

Quick Installation & Operating Guide

OS3012 – 300 PORT (100 1x2 DUPLEX) OPTICAL switch



Echola Systems L.L.C
1161 Ringwood Ct, Ste 100
San Jose, CA-95131
Phone: 408 321 9663
Fax: 408 321 9663
<http://www.echola.com>

Installation

OS3012 is a Linux based 300 port (100 1x2 duplex) optical switch used in patch panel automation applications. It provides a serial (RS232) and an Ethernet (10/100) port connectivity for management. Serial port is normally used in special situations such as to debug network connectivity if OS3012 is not reachable through Ethernet.

You might require a Laptop or a PC to configure OS3012 with an IP address before connecting to your network so that you would be able to access OS3012 from remote. You can use either serial or Ethernet port to configure IP. If you use serial port using supplied null modem cable then you would need to configure serial for **38400 baud rate with 8-N-1** to access OS3012. If you use Ethernet then you would need to configure the PC or Laptop's IP to match OS3012's default network. The default network configuration is as follows

IP Address: 10.1.1.100

Mask: 255.255.255.0

Gateway: 10.1.1.1

DNS: 10.1.1.1

If you have successfully configured serial or ethernet then you would see the os3012 login prompt. If it is first time then login as "root" to configure the OS3012.

"root" password: *osctl*

There are 2 other non-root users available on OS3012 by default: "osctl" is name of one Login and another is "termserv".

(1) **Username: *osctl***
Password: *osctl*

(2) **Username: *termserv***
Password: *lab*

"termserv" login provides Cisco termserver simulation for automated tcl scripts which use "modem-dtr" & "no modem-dtr" to switch from port 1 to 2. The "termserv" login should only be used in special situations.

To configure a static IP address use "osctl" command after login as "root" user. "osctl -?" shows detailed osctl command options with examples.

```
# osctl -i 192.168.1.10 -m 255.255.255.0 -g 192.168.1.1 -n 192.168.1.1 -h sw1
```

The above command configures IP address of OS3012 as 192.168.1.10 with mask 255.255.255.0 and gateway & DNS as 192.168.1.1 with hostname as sw1. Once the IP is configured from a PC or a Laptop using Ethernet or serial port, you can then connect OS3012 to your network and access it using “telnet” or “ssh”.

If you have a DHCP server running on your network and you want to dynamically assign an available IP address to OS3012 then use following option.

```
# osctl -D
```

Make sure you know the assigned IP address to login using “telnet” or “ssh”. You can also change the hostname of OS3012 switch using “osctl”.

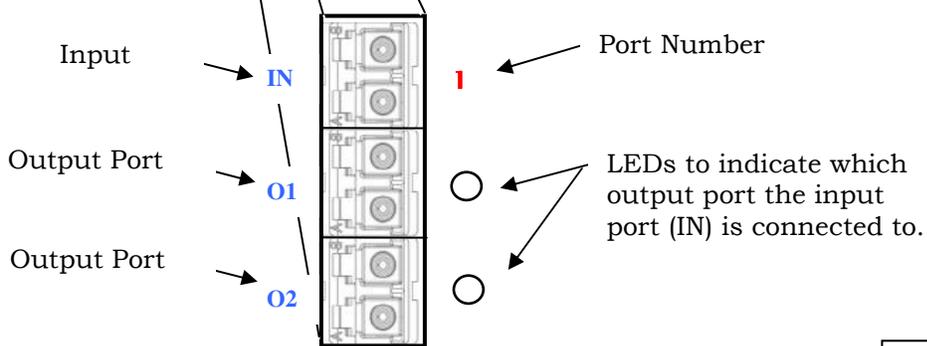
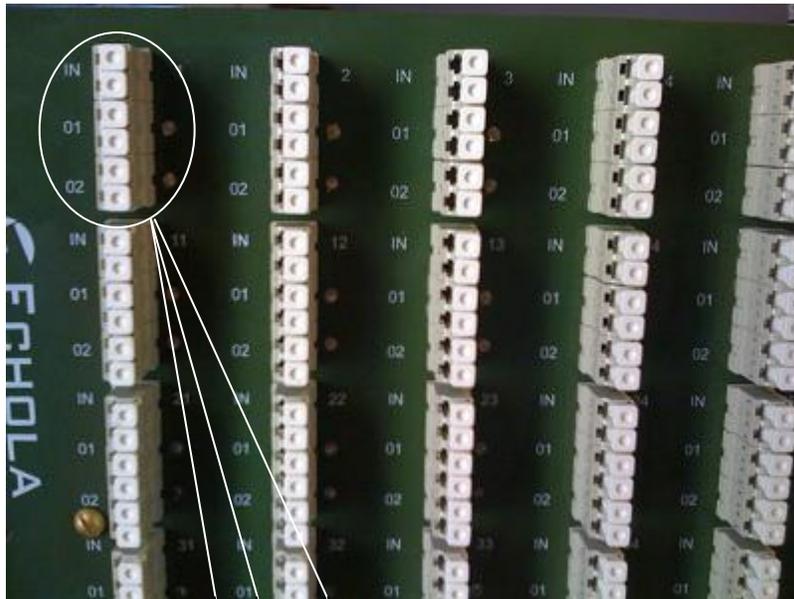
```
# osctl -h OS3012-SW-1
```

The above command changes hostname of OS3012 to OS3012-SW-1.

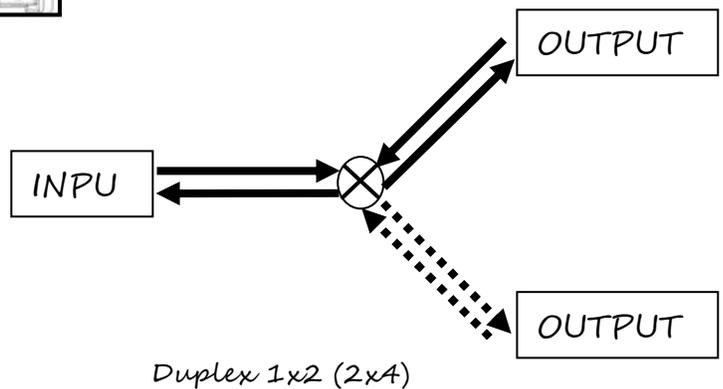
Most of other administrative functions can be done using standard Linux commands. For example, to change the password use “passwd” command from the Linux prompt and to add new user use “useradd” command. You have to be “root” user in order to add a new user.

Operation

OS3012's front panel has 100 port blocks (each with 3 LC duplex connectors) numbered left to right from 1 to 100. Each port block is an individual duplex 1x2 optical switch, consists of 1 input port labeled as "IN" and 2 output ports labeled as "O1" and "O2".



Each input ports' Tx and Rx are internally *cross connected* to corresponding output ports' Rx and Tx. OS3012 uses 100 2x4 switches, as one shown on right, to provide 300 port connectivity.



The switching of light from input port to any of the two output ports can be achieved using a command line interface. To simplify the operation, all functions are provided in a single command called “osctl”. Osctl provides 3 major functions

1. Network & Host configuration (allowed only in “root”)
2. Switch Control & Status
3. Port group Management

Osctl will show correct syntax usage if you make mistakes in typing command options. It will also provide some examples on how to use the command when you make mistakes. Also you may use “osctl -?” which shows all syntaxes with all examples.

Network & Host configuration

Network setup has 3 different syntaxes.

1. To configure static IP
osctl -i <ip> -m <mask> -g <gw> -n <dns> -h <hostname>
2. To use DHCP
osctl -D
3. To configure hostname alone
osctl -h <hostname>

For details refer to installation section as these are explained in that section.

Switch Control

In order to switch input to output port 1 or 2 of a particular port block is achieved by using following command.

```
$ osctl -p {<port#/s> | <port_range> | <port_group>} <1|2> [-t <secs>]
```

Note that the “{}” (braces) groups options and “|” is equivalent to “or”. If the options are in square brackets “[]” then it is optional. Wherever you see in_port# or port# they represent 1 of 100 input port of OS3012.

For example:

```
$ osctl -p 4 1
```

➔ switch input port 4 to output port 1 of same port block. LED on output port 1 lids when this command is issued which confirms that the input port is switched to out port 1.

\$ osctl -p "1 2 3" 2

➔ switch input ports 1, 2 and 3 to their corresponding output port 2. Note that the double quote is required, without double quote the command will fail.

\$ osctl -p "1-4" 1

➔ switch ports 1, 2, 3 and 4 to corresponding output port 1 (range 1 to 4). This comes in handy when you want to switch bunch of ports in order.

\$ osctl -p gp1 1

➔ switch all ports in group "gp1" to corresponding output port 1. You will have to create the group with "-c" option before using above command as explained in "Port group Management" section.

\$ osctl -p 2 2 -t 120

➔ switch port 2 to output port 2 after 120 secs (delayed switching)

Switch Status

Following command shows the status of a port whether it is on/off or status of ports in a pre-defined group.

\$ osctl -s [<port_group> | <in_port#>]

For example:

\$ osctl -s

➔ shows all ports' & groups' status as follows. It shows first all the ports' statuses and tells you which ports are part of a group. The following snippet shows the actual output.

All Ports Status

```
=====
Port    | Port Status
=====
1       | 1
2       | 1
3       | 1
4       | 1
5       | 2
```

```

6      |    2
7      |    2
8      |    2

```

```

.....
.....

```

```

-----
                Group Status

```

```

=====
Group Name | Port Status
=====
gp1        |    1

```

```

-----
                Group's Port Details

```

```

=====
GroupName: <gp1>
Port Status: 1
Ports in the group: 1 2 3 4
-----

```

```

$ osctl -s gp1

```

➔ shows group "gp1" status only. You will have to create group before using it with "-c" option as explained in "Port group Management" section.

```

$ osctl -s 2

```

➔ shows port 2 status only

Port group Management

Port group management commands provide convenience of switching bunch of ports together identified by a name. Group name can be any alpha-numeric name. Group name can not be just a number or start with a number. For example group name can not be "10" or 10gp1. The following are the group commands. Whenever you see reference to port_group it is same as group name.

Osctl provides 5 different syntaxes to manage port group functions.

1. To create a new group


```
$ osctl -c <port_group> {<in_port#/s> | <inport_range>}
```
2. To update existing group


```
$ osctl -u <port_group> {-a | -r <in_port#/s>}
```
3. To delete a group


```
$ osctl -d <port_group>
```
4. To delete all groups

\$ osctl -R

5. To list ports in a group

\$ osctl -l [<port_group> | <in_port#>]

For example:

\$ osctl -c gp1 "1 3 4"

→ creates group named "gp1" with ports 1,3 and 4. The double quotes around space separated port numbers are required, without that command will fail. Note that when you create a group, all the ports in the gp1 group are *switched to output port 1 by default*.

\$ osctl -c gp2 "5-8"

→ creates group named "gp2" with ports 5,6,7 and 8 (5 to 8 range)

\$ osctl -u gp1 -a "5 6"

→ adds ports 5 & 6 to existing group gp1

\$ osctl -u gp1 -a 7

→ adds port 7 to existing group gp1

\$ osctl -u gp1 -r "2 4"

→ removes ports 2 & 4 from group gp1

\$ osctl -d gp1

→ deletes group gp1 and release all ports which were part of the group.

\$ osctl -l

→ lists ports in group, like

GroupName: <gp1>

Ports in the group: 1 2 3 4

\$ osctl -R

→ delete all groups in the database.

Troubleshooting

- ➔ If you use telnet and is very slow, it could be due to name server / DNS issue. Make sure you have name server configured correctly (-n option). Try “ping <name_server_ip>” to see if name server configured can be reached from OS3012.
- ➔ All the group information is stored in a hidden XML database file. If for some reason this file is corrupted, the system will recover from this error by trying to copy the backup database file. If this happens it will throw a warning message but it is not guaranteed that all the group information will be restored correctly. In that case you may need to recreate missing groups.

Hardware Specifications

Electrical

Input Power	100-240 AC
Total Power Consumption	< 30 Watts
Serial Port	1x RS232
Networking	1x 10/100 Ethernet

Optical

Connectivity	300 Duplex Multimode LC ports
Data rate	No limitation - Physical Layer Switch
Wavelength (nm)	850/1300
Optical Technology	2x4 Electro-mechanical-optical switch
Insertion Loss (dB)	0.5 Typical, 0.8 Max.
Switching Time (ms)	≤ 10
Crosstalk (dB)	≤ -80
Repeatability (dB)	≤ 0.1

Mechanical & Environmental

Each Switch's Durability (Cycles)	> 10 ⁷
Chassis (RU)	10
Dimension (inch)	19 (W) x 14 (D) x 17.5 (H)
Operating Temperature range (°C)	-20 ~ 75
Storage Temperature range (°C)	-40 ~ 70
Humidity	5 – 85 % RH

Contact Info

If you have any technical questions and need help you can send email to support@echola.com or call 408-321-9663. You can also download latest documents and software from our website www.echola.com.