OPTICAL
SYSTEMS
DESIGN

OPERATOR MANUAL

OSD2154P

MICRO 10/100/1000Base-T to 1000Base-X

3-PORT SWITCH

WITH PoE++ SOURCE

INDEX 1

1 TECHNICAL SUMMARY 5

1.1 BRIEF DESCRIPTION 5
1.1.1 OVERVIEW 5
1.1.2 APPLICATIONS 5
1.1.3 FEATURES AND BENEFITS 5
1.2 TYPICAL CONFIGURATION 6
1.3 PRODUCTS AND OPTIONS 6
1.4 TECHNICAL SPECIFICATIONS 7
1.5 FRONT AND REAR PANELS 8

2 INSTALLATION AND OPERATION 9

2.1 INTRODUCTION 9
2.2 INSTALLATION 9
2.2.1 WARNING AND PRECAUTIONS 9
2.2.2 OSD2154P DRAWINGS AND DIMENSIONS 10
2.2.3 POWER SUPPLY CONNECTIONS 11
2.2.4 LOCATION 12
2.2.5 FIXED RJ45 COPPER PORT PIN ASSIGNMENTS 12
2.2.6 LED INDICATORS 13
2.2.7 CONTROLS 14
2.2.8 RESET BUTTON 14
2.2.9 FITTING SFP CONNECTORS 15
2.2.10 BASIC CONNECTIONS 15
2.3 OSD2154P SINGLE/DUAL SIGNATURE PD OPERATION 16
2.3.1 SINGLE SIGNATURE PD 16
2.3.2 DUAL SIGNATURE PD 16
2.4 COMMAND LINE INTERFACE (CLI) 17
2.4.1 TERMINAL EMULATION SETUP 17
2.4.2 COMMAND LINE FUNCTIONS 18
2.5 WEB GUI 23
2.5.1 LOGGING ON TO THE SWITCH 24
2.5.2 GUI MENU 24

3 MAINTENANCE 31

3.1 INTRODUCTION 31
3.2 EXTERNAL INSPECTION 31
3.3 ROUTINE MAINTENANCE 31

4 WARRANTY 32

4.1 WARRANTY PERIOD 32
4.2 REPAIRS 32
4.2.1 WARRANTY REPAIRS 32
4.2.2 OUT-OF-WARRANTY REPAIRS 32
4.2.3 SITE REPAIRS 32
4.2.4 EXCLUSIONS 32

FIGURE 1: OSD2154P TYPICAL CONFIGURATIONS 6
FIGURE 2: OSD2154P CONNECTORS 8
FIGURE 3: OSD2154P DIMENSIONS 10
FIGURE 4: OSD2154P MOUNTING DIMENSIONS 10
FIGURE 5: MODULE POWER SUPPLY CONNECTIONS 11
FIGURE 6: FIXED RJ45 ETHERNET CONNECTORS 12
FIGURE 7: LED INDICATORS 13
FIGURE 8: OSD2154P 3-WAY DIP SWITCH 14
FIGURE 9: FITTING/REMOVING SFP CONNECTORS 15
FIGURE 10: BASIC CONNECTIONS 15
FIGURE 11: SINGLE SIGNATURE PD 16
FIGURE 12: DUAL SIGNATURE PD 16
FIGURE 13: CLI PORT SETTINGS 17
FIGURE 14: CLI "?" COMMAND 18
FIGURE 15: CLI – VERSION CHECK 19
FIGURE 16: CLI – POE DUMP 19
FIGURE 17: CLI – PSE REGISTER 20
FIGURE 18: CLI – IP CONFIGURATION 20
FIGURE 19: CLI – POE PORT CONFIGURATION 21
FIGURE 20: CLI – DEFAULT SETTING 21
FIGURE 21: CLI – WEB ENABLE 22

TABLE 1: PRODUCTS AND OPTIONS 6
TABLE 2: TECHNICAL SPECIFICATIONS 7
TABLE 3: POWER CONNECTION 11
TABLE 4: LED FUNCTION 13
TABLE 5: OSD2154P 3-WAY DIP SWITCH SETTINGS 14
TABLE 6: CLI COMMAND LIST 18

1 TECHNICAL SUMMARY

1.1 BRIEF DESCRIPTION

1.1.1 OVERVIEW

The OSD2154P is designed to convert between 10/100/1000Base-T copper cabling & 100/1000Base-X fiber cabling. It has two RJ45 copper PoE ports (up to 90W) and one SFP port which can be specified by the user for one or two fiber configuration The PoE ports are available for single or dual signature Powered Device (PD) where the unit automatically detects the PD signature when devices are powered up (factory setup not required). The OSD2154P also includes CLI and WebGUI software to conveniently access some advanced functions as standard.

The unit will operate on either singlemode or multimode fiber by use of the appropriate optical device.

A major benefit of the OSD2154P is its reliable operation over the -20°C to +75°C temperature range which allows it to be used in environments such as roadside cabinets, mine sites and factories.

The OSD2154P module is intended for isolated use and requires an external power source.

1.1.2 APPLICATIONS

- Any network utilising a mix of copper and fiber
- Networks using Power over Ethernet devices such as cameras, intercoms, access control, telephones, etc.
- Industrial IP communications
- Gigabit Ethernet 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.
- Supports network traffic of 10, 100Mbps or 1000Mbps.
- Has two fixed 10/100/1000Base-T copper port and one SFP port which can be 100Base-Fx or 1000BaseLx/Sx/Zx.
- Auto MDI/MDIX.
  Can be used with either singlemode or multimode fiber over a variety of link budgets
- Complies with the IEEE802.3af and IEE802.3at standards.
- Web browser based Graphical User Interface (GUI)
- Provides up to 60W (90W optional) to each RJ45 port. Single and dual signature PD detection with OSD's unique automatic PoE configuration software or manual setup.
- Available for operation over 1 or 2 fibers.
- Powered by non-critical 50VDC supplies
- Operates over the temperature range of -20 to +75°C.
- PoE ports are available for single or dual signature Powered Device (PD).
- Remote PoE on/off control and status monitoring
- Supports IEEE802.af Alternative A and B cable wiring.
- Supports10KB jumbo frames.
- SFP module sold separately.
- DIN rail mounting.

1.2 TYPICAL CONFIGURATION

Figure 1 below indicates the typical set-up for an OSD2154P system.

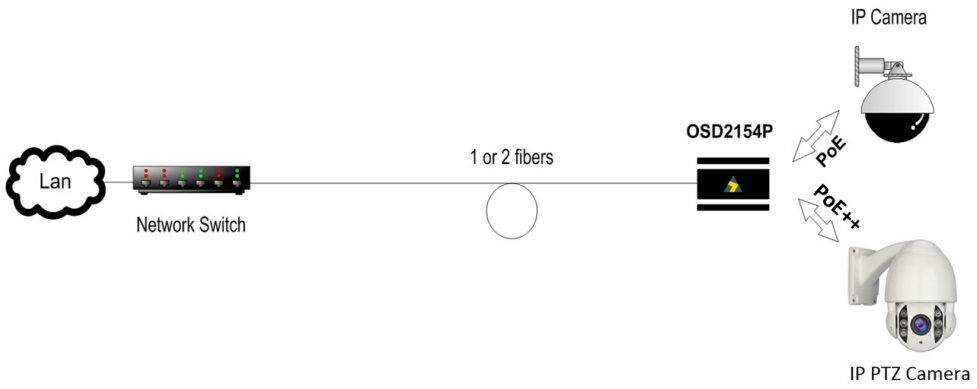

FIGURE 1: OSD2154P TYPICAL CONFIGURATIONS

1.3 PRODUCTS AND OPTIONS

There are two options available for the OSD2154P as identified in Table 1 below. This must be specified at time of sale. The standard OSD2154P is by default the 60W version. A 90W version is available as an option:

TABLE 1: PRODUCTS AND OPTIONS

ITEM	DESCRIPTION
60W	Single PD: Provides up to 60W on both ports Dual PD: Provides up to 30W + 30W on each port
90W	Single PD: Provides up to 90W on both ports Dual PD: Provides up to 45W + 45W on each port

The OSD2154P has PoE PD device (e.g. IP camera) Signature Auto-Detection function, both single-signature type and dual-signature type PD can be automatically detected and then powered up. *Note: Operating conditions will depend on powered device PD.* The OSD2154P detects and supports the following;

- DD: Both RJ45 ports support dual signature PD
- SS: Both RJ45 ports support single signature PD
- SD: Supports single signature PD on any one port while the other port supports dual signature PD

1.4 TECHNICAL SPECIFICATIONS

TABLE 2: TECHNICAL SPECIFICATIONS

SPECIFICATION	PERFORMANCE
Electrical	
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 or IEEE802.3u 100Base-Fx
Optical Data Rate	100Mbps or 1000Mbps
Operating Mode	Half or full duplex for 10/100 Full duplex for 1000 Flow control
Electrical Data Connector	RJ45
Controls	100 or 1000Mbps on fiber Program Hi-PoE mode (up to 90W/60W)
PoE	IEEE802.3af, IEEE802.3at and PoE++ (60W) with 90W optional Supports single or dual signature powered device (PD)
Operating Mode	Alternative A & B (Pins 1/2, 3/6, 4/5, and 7/8)
Management	
Standard Interface	Web browser based Graphical User Interface (GUI)
Controls	100 or 1000Mbps of fiber Program
Optical	
Optical Port Connector	SFP (LC connectors for 2-fiber operation and SC for 1-fiber operation)
SFP Options	Short haul, long haul, single fiber operation, etc Please consult OSD datasheet #1021000XX or contact OSD
Physical	
Operating Temperature	-20°C to +75°C
Relative Humidity	0 to 95% non-condensing
Power Requirements	+46V_{DC} to +57V_{DC} @ 6W plus up to an extra 124W for 60W/port and 184W 90W/port PoE operation (attached power device dependant) ≥52V_{DC} recommended for PoE+ or ≥55V_{DC} for 60W and 90W PoE
Power Connector	2 Way 3.5mm Terminal Block on the module
Indicators	2x Copper Link/Activity on RJ45 2x Copper Speed on RJ45 2x PoE Enable/Disable 1x Power On/Off 1x SFP Link/Speed on SFP
Dimensions (mm)	90W x 88D x 49H
Weight	0.3kg

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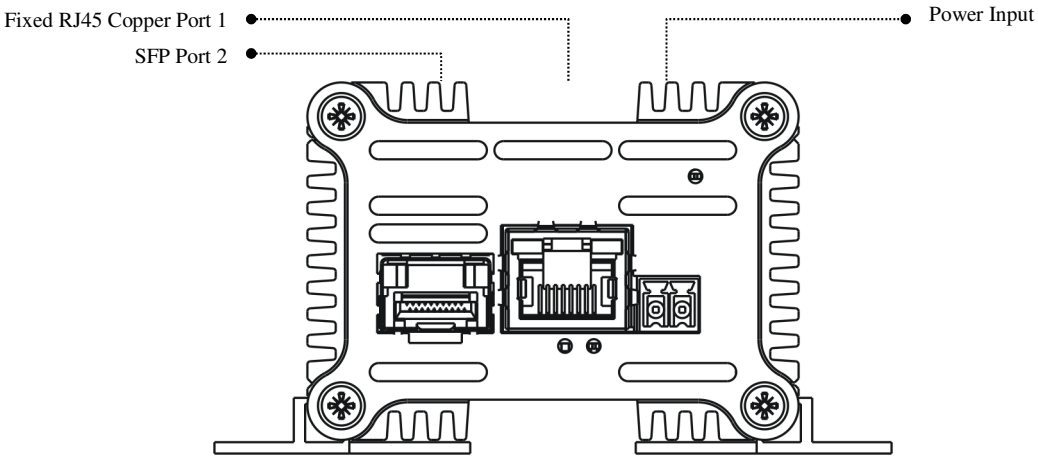
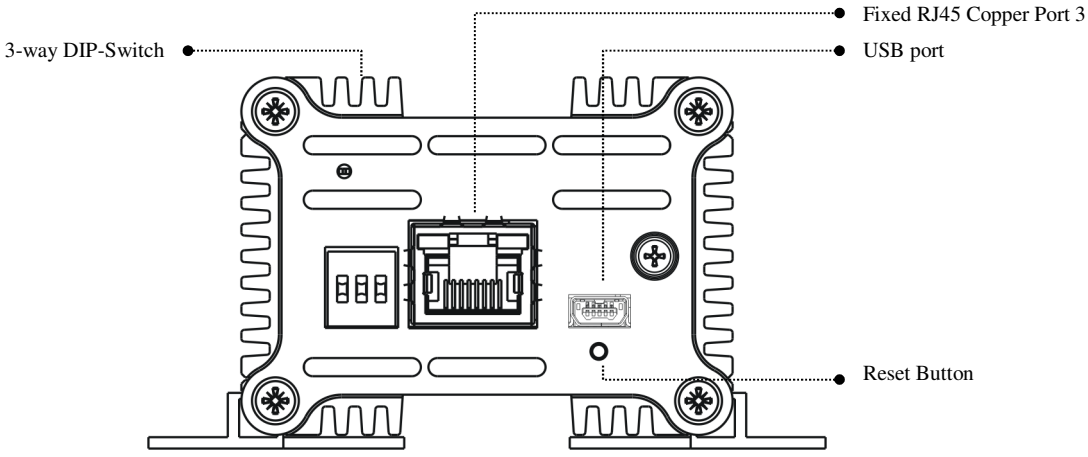
1.5 FRONT AND REAR PANELS

The front panel consists of one fixed copper port for 10/100/1000Base-T, one SFP port and a 2-way terminal block power connector while the rear panel has one fixed copper port for 10/100/1000Base-T, a 3-way DIP switch and a USB port. The SFP device is sold separately giving the user choice to use either one or two fiber communications with various optical power outputs depending on the distance required. Each section will be described further throughout this manual.



OSD2154P Front Panel



OSD2154P Rear Panel

FIGURE 2: OSD2154P CONNECTORS

2 INSTALLATION AND OPERATION

2.1 INTRODUCTION

This section outlines the methods required to install and operate the OSD2154P 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.

Class 1
The OSD2154P 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 OSD2154P DRAWINGS AND DIMENSIONS

The standard OSD2154P is designed to be mounted on an even surface and to be secured by means of M4 or smaller screws. All dimensions are in mm. The unit also can be mounted on a standard DIN rail with the OSD2154P DIN Rail bracket.

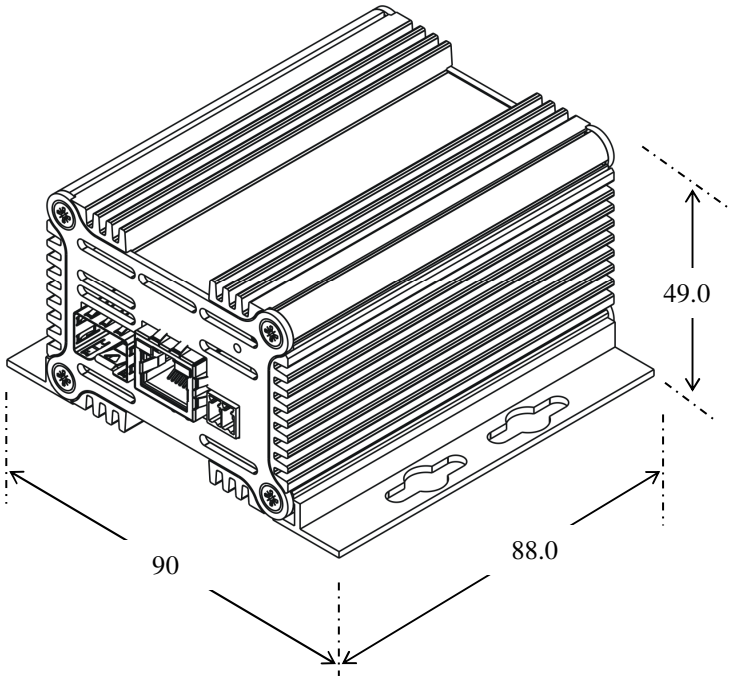


FIGURE 3: OSD2154P DIMENSIONS

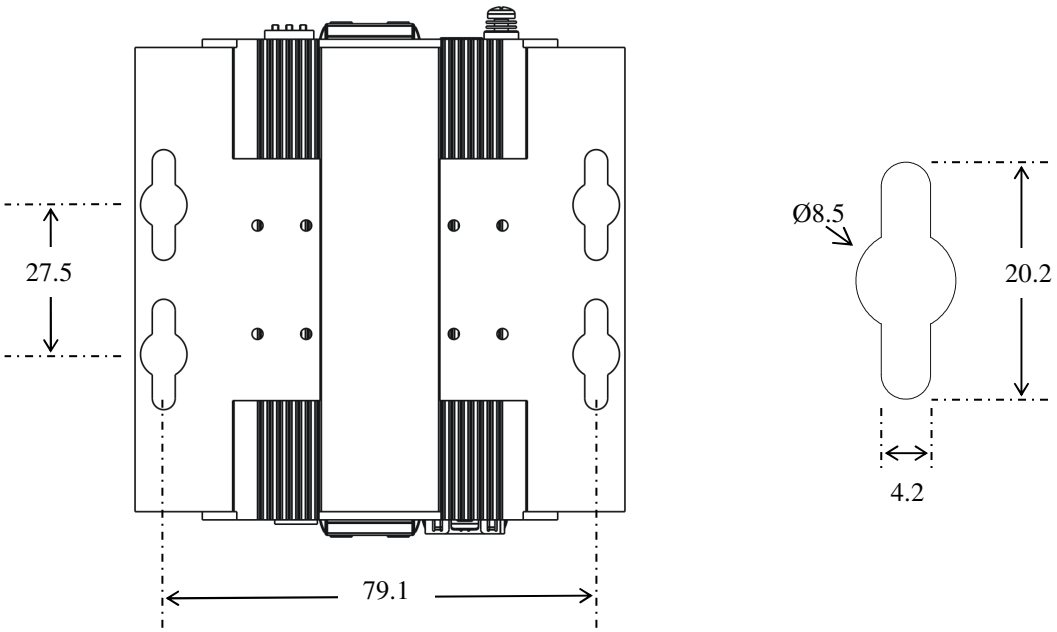


FIGURE 4: OSD2154P MOUNTING DIMENSIONS

2.2.3 POWER SUPPLY CONNECTIONS

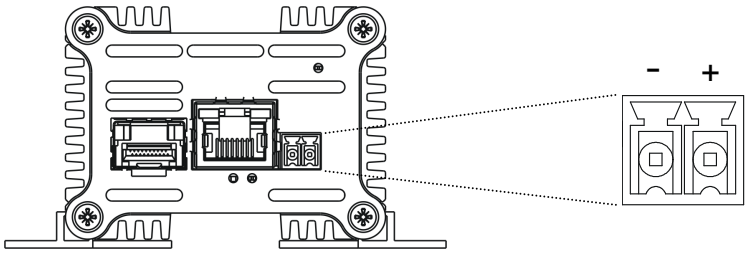
THE OSD2154P REQUIRES EXTERNAL DC POWER. THE VOLTAGE RANGE OF THE OSD2154P IS +46V_{DC} TO +57V_{DC} @ 6W. ≥52V_{DC} IS RECOMMENDED FOR 60W AND ≥55V_{DC} FOR 90W OPERATION. POWER IS CONNECTED TO THE 2-WAY TERMINAL BLOCK LOCATED ON THE FRONT PANEL AS INDICATED IN

Table 3.

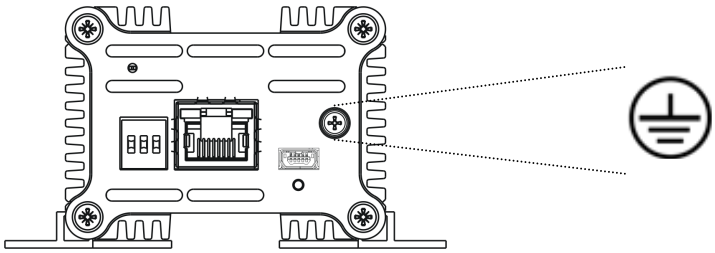
CAUTION	It is highly recommended to wait about 30 seconds before reconnecting the PD when the PD has been disconnected from the OSD2154P. This will prevent a high inrush current being applied to the OSD2154P. Although the OSD2154P has a high inrush current tolerance (400mA for 50 to 75ms as per the IEEE802.3at standard), inrush currents higher than 1.5A may damage the device.

TABLE 3: POWER CONNECTION

External Power Pin	Specification
+	+46V_{DC} to +57V_{DC} @ 6W
-	0V
⏚	Chassis Ground connection point



Front Panel



Rear Panel

FIGURE 5: MODULE POWER SUPPLY CONNECTIONS

2.2.4 LOCATION

As with any electrical device, the OSD2154P should be placed where the unit will not be subjected to extreme temperatures, humidity, or electromagnetic interference. Specifically, the site selected should meet the following requirements:

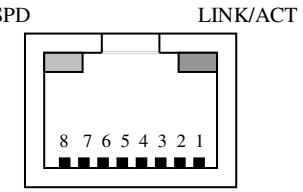
- The ambient temperature should be between -20°C to 75°C (-4°F to 167°F).
- The relative humidity should be less than 95 percent, non-condensing.
- Surrounding electrical devices should not exceed the electromagnetic field (RFC) standards.
- Make sure that the switch receives adequate ventilation. Do not block or obstruct the ventilation holes on any side of the switch.

2.2.5 FIXED RJ45 COPPER PORT PIN ASSIGNMENTS

The OSD2154P complies with IEEE802.3af and IEEE802.3at, and is capable of supplying up to 90W of PoE per RJ45 port. The OSD2154P supports Alternative A & B (pins 1/2, 3/6, 4/5, 7/8). For the 90W version the OSD2154P transmits power over all 8 pins. Bidirectional data as well as power terminate on all 8 pins. Both or either ports can optionally support dual signature PD. Port 3 (see Figure 2) on the rear panel supports Hi-PoE output (see Table 5).

Figure 6 shows the pin configuration for the fixed RJ45 copper port.

Fixed Copper Port



1: Bidirectional Data A+, DC+
2: Bidirectional Data A-, DC+
3: Bidirectional Data B+, DC-
4: Bidirectional Data C+, DC+
5: Bidirectional Data C-, DC+
6: Bidirectional Data B-, DC-
7: Bidirectional Data D+, DC-
8: Bidirectional Data D-, DC-

FIGURE 6: FIXED RJ45 ETHERNET CONNECTORS

2.2.6 LED INDICATORS

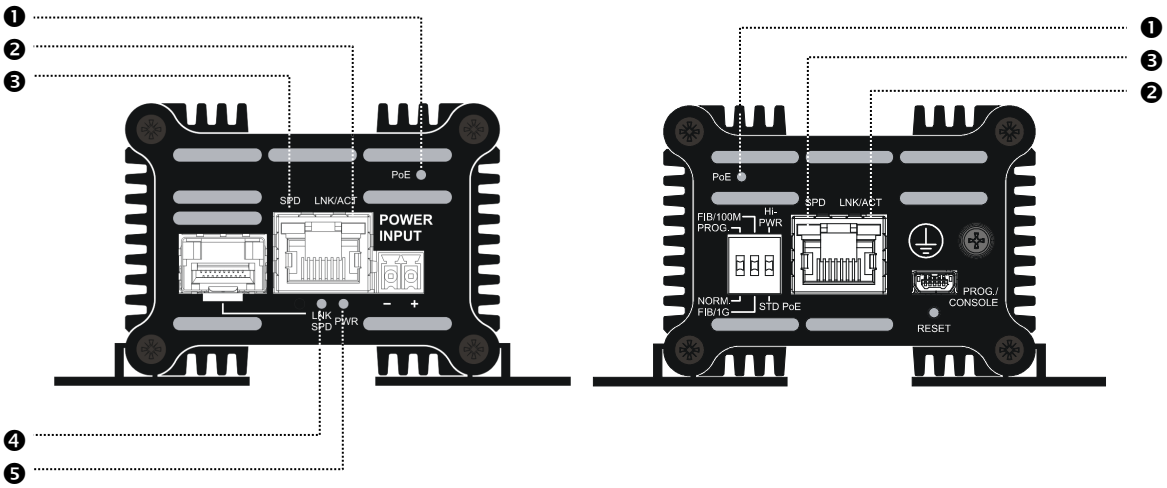


FIGURE 7: LED INDICATORS

TABLE 4: LED FUNCTION

No	FUNCTION					
	Indicator	**On**		**LED Colour**	**Off**	**Blinking**
❶	PoE	PoE Enable		Green(1)	No PoE	-
❷	LNK/ACT	Copper Link Activity		Amber	No Copper Link	Activity(2)
❸	SPD	Copper Speed	1Gbps	Green	10/100Mbps	-
❹	LNK SPD	Fiber Speed	100Mbps	Amber	No Optical Link	-
			1Gbps	Green		
❺	PWR	Power On		Green	Power Off	-

Notes: (1) When PoE LED is on it indicates that the unit is supplying power to the PSE
(2) Activity indicates traffic for copper port

2.2.7 CONTROLS

The OSD2154P has a 3-way DIP switch to control a number of functions. Figure 8 outlines the function of each switch. For correct operation, set the required switch settings before powering the unit. The OSD2154P also has a reset switch located on the rear panel.

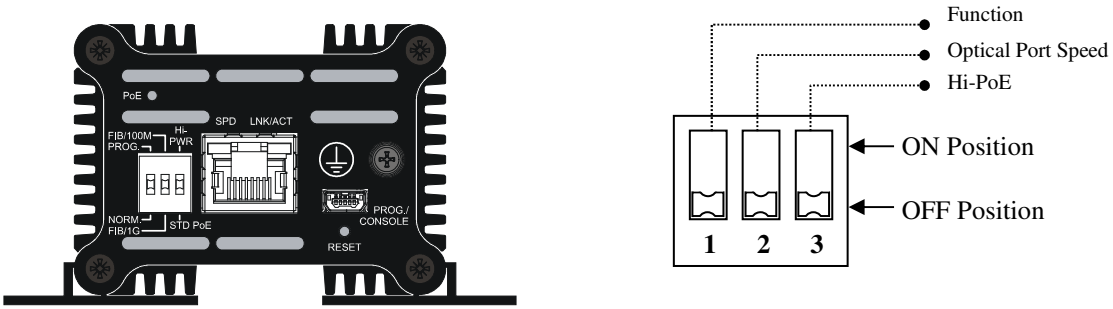


FIGURE 8: OSD2154P 3-WAY DIP SWITCH

TABLE 5: OSD2154P 3-WAY DIP SWITCH SETTINGS

SWITCH NUMBER	DESCRIPTION	SWITCH POSITION	FUNCTION
1	Function	OFF	User Mode*
		ON	Programming Mode
2	Optical Port Speed	OFF	1000BASE-X*
		ON	100BASE-X
3	Hi-PoE Mode	OFF	Auto Mode + Manual Configurable
		ON	Max Power Output & High PoE Support*

* Default settings.

2.2.8 RESET BUTTON

The reset button (see Figure 2) resets the OSD2154P to Factory Default Setting

- **Ensure DIP switch 1 is in "Default" mode (OFF position) and the unit is off (not powered) when performing reset.**
- Press and hold the Reset button and power up the OSD2154P.
- The LEDs will blink rapidly when powered on.
- Wait until the LEDs blink slowly and then release the Reset button.
- Wait for OSD2154P to restart.
- The factory default setting is now restored. The IP address is set to 192.168.0.99.

2.2.9 FITTING SFP CONNECTORS

Care should be taken when inserting/removing the SFP connectors from the SFP port 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 appropriate fiber cable.

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

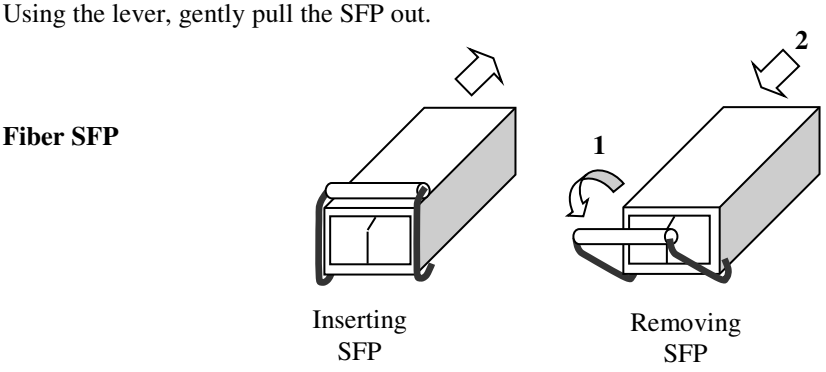


FIGURE 9: FITTING/REMOVING SFP CONNECTORS

2.2.10 BASIC CONNECTIONS

Figure 10 shows basic user connections to the OSD2154P.

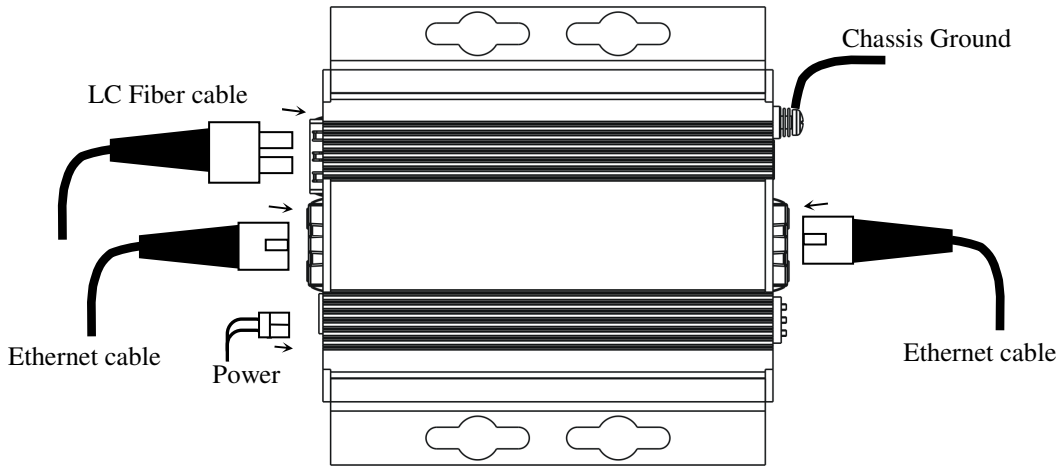


FIGURE 10: BASIC CONNECTIONS

2.3 OSD2154P SINGLE/DUAL SIGNATURE PD OPERATION

The OSD2154P supports single, dual or either single/dual signature PD by automatically detecting the user PD signature.

2.3.1 SINGLE SIGNATURE PD

A “single signature PD” shares the same detection signature, classification signature, and maintains power signature between both pair sets.

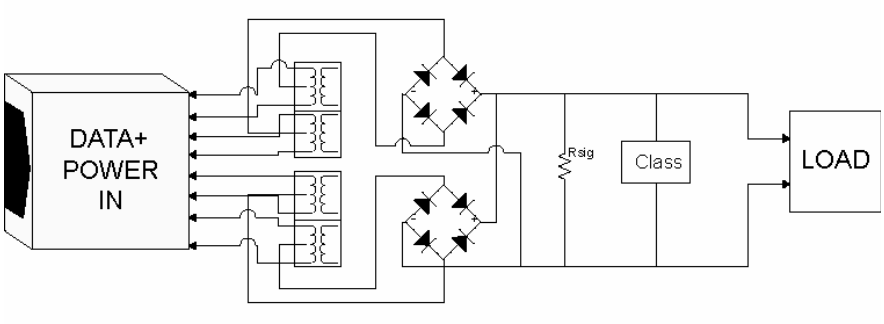


FIGURE 11: SINGLE SIGNATURE PD

2.3.2 DUAL SIGNATURE PD

A “dual signature PD” has independent detection signatures, classification signatures, and maintains power signatures on each pair set. It enables the load to work with two pair PSEs eg. A surveillance camera built with dual signature PD can have one pair connected to the camera and the other pair to a fan or heater. Note that dual signature PDs require two parallel PD interfaces, one for each pair set, where the power from the two PSEs are summed after each PD interface ie Camera (25W) + fan (10W) = 35W from one port.

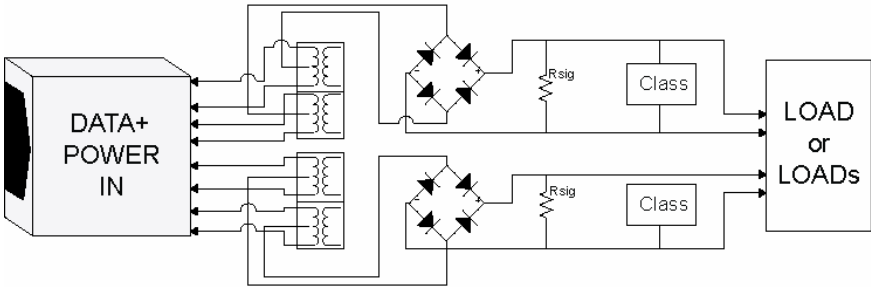


FIGURE 12: DUAL SIGNATURE PD

2.4 COMMAND LINE INTERFACE (CLI)

The Command Line Interface (CLI) is a useful tool for checking link status and debugging link connections. To enable the use of CLI, the OSD2154P must be connected to a PC with a USB port via a Mini USB to (typically) USB Type A cable. Using a terminal emulation program such as hyperterminal or SSCOM, a number of command lines specific to the OSD2154P can be implemented.

2.4.1 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.

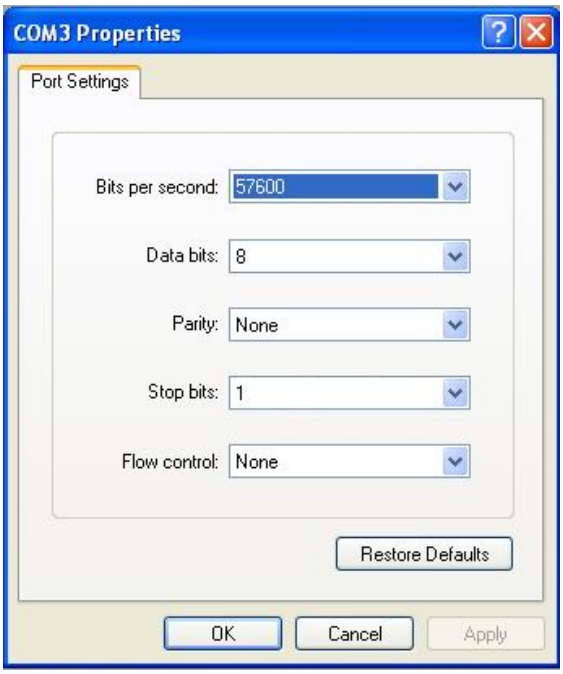


FIGURE 13: CLI PORT SETTINGS

2.4.2 COMMAND LINE FUNCTIONS

There are a number of command line functions that enables the user to obtain limited information or reset the unit to factory default configuration.

Once the terminal emulation has been set up typing the "**?**" command will bring up a list of available CLI commands.

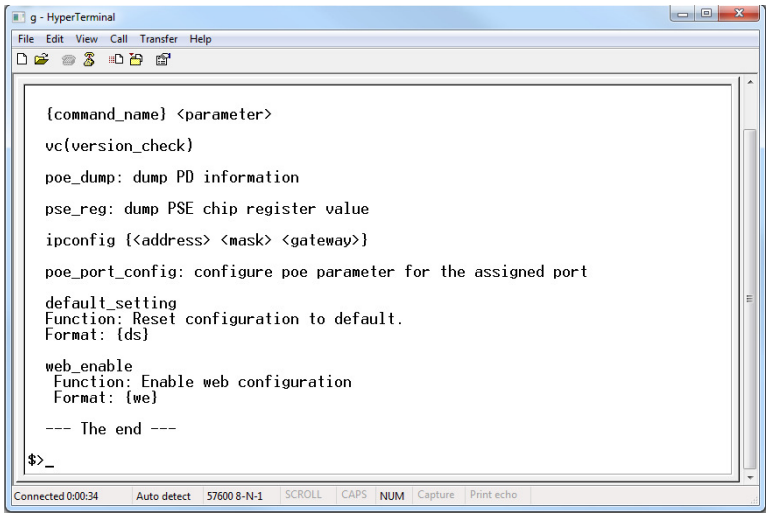


FIGURE 14: CLI "?" COMMAND

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

TABLE 6: CLI COMMAND LIST

TERMINAL COMMAND LINE	SPECIFICATION	FUNCTION	FIGURE
?	help	Displays all user available CLI commands	Figure 14
vc	Version Check	Displays the current software version and revision installed on the unit	Figure 15
poe_dump	Dump PD Information	Displays the running PoE Information for each Port/Channel	Figure 16
pse_reg	Dump PSE chip register value	Displays the chip register value for debugging purposes	Figure 17
ipconfig	IP Configuration	Displays current IP, Mask and Gateway. Provides ability to change the IP settings.	Figure 18
poe_port_config	PoE Port Configuration	Provides PoE port settings to be manually changed	Figure 19
ds	Default Setting	Allows the user to reset the unit to factory default.	Figure 20
we	Web Enable	Enable Web Configuration	Figure 21

{**vc**} – Version Check

Note: Software version in below screen is for illustrative purpose.

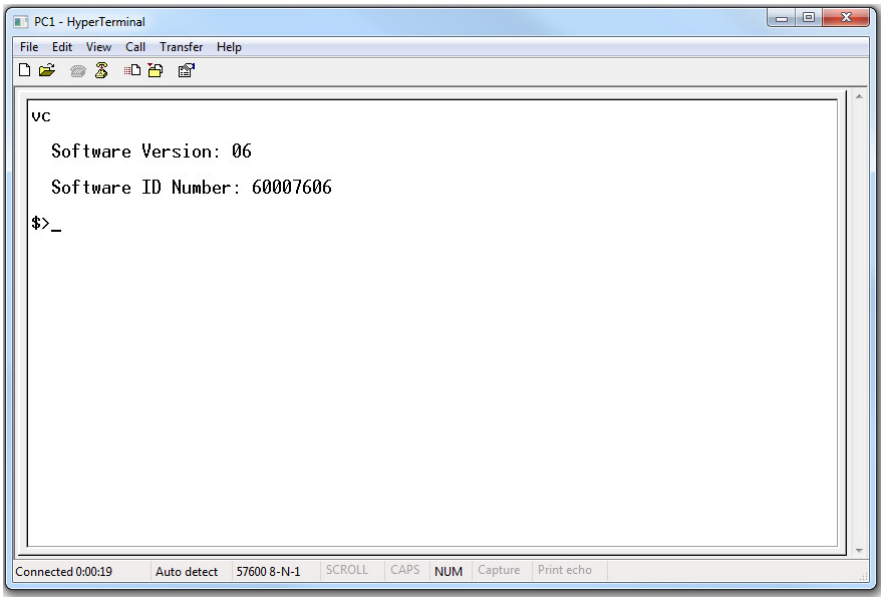


FIGURE 15: CLI – VERSION CHECK

{**poe_dump**} – PoE Dump

Note: The information available differs for each detected PD.

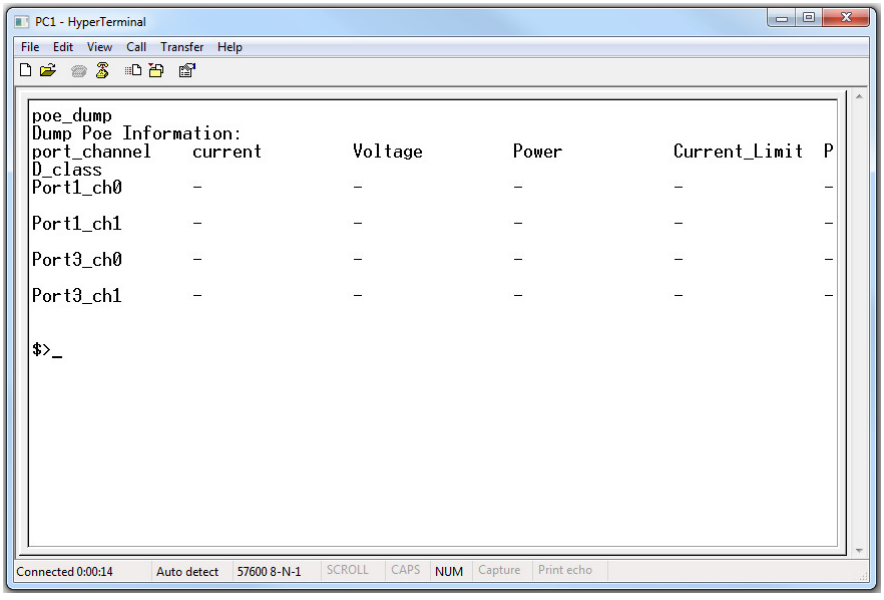


FIGURE 16: CLI – POE DUMP

{**pse_reg**} – PSE Register

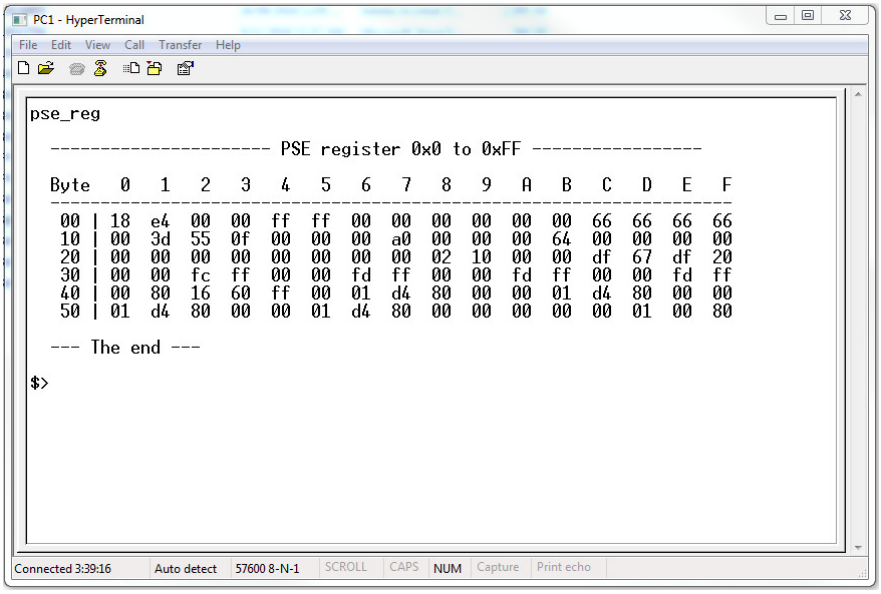


FIGURE 17: CLI – PSE REGISTER

{**ipconfig**} – IP Configuration

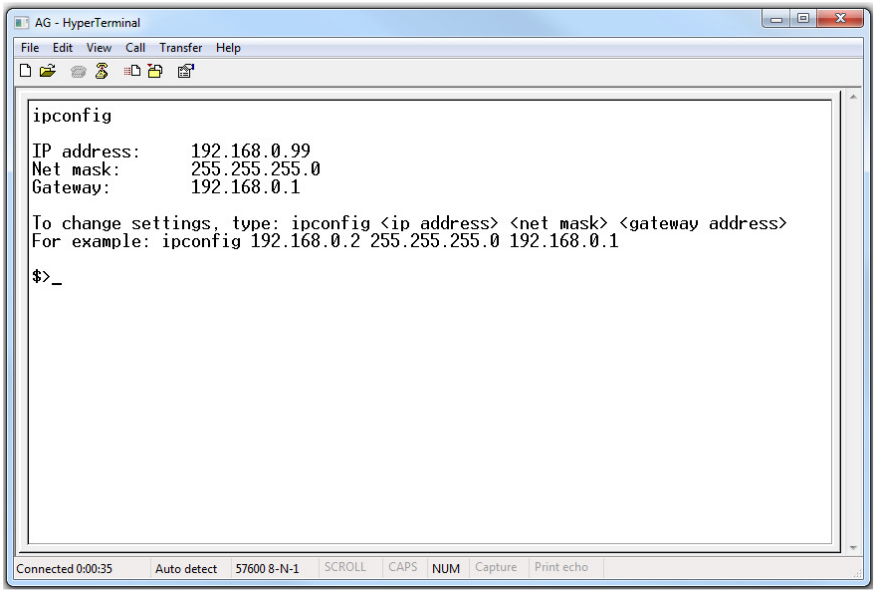


FIGURE 18: CLI – IP CONFIGURATION

{**poe_port_config**} – PoE Port Configuration

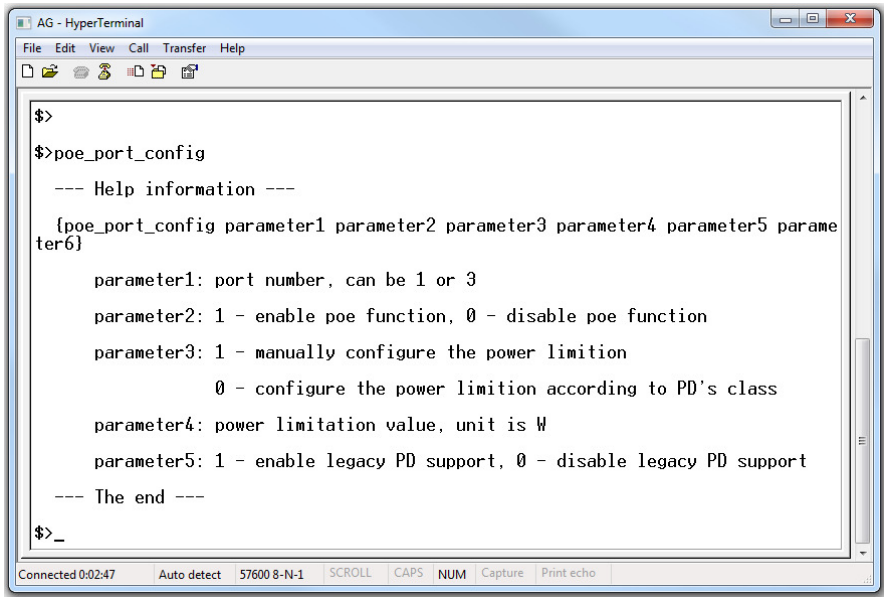


FIGURE 19: CLI – POE PORT CONFIGURATION

For 60W version: parameter4 range is 1 to 70.
For 90W version: parameter4 range is 1 to 90.

{**ds**} – Default Setting

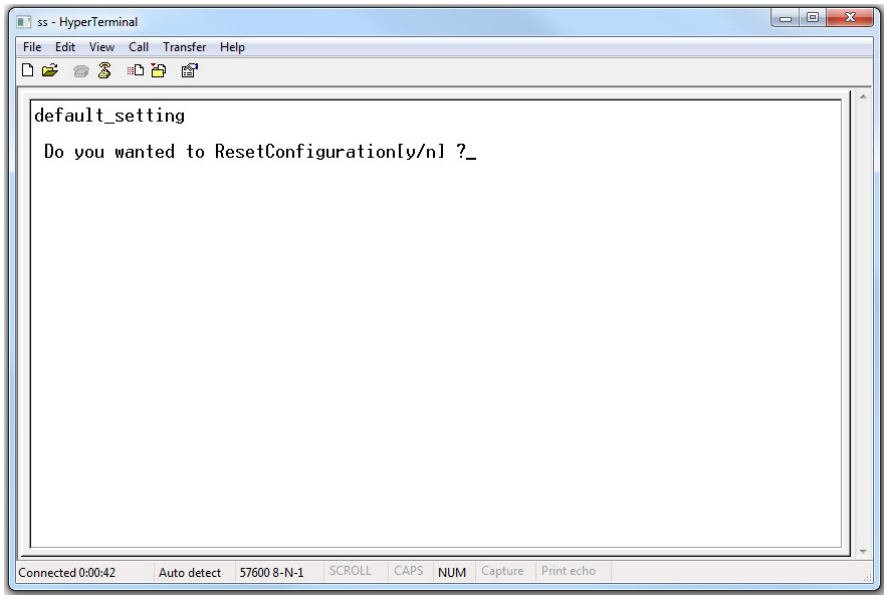


FIGURE 20: CLI – DEFAULT SETTING

{we} – Web Enable

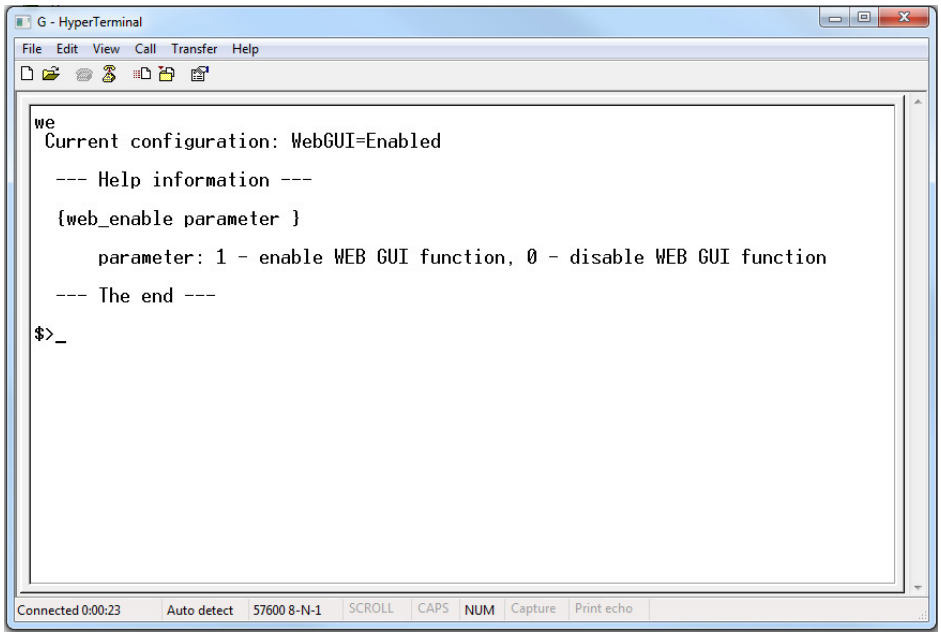


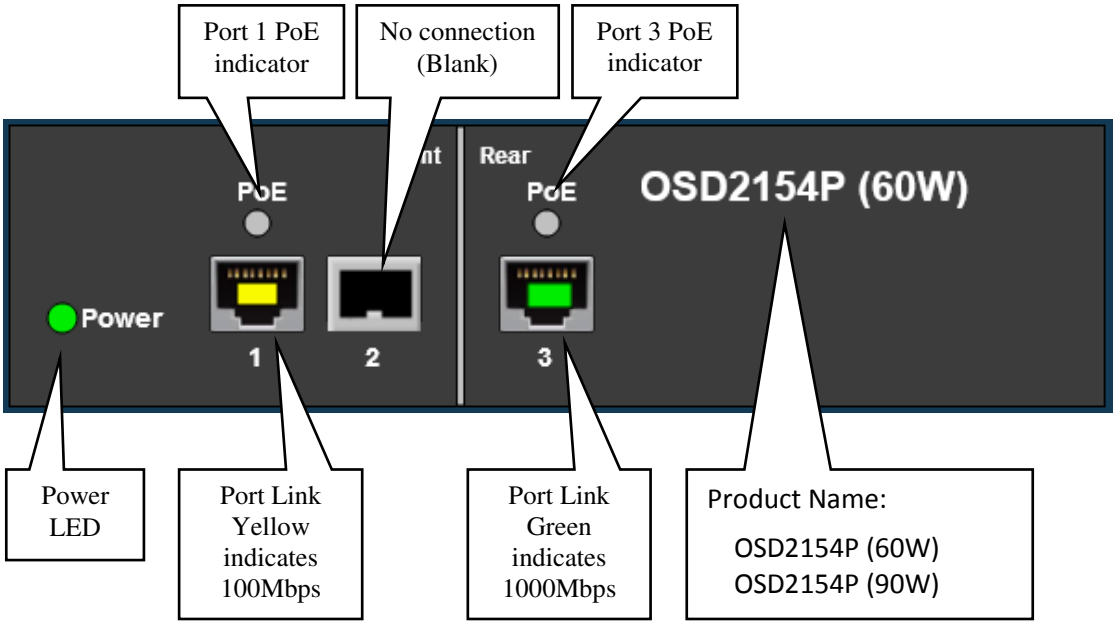
FIGURE 21: CLI – WEB ENABLE

To enable Web GUI – we 1
To disable Web GUI – we 0

2.5 WEB GUI

The OSD2154P 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.



2.5.1 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

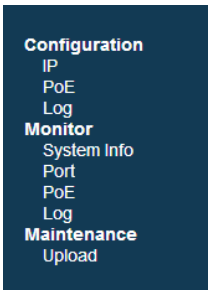
Upon connecting to the OSD2154P, the home screen will display some useful information. The header will display the OSD2154P configuration (60W or 90W). Green lighted ports, Power and PoE indicate connection to relevant port and active state of Power and PoE Port1 and Port3.

A table displaying system information is also displayed containing MAC address, Serial Number, Software, IP address, etc.

System Information

Parameter	Value
MAC address	00-26-dc-00-16-41
Serial Number	99999999
Software ID number	600076-06
PCB Number	844730-03
IP Address	192.168.0.99
Subnet Mask	255.255.255.0
Default Gateway	192.168.0.1
Date of Manufacture (DD-MM-YYYY)	10-01-2019
Board Temperature	34 Degree C

2.5.2 GUI MENU



The user has access to Configure, Monitor or Maintain the OSD2154P. Each section will be explained within this manual.

CONFIGURATION → IP

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

Save Reset

IP ADDRESS

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

SUBNET MASK

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

DEFAULT GATEWAY

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

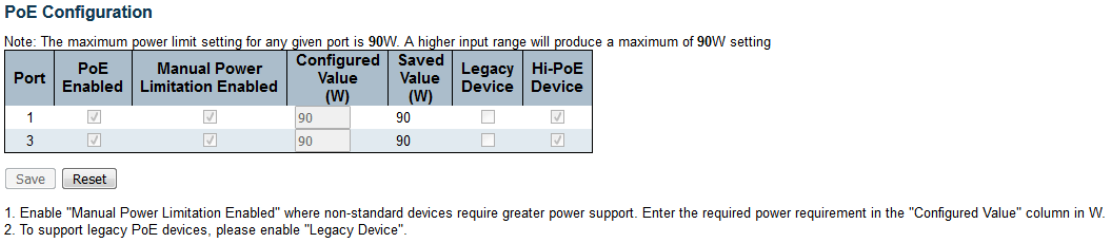
Buttons

Save: saves the new settings

Reset: resets any changes made

CONFIGURATION → POE

To enable manual control, switch 3 (SW3) must be 'Off". If SW3 is in "On" position, the configuration boxes are greyed out and locked.



PORT

Indicates port number per row.

POE ENABLED

A tick indicates the PoE is enabled for the port.

MANUAL POWER LIMITATION ENABLED

Allows the user to manually limit power in Watts (W) to each individual port. A tick indicates that the Manual Power Limitation is enabled.

CONFIGURED VALUE

If the Manual Power Limitation is enabled, the required Configured Value can be entered in this window. Note: The maximum configured power setting is as follows;

- 60W version: 70W. *Entering a higher value produces a maximum of 70W only.*
- 90W version: 90W. *Entering a higher value produces a maximum of 90W only*
- Note: *Some PDs require very high inrush current (up to 1.6A). The power output configuration value must be set to maximum of 56W!*

SAVED VALUE

If a previously saved Configured Value was entered, the value will be displayed in this window.

LEGACY DEVICE

The OSD2154P provides legacy PoE support. A tick will enable Legacy devices.

HI-POE DEVICE

To support Hi-PoE devices "Manual Power Limitation Enabled" and "Hi-PoE Support" must be enabled and the current (in mA) value in the "Configured Value" must be specified.

Buttons

Save: saves the new settings

Reset: resets any changes made

CONFIGURATION → LOG

Event Log Settings

ID	Module	Log Level
1	PoE	Info
2	SYS	Info

Save

ID

Indicates the sequential log event number.

MODULE

Indicates the log event.

- **PoE**: PoE related information such as powering of PoE device, disconnection of PoE device, reason for powering failure, etc.
- **SYS**: General information of the system such as changing of IP, Port link up and link down, high temperature alarm, etc

LOG LEVEL

A drop down window allows the user to select the desired log event setting.

- **Disable**: No information is logged from that module
- **Info**: Some basic information is logged
- **Debug**: Diagnostic information logged

Buttons

Save: saves the new settings

MONITOR → SYSTEM INFO

System Information

Parameter	Value
MAC address	00-26-dc-00-16-41
Serial Number	99999999
Software ID number	600076-06
PCB Number	844730-03
IP Address	192.168.0.99
Subnet Mask	255.255.255.0
Default Gateway	192.168.0.1
Date of Manufacture (DD-MM-YYYY)	10-01-2019
Board Temperature	34 Degree C

See Section 2.5.1

MONITOR → PORT

Port Status

Port	Copper_SFP	Link	Speed	Duplex
1	Copper	Up	1000	Full
2	SFP	Down	-	-
3	Copper	Down	-	-

PORT

Monitors each port activity.

COPPER_SFP

Indicates the port connection: Either Copper or SFP

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. Full, Half

MONITOR → POE

PoE Status

Port	PD Type	Channel	Current	Voltage	Power	Current Limit	PD Class
1	-	ch0	-	-	-	-	-
		ch1	-	-	-	-	-
3	-	ch0	-	-	-	-	-
		ch1	-	-	-	-	-

PS: Ch0 shows the power status runs through pin1,2 and pin3,6 on RJ45.
Ch1 shows the power status runs through pin4,5 and pin7,8 on RJ45.

PORT

Indicates port number per row.

PD TYPE

Indicates the Power Device Type detected;

- Single Signature
- Dual Signature

CHANNEL

Indicates the channel number of the port

- **Ch0**: Pins 1,2 and Pins 3,6 on RJ45
- **Ch1**: Pins 4,5 and Pins 7,8 on RJ45

CURRENT

Indicates the current drawn from the relevant PoE port/channel

VOLTAGE

Indicates the voltage from the relevant PoE port/channel

POWER

Indicates the power drawn from the relevant PoE port/channel

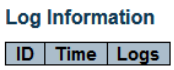
CURRENT LIMIT

Indicates the maximum current limit from the relevant PoE port/channel

PD CLASS

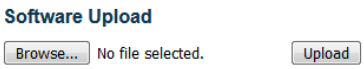
Indicates the detected PD class.

MONITOR → LOG



Monitors and logs activity

MAINTANANCE → UPLOAD



Use this section to upload OSD released update software.

Buttons

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

3 MAINTENANCE

3.1 INTRODUCTION

The following section outlines the fault-finding procedure for the OSD2154P 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 PSE power requirements do not exceed the OSD2154P modems maximum PD power.
- Inspect the optical connectors (fiber SFP) 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 OSD2154P.

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 call 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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Printed in Australia