OPTICAL
SYSTEMS
DESIGN

# Quick Start Guide

**OSD2890**

**L2/3 MANAGED 24 x 10/100/1000BASE-T**

**& 4 x 10G SFP ETHERNET SWITCH**

# INDEX 1

# 1 INTRODUCTION

Thank you for choosing the OSD2890 28-Port (24x1G + 4x10G) L2/L3 Managed Ethernet Switch. This Quick Start Guide is designed to guide you through the installation and basic software functions.

# 2 TECHNICAL SUMMARY

## 2.1 BRIEF DESCRIPTION

### 2.1.1 OVERVIEW

The OSD2890 is an L2/L3 managed 24 port 10/100/1000BASE-T and 4 port 10G SFP Ethernet Switch. Please see OSD2890 datasheets for options available.

### 2.1.2 APPLICATIONS

- Any network utilising a mix of copper and fiber
- Industrial IP communications
- Self-healing Gigabit Ethernet backbone networks
- Four 10G SFP trunk/uplink ports

### 2.1.3 FEATURES AND BENEFITS

- Complies with IEEE802.3i/802.3u/802.1ab 10/100/1000Base-T, IEEE802.3z 1000Base-LX, IEEE802.3ae 10GBaseXX standards
- Supports RSTP/STP/ ITU-TG.8032 Ethernet Ring Protection Switching for Ethernet redundancy Supports Loop Protection
- IP Multicast Filtering through IGMP Snooping V2
- Supports port-based VLAN and Private VLAN
- QoS with eight priority levels
- Virtual USB console, Telnet, SNMP V1, V2c & V3 and Web Browser
- Full wire-speed forwarding rate
- Supports IEEE802.1x Security
- IEEE802.3ab Link Layer Discovery Protocol
- Static and LACP link Aggregation
- Port speed control and Port mirroring
- 1000Mbps-Full-duplex, 10/100Mbps-Full/Half-duplex, Auto-Negotiation, Auto-MDI/MDIX
- Operates over the temperature range of -20 to +60ºC
- Redundant DC powering and optional redundant AC powering
- Optional IEEE 802.3af/at PoE (OSD2890P)
- System log and remote firmware upgrading
- Intelligent thermal protection
- L3 compliant switch, including functions like: Universal Plug and Play (UPnP), IPv4/IPv6 L3 static routing, RFC2328 OSPFv2 dynamic routing, RFC-1812 L3 checking (version, IHL, checksum), etc.

## 2.2 TECHNICAL SPECIFICATIONS

TABLE 1: TECHNICAL SPECIFICATIONS

| SPECIFICATION | | PERFORMANCE |
|---|---|---|
| Electrical Data Interface | | IEEE802.3i/802.3u/802.3ab, 10/100/1000Base-T Ethernet |
| Electrical Data Connector | | RJ45 on the fixed copper ports for OSD2890 and OSD2890P |
| OSD2890P PoE | | IEEE802.3af: 47 to 55$V_{DC}$ @ 0.35Amp maximum<br>IEEE802.3at: 47 to 55$V_{DC}$ @ 0.70Amp maximum |
| Configuration Connector | | Mini USB console Port |
| Alarms | | Four: 2 for Power Supply Status, 2 user definable via the GUI |
| Alarm Interface | | 4 opto-isolated relay drivers via two 4-way 3.5mm terminal blocks |
| Control | | System reset |
| Optical Port Connector | | Dual LC on 2-fiber SFP modules or SC on 1-fiber SFP modules |
| Trunk/Uplink Ports Optical Interface | | IEEE802.3ae for 10GBASE-SR (MM: 300m), 10GBASE-LR (SM: 10km), 10GBASE_ER (SM: 40km), 10GBASE_ZR (SM: 80km), IEEE802.3z 1000Base-Lx/Sx |
| Operating Mode | | Half or full duplex for 10/100<br>Full duplex for 1G, 2.5G and 10G<br>Store-and-Forward<br>Half-duplex back-pressure and IEEE802.3x full-duplex flow control |
| Indicators | | 1 x power<br>24 x 10/100/1000Base-T: Link Activity<br>24 x 10/100/10001000Base-T: Speed<br>4 x 10G Link/Activity/Speed<br>24 x 10/100/1000Base-T: PoE (OSD2890P only) |
| SFP Options | | See OSD Datasheets #1010000X and #10210G00X for full details on available optical SFP modules |
| Operating Temperature | | -20°C to +60°C |
| Relative Humidity | | 5 to 95% non-condensing |
| Power Requirements | OSD2890DC | 10 to 36$V_{DC}$ @ 45VA Max via one 4-way 5.08mm terminal block |
| | OSD2890AC | 90 to 264$V_{AC}$ @ 50VA Max via integrated IEC power inlet module |
| | OSD2890DAC | 90 to 264$V_{AC}$ @ 55VA Max via two integrated IEC power inlet modules |
| | OSD2890P | 47-57 $V_{DC}$ @ 50VA Max (without PoE) & @ 450VA Max (with PoE0 via one 4-way 5.08mm terminal block |
| OSD2890P PoE Power Budget | | 600W maximum |
| Dimensions of Module (mm) | | 440W x 300D x 44H |
| Weight (kg) | | 4.9 for OSD2890, 5.1 for OSD2890P |

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# 3 INSTALLATION

**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 (SFP) per IEC 60825-1:2014 standard.

| **Class 1** |
| --- |
| The OSD2890 is a **Class 1 laser product** when SFP are fitted |
|   |

**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.

# 4 OSD2890 FRONT AND REAR PANELS

## 4.1 FRONT PANEL

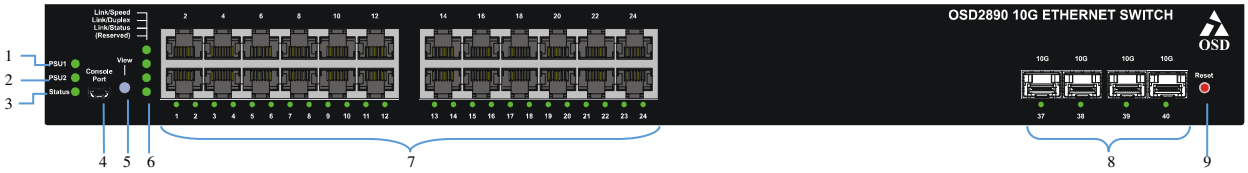



FIGURE 1: FRONT PANEL

1. PSU1 Status LED
2. PSU2 Status LED
3. Status LED
4. USB Console Port
5. View LED Mode button
6. View mode LEDs indicators
7. 24 x 10/100/1000M COPPER ports with Link/Speed/Status LED
8. 4 x 10G Trunk/Uplink SFP ports with Link/Speed/Status LED
9. Reset Button

## 4.2 REAR PANEL


FIGURE 2: REAR PANEL

10. PSU Alarm Output connector
11. Programmable Alarm Output Connector
12. Earth/Ground screw
13. PSU 1 Power Supply Input

# 5 Power Supply Connections

There are various power options for the OSD2890. Refer to Table 1 Power Options (Figure 3 has OSD2890AC version shown). Power is connected to the rear of the unit.

Fuse: 1A 250V Anti-Surge, 5x20mm.


FIGURE 3: POWER CONNECTION

# 6 LED Indicators

TABLE 2: LED FUNCTION

| LED | Function |
|---|---|
| PSU 1 | • Red – PSU 1 Not connected or faulty<br>• Green – PSU 1 On |
| PSU 2 | • Red – PSU 2 Not connected or faulty<br>• Green – PSU 2 On<br>• Off – PSU 2 not available/fitted |
| Status | • Red – Standby/Initialization Mode<br>• Green – Normal status |
| View Mode LED Indicators | Controlled by View LED Mode Button. Pressing the Mode button cycles the Copper Port Status LED indication.<br>Speed Mode → Duplex Mode → Status Mode → Reserved |
| Copper Port Status LED | The Copper Port Status LED will indicate different information.<br>Speed Mode:<br>• Green – 1Gbps<br>• Yellow – 100MBps<br>• Off – No Connection<br>• Blinking – Traffic<br>Duplex Mode:<br>• Green – Full Duplex<br>• Yellow – Half Duplex<br>• Off – No Connection<br>Status Mode:<br>• Green – Connection established<br>• Off – No Connection |
| Fiber Port Status LED | The Fiber Port Status LED will indicate different information.<br>Speed Mode:<br>• Green – 1Gbps or 10Gbps<br>• Yellow – 100MBps<br>• Off – No Connection<br>Duplex Mode:<br>• Green – Full Duplex<br>• Off – No Connection<br>Status Mode:<br>• Green – Connection established<br>• Off – No Connection |

# 7 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.

**Fiber SFP**

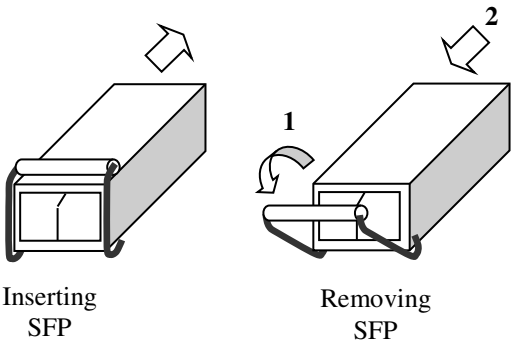
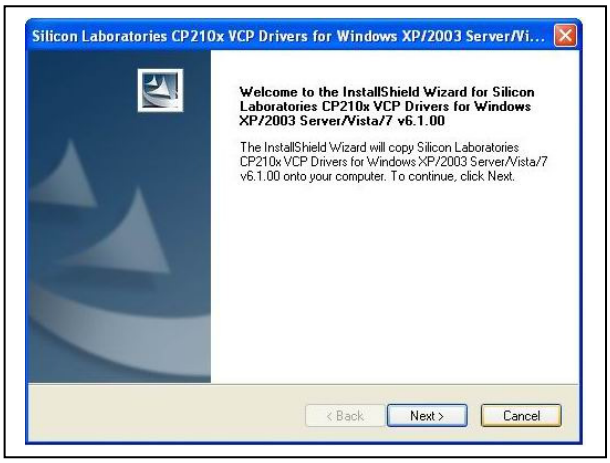


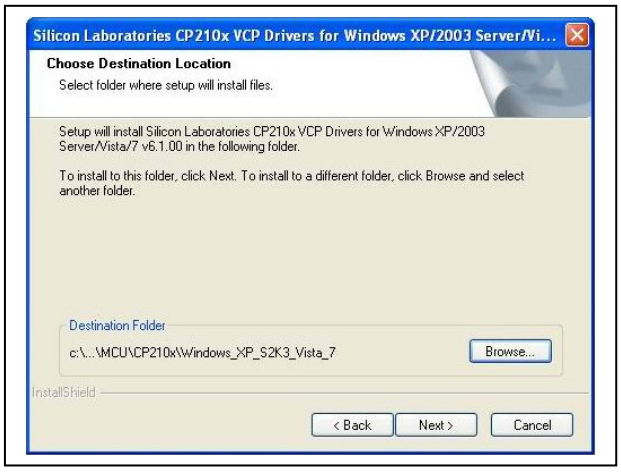

FIGURE 4: FITTING/REMOVING SFP CONNECTORS

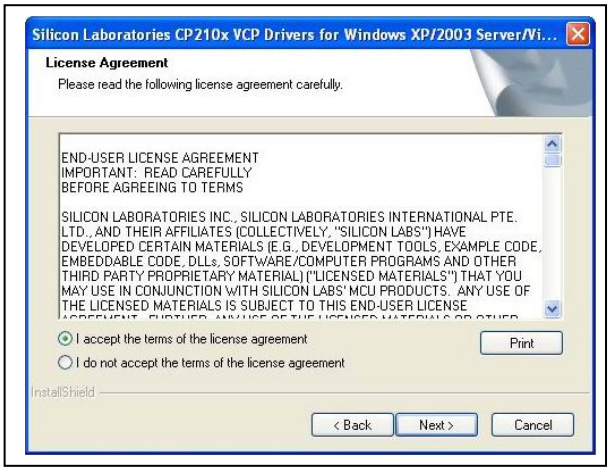
# 8 CLI OVERVIEW

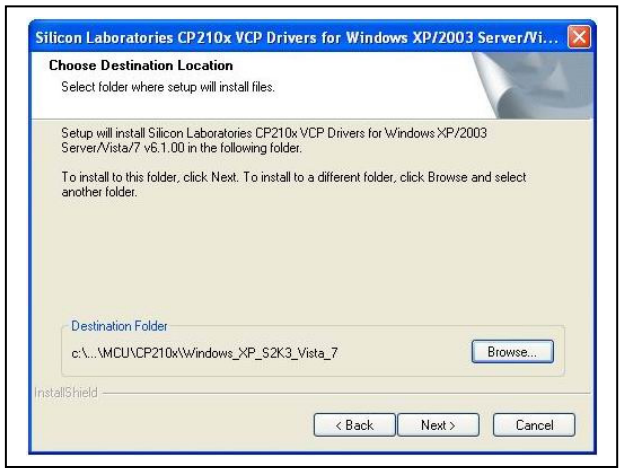
## 8.1 CONNECT TO CLI

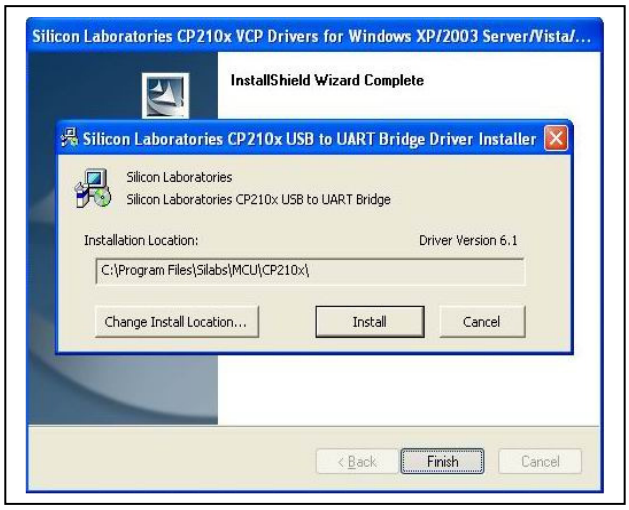
The Silicon Laboratories CP210x VCP Drivers is required to be installed on the PC before connecting the switch.

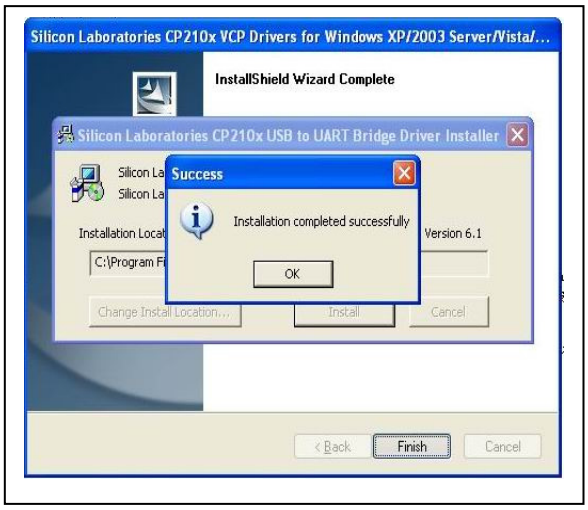




1. Connect the Console Port on OSD2890 (Mini USB) to PC with USB cable.
2. Using HyperTerminal or similar, set up the following parameters.
   - Baud Rate: 115200
   - Data Bits: 8
   - Parity: None
   - Stop Bits: 1
   - Flow Control: None
3. Check the link by pressing <ENTER>. The line should jump to the next line.
4. Using the Username and password to login the switch
   - **Default Username**: admin
   - **Default Password**: (None)

```
 Active fis: linux
00:00:01 Stage 1 booted
00:00:02 Loading stage2 from NAND file 'fw2CdUiH'
00:00:21 Overall: 20004 ms, ubifs = 1714 ms, rootfs 18253 ms of which xz = 0 ms of which untar = 0 ms
00:00:27 Starting application...
Using existing mount point for /switch/

Press ENTER to get started

Username: admin
Password:
#
#
```

## 8.2 CLI COMMAND FOR IP CONFIGURATION

The Command Line Interface (CLI) is a useful tool for checking link status and debugging link connections. To enable the use of CLI the OSD2890 must be connected to a PC with a USB port using a Mini-USB cable. Using a terminal emulation program such as Hyperterminal, a number of command lines specific to the OSD2890 can be implemented

- ***show ip interface brief***: Displays the current IP address and subnet mask.

```
#
# show ip interface brief
Interface  Address              Method   Status
---------- -------------------- -------- ------
VLAN 1     192.168.0.99/24      Manual   UP
#
```

- ***configure terminal -> interface vlan 1 -> ip address <IP address> <subnet mask>***: Setup the switch IP address. The following picture is an example of how to configure the device IP into 192.168.16.88

```
#
# conf t
(config)# int vlan 1
(config-if-vlan)#  ip add 192.168.16.88 255.255.255.0
(config-if-vlan)# end
#
#
```

- ***copy running-config startup- config***: Save the current configuration to start-up configuration. The configuration will be saved into Flash so that the desired configuration setup will be in effect at the next startup.

```
#
#
# copy runn star
Building configuration...
% Saving 2525 bytes to flash:startup-config
#
#
#
```

**PS: All configuration changes must be saved otherwise all the changes will be lost after rebooting!**

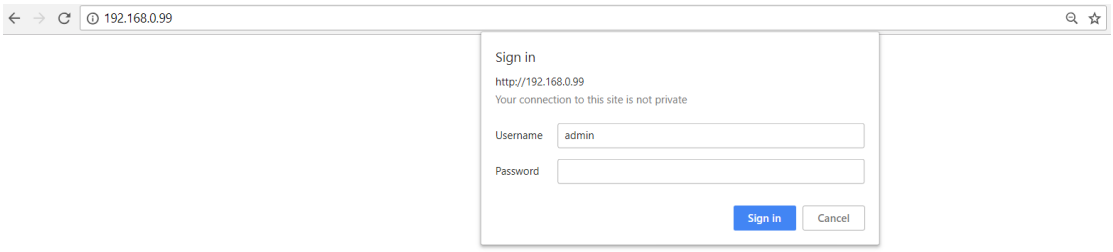
# GUI Overview

## 8.3 DEFAULT SETTING

- IP Address: 192.168.0.99
- Subnet Mask: 255.255.255.0
- Gateway: 192.168.0.1
- User Name: admin
- Password: (None)

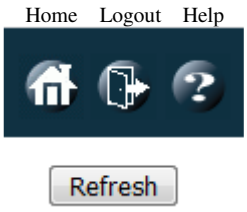
## 8.4 LOG INTO THE SWITCH

- Connect an Ethernet cable to any switch port from a PC. It may be necessary to change the PC's network IP address to connect to the switch. (i.e.: 192.168.0.2). Make sure the IP address of the PC and the switch in the same subnet.
- In a web browser, enter the URL 192.168.0.99.
- Enter the username (admin) and password (none/blank) and click "Sign In".




## 8.5 GUI OVERVIEW

This Quick Start Guide will only show a few main or important features to get the user running the OSD2890 successfully. On the top right hand of the GUI screen there are a few icons available to quickly navigate or obtain help for each GUI menu items.



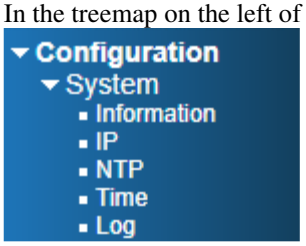

**HOME:** Clicking the Home button will exit any GUI current screen and display the panel status.

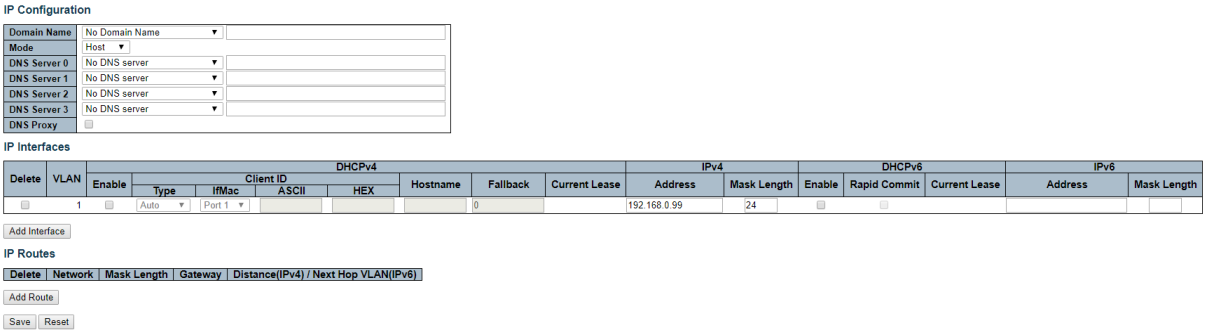
**LOGOUT:** Clicking the Logout button will logout the current user and close the windows session

**HELP:** Clicking the Help button will open a help window for the current open menu window and display all functions and input arguments for that page.

## 8.6 IP CONFIGURATION

In the treemap on the left of the GUI, expand the **Configuration → System → IP.**




Enter the **IPv4 address** and **Mask Length** in the table.

Choose the management VLAN ID to access that IP in **VLAN** table if VLAN function is required.

If multiple IP addresses are required, click **Add Interface** to add more IP interfaces.

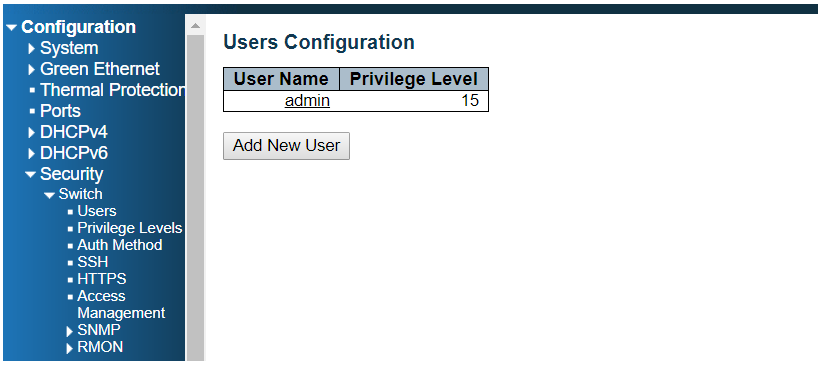
Click **Save** to save the configuration.

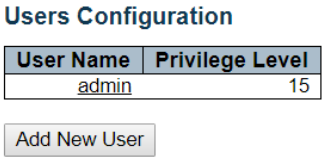
Use new IP address to access the switch.

**PS: All configuration changes must be saved otherwise all the changes will be lost after rebooting!**

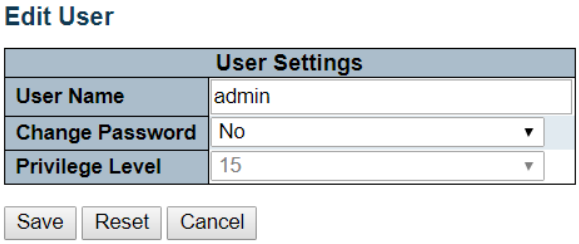
## 8.7 USERS AUTHENTICATION

In the tree map on the left, expand the **Configuration → Security → Switch → Users**

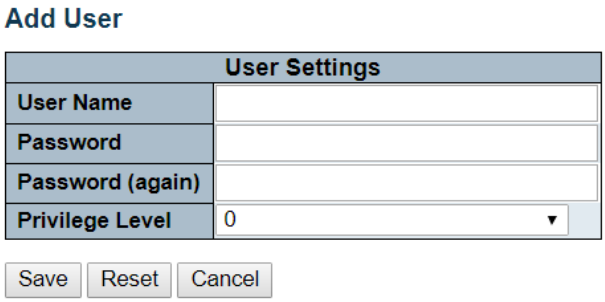



Click **admin** to change the current admin account setting.



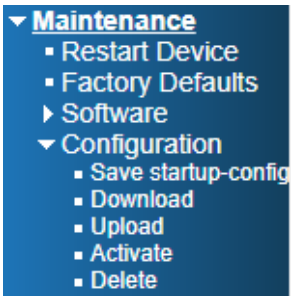

If multiple users are required, click **Add New User**

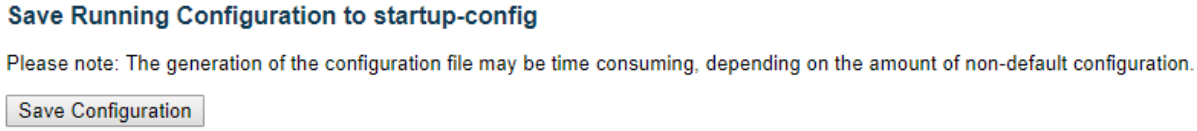



**PS: All configuration changes must be saved otherwise all the changes will be lost after rebooting!**

## 8.8 SAVE CONFIGURATION TO START-UP

In the treemap below, expand the **Maintenance → Configuration → Save startup-config**

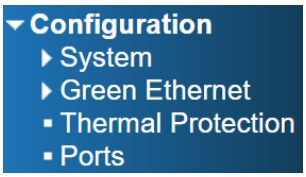



Click **Save Configuration** to save the configuration on start-up.

## 8.9 PORT SPEED SETTING

The port speed settings for the OSD2890 is auto mode for copper port and 10G for SFP port. On the tree map below expand **Configuration → Ports**.




Port Configuration

| Port | Link | Speed | | Adv Duplex | | Adv speed | | | | | | Flow Control | | | PFC | | Maximum | Excessive | Frame |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Current | Configured | Fdx | Hdx | 10M | 100M | 1G | 2.5G | 5G | 10G | Enable | Curr Rx | Curr Tx | Enable | Priority | Frame Size | Collision Mode | Length Check |
| * | | | <> | ☑ | ☑ | ☑ | ☑ | ☑ | ☑ | ☑ | ☑ | ☐ | | | ☐ | 0-7 | 10240 | <> | ☐ |
| 1 | | Down | Auto | ☑ | ☑ | ☑ | ☑ | ☑ | ☐ | ☐ | ☐ | ☐ | ✗ | ✗ | ☐ | 0-7 | 10240 | Discard | ☐ |
| 2 | | Down | Auto | ☑ | ☑ | ☑ | ☑ | ☑ | ☐ | ☐ | ☐ | ☐ | ✗ | ✗ | ☐ | 0-7 | 10240 | Discard | ☐ |
| 3 | | Down | Auto | ☑ | ☑ | ☑ | ☑ | ☑ | ☐ | ☐ | ☐ | ☐ | ✗ | ✗ | ☐ | 0-7 | 10240 | Discard | ☐ |
| 4 | | Down | Auto | ☑ | ☑ | ☑ | ☑ | ☑ | ☐ | ☐ | ☐ | ☐ | ✗ | ✗ | ☐ | 0-7 | 10240 | Discard | ☐ |
| 5 | | Down | Auto | ☑ | ☑ | ☑ | ☑ | ☑ | ☐ | ☐ | ☐ | ☐ | ✗ | ✗ | ☐ | 0-7 | 10240 | Discard | ☐ |
| 6 | | Down | Auto | ☑ | ☑ | ☑ | ☑ | ☑ | ☐ | ☐ | ☐ | ☐ | ✗ | ✗ | ☐ | 0-7 | 10240 | Discard | ☐ |
| 7 | | Down | Auto | ☑ | ☑ | ☑ | ☑ | ☑ | ☐ | ☐ | ☐ | ☐ | ✗ | ✗ | ☐ | 0-7 | 10240 | Discard | ☐ |
| 8 | | Down | Auto | ☑ | ☑ | ☑ | ☑ | ☑ | ☐ | ☐ | ☐ | ☐ | ✗ | ✗ | ☐ | 0-7 | 10240 | Discard | ☐ |
| 9 | | Down | Auto | ☑ | ☑ | ☑ | ☑ | ☑ | ☐ | ☐ | ☐ | ☐ | ✗ | ✗ | ☐ | 0-7 | 10240 | Discard | ☐ |
| 10 | | Down | Auto | ☑ | ☑ | ☑ | ☑ | ☑ | ☐ | ☐ | ☐ | ☐ | ✗ | ✗ | ☐ | 0-7 | 10240 | Discard | ☐ |
| 11 | | 1Gfdx | Auto | ☑ | ☑ | ☑ | ☑ | ☑ | ☐ | ☐ | ☐ | ☐ | ✗ | ✗ | ☐ | 0-7 | 10240 | Discard | ☐ |
| 12 | | Down | Auto | ☑ | ☑ | ☑ | ☑ | ☑ | ☐ | ☐ | ☐ | ☐ | ✗ | ✗ | ☐ | 0-7 | 10240 | Discard | ☐ |
| 13 | | Down | Auto | ☑ | ☑ | ☑ | ☑ | ☑ | ☐ | ☐ | ☐ | ☐ | ✗ | ✗ | ☐ | 0-7 | 10240 | Discard | ☐ |
| 14 | | Down | Auto | ☑ | ☑ | ☑ | ☑ | ☑ | ☐ | ☐ | ☐ | ☐ | ✗ | ✗ | ☐ | 0-7 | 10240 | Discard | ☐ |
| 15 | | Down | Auto | ☑ | ☑ | ☑ | ☑ | ☑ | ☐ | ☐ | ☐ | ☐ | ✗ | ✗ | ☐ | 0-7 | 10240 | Discard | ☐ |
| 16 | | Down | Auto | ☑ | ☑ | ☑ | ☑ | ☑ | ☐ | ☐ | ☐ | ☐ | ✗ | ✗ | ☐ | 0-7 | 10240 | Discard | ☐ |
| 17 | | Down | Auto | ☑ | ☑ | ☑ | ☑ | ☑ | ☐ | ☐ | ☐ | ☐ | ✗ | ✗ | ☐ | 0-7 | 10240 | Discard | ☐ |
| 18 | | Down | Auto | ☑ | ☑ | ☑ | ☑ | ☑ | ☐ | ☐ | ☐ | ☐ | ✗ | ✗ | ☐ | 0-7 | 10240 | Discard | ☐ |
| 19 | | Down | Auto | ☑ | ☑ | ☑ | ☑ | ☑ | ☐ | ☐ | ☐ | ☐ | ✗ | ✗ | ☐ | 0-7 | 10240 | Discard | ☐ |
| 20 | | Down | Auto | ☑ | ☑ | ☑ | ☑ | ☑ | ☐ | ☐ | ☐ | ☐ | ✗ | ✗ | ☐ | 0-7 | 10240 | Discard | ☐ |
| 21 | | Down | Auto | ☑ | ☑ | ☑ | ☑ | ☑ | ☐ | ☐ | ☐ | ☐ | ✗ | ✗ | ☐ | 0-7 | 10240 | Discard | ☐ |
| 22 | | Down | Auto | ☑ | ☑ | ☑ | ☑ | ☑ | ☐ | ☐ | ☐ | ☐ | ✗ | ✗ | ☐ | 0-7 | 10240 | Discard | ☐ |
| 23 | | Down | Auto | ☑ | ☑ | ☑ | ☑ | ☑ | ☐ | ☐ | ☐ | ☐ | ✗ | ✗ | ☐ | 0-7 | 10240 | Discard | ☐ |
| 24 | | Down | Auto | ☑ | ☑ | ☑ | ☑ | ☑ | ☐ | ☐ | ☐ | ☐ | ✗ | ✗ | ☐ | 0-7 | 10240 | Discard | ☐ |
| 25 | | Down | 10Gbps FDX | ☑ | ☑ | ☐ | ☑ | ☑ | ☑ | ☑ | ☑ | ☐ | ✗ | ✗ | ☐ | 0-7 | 10240 | | ☐ |
| 26 | | Down | 10Gbps FDX | ☑ | ☑ | ☐ | ☑ | ☑ | ☑ | ☑ | ☑ | ☐ | ✗ | ✗ | ☐ | 0-7 | 10240 | | ☐ |
| 27 | | Down | 10Gbps FDX | ☑ | ☑ | ☐ | ☑ | ☑ | ☑ | ☑ | ☑ | ☐ | ✗ | ✗ | ☐ | 0-7 | 10240 | | ☐ |
| 28 | | Down | 10Gbps FDX | ☑ | ☑ | ☐ | ☑ | ☑ | ☑ | ☑ | ☑ | ☐ | ✗ | ✗ | ☐ | 0-7 | 10240 | | ☐ |

Save Reset

# 9 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:

## 9.1 WARRANTY PERIOD

For warranty period, please call your local OSD distributor.

## 9.2 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.

### 9.2.1 WARRANTY REPAIRS

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

### 9.2.2 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.

### 9.2.3 SITE REPAIRS

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

### 9.2.4 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