus having Float Backup enabled. SETTING_RESULT: 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 Master 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 3 will always be the backup branch – indicated by a dashed line on a ring topology.



FIGURE 29: RING TOPOLOGY

In Figure 29, 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 30), node 1 will communicate with node 3 via node 2 and node 4.

PAGE 31

OSD2258 OPERATOR MANUAL



FIGURE 30: 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 31.



FIGURE 31: 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. Differing backup configurations will cause segmented backup branches and may not function as intended.

All OSD2258 are set to enabled float backup upon shipment.

PAGE 32

OSD2258 OPERATOR MANUAL

FLOAT BACKUP DISABLE - <fbd>

🤏 PC1 -	- HyperTerminal			
File Edit	t View Call Transfer Help)		
				-1.5
fbd				
No.	MAC_ADDRESS	FLOAT_BACKUP	SETTING_RESULT	
1 2 3 4 	00:26:dc:00:00:63 00:26:dc:00:00:65 00:26:dc:00:00:5f 00:26:dc:00:00:64 The end	Disable Disable Disable Disable	ОК ОК ОК ОК	<-local
\$>				
Connected 0	:00:12 Auto detect 57600 8-N-1	SCROLL CAPS NUM Cap	oture Printiecho	×

FIGURE 32: 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: Displays all the units connected to the ring/bus having Float Backup disabled. SETTING_RESULT: 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 Master 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 3 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.

OSD2258 OPERATOR MANUAL

If the link between node 1 and 3 is broken (see Figure 33), node 1 will communicate with node 3 via node 2 and node 4.





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 34.



FIGURE 34: 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. Differing backup configurations will cause segmented backup branches and may not function as intended.

All OSD2258 are set to enabled float backup upon shipment.

PAGE 34

OSD2258 OPERATOR MANUAL

NODE IP SET - <node_ip_set>

💽 OSD - HyperTerminal
File Edit View Call Transfer Help
\$>node_ip_set
nelp information
Four parameters are needed. Correct format is:
<pre>{node_ip_set/nis} <00:26:dc:xx:xx>(hex) <ip address=""> <net mask=""> <gateway ac<br="">dress> For example: node_ip_set 00:26:dc:00:25:86 192.168.0.10 255.255.255.0 192.168.0. 1 The end</gateway></net></ip></pre>
\$>_
Connected 0:19:10 Auto detect 57600 8-N-1 SCROLL CAPS NUM Capture Print echo

FIGURE 35: NODE IP SET

This command line enables the user to setup the IP of the node with the given MAC address. Correct entry format is as follows (MAC, IP, mask and gateway address specified below is an example);

node_ip_set 00:26:dc:00:30:fe 192.168.0.99 255.255.255.0 192.168.0.1

NODE ALL	SET	- <node< th=""><th>all</th><th>set></th><th></th></node<>	all	set>	
				_~~~~	

OSD - HyperTerminal			
File Edit View Call Transfer Help			
\$>node_all_set			
Help information			
Four parameters are needed. Correct format is:			
<pre>{node_all_set/nas} <base address="" ip=""/> <net mask=""> <gateway address=""> <step> For example: node_all_set 192.168.0.10 255.255.255.0 192.168.0.1 2 Note: The base_ip_address is set on current device, the setting sequence follows the display number when running tc command Please make sure running tc command before executing this command The end</step></gateway></net></pre>			
\$>_			
Connected 0:20:13 Auto detect 57600 8-N-1 SCROLL CAPS NUM Capture Print echo			

FIGURE 36: NODE ALL CHECK

This command line enables the user to setup the IP for all nodes on a ring/bus. Correct entry format is as follows (MAC, IP, mask and gateway address specified below is an example);

node_all_set 192.168.0.99 255.255.255.0 192.168.0.1 2

PAGE	35
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OSD2258 OPERATOR MANUAL

2.7 WEB GUI



The OSD2258 provides a web-based browser interface for configuring and monitoring the unit. This interface allows you to access the switch using any preferred web browser.

This chapter describes how to configure the switch using its web-based browser interface.



PAGE 36

OSD2258 OPERATOR MANUAL

2.7.1 LOGGING ON TO THE SWITCH

SWITCH IP ADDRESS

In your web browser, specify the IP address of the switch. Default IP address is 192.168.0.99. Note: Access to this unit is unrestricted.



Upon connecting to the OSD2258, the home screen will display some useful information.

A series of tables showing system information is also displayed containing Software Information, Hardware Information and Running Information.

Software Information

Parameter	Value
Software ID	600122-02
Build Time	09-04-2019:14:30:04

Hardware Information

Parameter	Value
MAC address	00-26-dc-00-33-aa
Serial Number	10173617
PCB Number	844727-02
Date of Manufacture (DD-MM-YYYY)	04-10-2019

Running Information

Parameter	Value
Running Hours	0 D: 0 H : 24 M : 40 S
Date and Time (DD-MM-YYYY H:M:S)	01-01-2000 00:24:41
Energy Efficient Ethernet (EEE)	Enabled
Location	Not set
IP Address	192.168.0.99
Subnet Mask	255.255.255.0
Default Gateway	192.168.0.1

OSD2258 OPERATOR MANUAL

2.7.2 GUI MENU

Configuration
System
Date/Time
Port Setting
Log
Monitor
System Info
Port
Topology
System Log
Maitenance
Upload
System Reboot

The user has access to Configure, Monitor or Maintain the OSD2258. Each section will be explained within this manual.

PAGE 38

OSD2258 OPERATOR MANUAL

CONFIGURATION → **SYSTEM**

IP Configuration

	Configured	Current
IP Address	192.168.0.99	192.168.0.99
Subnet Mask	255.255.255.0	255.255.255.0
Default Gateway	192.168.0.1	192.168.0.1

Location

	Configured	Current
Location	Not set	Not set
Save Reset		

IP ADDRESS

Configured: The IP address can be changed by modifying this text box. *Current:* Displays the current saved IP address

SUBNET MASK

Configured: The Subnet Mask can be changed by modifying this text box. *Current:* Displays the current saved Subnet Mask

DEFAULT GATEWAY

Configured: The Default Gateway can be changed by modifying this text box. *Current:* Displays the current saved Default Gateway

LOCATION

Location: The location of the unit can be set by the user by modifying this text box

Buttons

Save : saves the new settings

Reset : resets any changes made

PAGE 39

OSD2258 OPERATOR MANUAL

CONFIGURATION → **DATE/TIME**

Date/Time Setting

	Configured	Current	Format
Date	01/01/2000	01/01/2000	DD/MM/YYYY
Time	00:17:17	00:17:17	HH:MM:SS

Save Reset

DATE

Allows the user to set the date in the configured window. Also displays the current setting and format expected entry

TIME

Allows the user to set the time in the configured window. Also displays the current setting and format expected entry

Buttons

Save : saves the new settings

Reset : resets any changes made

CONFIGURATION → **PORT SETTING**

Port Setting

Port	Mode
Port 1	Auto 👻
Port 2	Auto 👻
Port 3	Auto 👻
Port 4	Auto 👻
Port 5	Auto 👻
Port 6	Auto 👻
Port 7	Auto 👻
Port 8	Auto 👻

Save

Port

Indicates the Port number

Mode

Allows the user to set the Port Speed from the drop-down selection.

- Auto: Auto detection of the port speed
- **10Mbps HDX**: 10Mbps Half Duplex mode
- **10Mbps FDX**: 10Mbps Full Duplex mode
- 100Mbps HDX: 100Mbps Half Duplex mode
- 100Mbps FDX: 100Mbps Full Duplex mode
- 1Gbps FDX: 1Gbps Full Duplex mode

Buttons

Save : saves the new settings

PAGE 40

OSD2258 OPERATOR MANUAL

CONFIGURATION \rightarrow LOG

Log Settings

ID	Module	Log Level	
1	SYS	Info 🔻	

Save

ID

Indicates the ID number

MODULE

Allows the user to set the Log Settings for System.

LOG LEVEL

Allows the user to set the level of the Log monitoring displayed

- **Disable**: Disables Log entries
- Info: Displays the Log Information for the module
- **Debug**: Displays the debug information for the module

Buttons

Save : saves the new settings

MONITOR → SYSTEM INFO

Software Information

Parameter	Value
Software ID	600122-02
Build Time	09-04-2019:14:30:04

Hardware Information

Parameter	Value		
MAC address	00-26-dc-00-33-aa		
Serial Number	10173617		
PCB Number	844727-02		
Date of Manufacture (DD-MM-YYYY)	04-10-2019		

Running Information

Parameter	Value		
Running Hours	0 D: 0 H : 24 M : 40 S		
Date and Time (DD-MM-YYYY H:M:S)	01-01-2000 00:24:41		
Energy Efficient Ethernet (EEE)	Enabled		
Location	Not set		
IP Address	192.168.0.99		
Subnet Mask	255.255.255.0		
Default Gateway	192.168.0.1		

See Section 2.7.1

OSD2258 OPERATOR MANUAL

MONITOR \rightarrow Port

Port Status

Port	Copper/SFP	Role	Link	Speed	Duplex
1	Copper	Switch Port	Down	-	-
2	Copper	Switch Port	Up	100	Full
3	Copper	Switch Port	Down	-	-
4	Copper	Switch Port	Down	-	-
5	Copper	Switch Port	Down	-	-
6	Copper	Switch Port	Down	-	-
7	Copper	Switch Port	Down	-	-
8	Copper	Switch Port	Down	-	-
9	SFP	Ring Port	Down	-	-
10	SFP	Ring Port	Down	-	-

Port

Monitors each port activity listed 1-10.

COPPER/SFP

Indicates the port connection: Either Copper or SFP

ROLE

Switch Port: Indicates the role of the port **Ring Port**: Indicates the role of the port

Link

Up: Connection established **Down**: No Connection detected

SPEED

Indicates the port connection speed in Mbps.

- **10**: 10Mbps
- **100**: 100Mbps
- **1000**: 1000Mbps (1Gbps)

DUPLEX

Indicates port connection type.

- -: No Connection
- Half: Half Duplex
- Full: Full Duplex

PAGE 42

OSD2258 OPERATOR MANUAL

MONITOR → TOPOLOGY

Ring Topology Status

No	MAC Address	Topology	Node Role	Ring_P0	Ring_P1	IP Address	Ring Version
1	00-26-dc-00-33-aa	INIT	SLAVE	U_port	U_port	192.168.0.99	5

No

Indicates number of units connected to the ring/bus

MAC ADDRESS

Lists the MAC address of the individual units connected on the ring/bus

TOPOLOGY

Indicates type of connection of the system

- Init: Only single unit connected
- **Ring**: Ring connection
- **Bus**: Bus Connection

NODE ROLE

Indicates the role of each unit on the ring/bus

- Slave: Slave
- Master: Master

RING_P0

Indicates the function of port 9 and its relation to the ring/bus

- **M_port**: Master Port (port facing the master)
- **S-port**: Slave Port (port back to the master)
- **B**_port: Backup Port
- **U_port**: Unconnected Port

RING_P1

Indicates the function of port 10 and its relation to the ring/bus

- **M_port**: Master Port (port facing the master)
- **S-port**: Slave Port (port back to the master)
- **B**_port: Backup Port
- **U_port**: Unconnected Port

IP ADDRESS

Lists the IP address of the individual units connected on the ring/bus

RING VERSION

Displays ring version

PAGE 43

OSD2258 OPERATOR MANUAL

MAINTENANCE → UPLOAD

Software Upload

Browse... No file selected. Upload

Use this section to upload OSD released update software.

Buttons

Browse...:: Browse file location Upload : Upload software

MAINTENANCE → SYSTEM REBOOT

System Reboot

Reboot

Use this section to reboot the unit

Buttons

Reboot : Reboots the unit

PAGE 44

OSD2258 OPERATOR MANUAL

3 MAINTENANCE

3.1 INTRODUCTION

The following section outlines the fault-finding procedure for the OSD2258 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 OSD2258 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 OSD2258.

PAGE 45

OSD2258 OPERATOR MANUAL

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.

PAGE 46

OSD2258 OPERATOR MANUAL

PAGE 47

OSD2258 OPERATOR MANUAL

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