



## INSTALLATION AND OPERATION MANUAL

# CNGE4+2SMS[POE][HO]

## 10/100/1000 MBPS INTELLIGENT REDUNDANT RING GIGABIT SWITCH WITH OPTIONAL POE+

### This manual serves the following ComNet Model Numbers:

CNGE4+2SMS  
CNGE4+2SMSPOE  
CNGE4+2SMSPOEHO

The ComNet CNGE4+2SMS[POE][HO] is a four port intelligent switch with light management functionality. It provides two 10/100/1000Base-T(X) copper ports and two 100/1000Base-FX SFP ports. The CNGE4+2SMS[POE][HO] provides exclusive functionality for easy field deployment including DIP switch based operation of RSTP for creating redundant network topologies as well as preventing network video flooding of multicast traffic with IGMP snooping. Copper ports 1 through 4 can optionally supply up to thirty (30) watts of power per port based on the IEEE 802.3at standard. An optional High Output (HO) version is also available that can supply up to sixty (60) watts of PoE from copper ports 1 through 4. This product is fully compatible with the ComNet exclusive CopperLine® SFP modules for operation over extended distance UTP or Coax cable. The ComNet exclusive Port Guardian feature provides additional cyber security protection by enabling physical port lockout in the event that an existing cable is disconnected and prevents a potential network incursion using common spoofing techniques. The intrusion event is reported back to the operator using SNMP.

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## Regulatory Compliance Statement

Product(s) associated with this publication complies/comply with all applicable regulations. Please refer to the Technical Specifications section for more details.

## Warranty

ComNet warrants that all ComNet products are free from defects in material and workmanship for a specified warranty period from the invoice date for the life of the installation. ComNet will repair or replace products found by ComNet to be defective within this warranty period, with shipment expenses apportioned by ComNet and the distributor. This warranty does not cover product modifications or repairs done by persons other than ComNet-approved personnel, and this warranty does not apply to ComNet products that are misused, abused, improperly installed, or damaged by accidents.

Please refer to the Technical Specifications section for the actual warranty period(s) of the product(s) associated with this publication.

## Disclaimer

Information in this publication is intended to be accurate. ComNet shall not be responsible for its use or infringements on third-parties as a result of its use. There may occasionally be unintentional errors on this publication. ComNet reserves the right to revise the contents of this publication without notice.

## Safety Indications

- » The equipment can only be accessed by trained ComNet service personnel.
- » This equipment should be installed in secured location.

# Overview

## Introduction

The CNGE4+2SMS is a light managed, hardened Ethernet switch that contains many features. The switch will work under a wide variety of temperature, dirty and humid conditions. It can be managed through WEB, USB Console or other third-party SNMP software. With the easy to use and intuitive web and CLI interfaces, the switch can be easily monitored by a utility called eVision, which is part of the ComNet eConsole software suite.

eConsole is network management software that is very effective. With easy to use and intuitive interface, you can easily monitor the status of the switches.

## Software Features

- » Supports SNMPv1/v2c
- » Event notification by SNMP trap and Relay Output (Relay Output for PoE models only)
- » Web-based GUI and USB Console CLI configuration
- » Enable/disable ports
- » LLDP (Link Layer Discovery Protocol) support (802.1AB)
- » PoE status monitoring and health check
- » RSTP (802.1w)
- » IGMP snooping v2 (64 groups)
- » Jumbo Frame support (10240 MTU)
- » Static MAC lock (per port)
- » Static multicast MAC routing
- » Field firmware upgrade capable
- » Port Guardian physical port lockout feature
- » Active ping check with SNMP trap, port reset & port shutdown capability

## Hardware Features

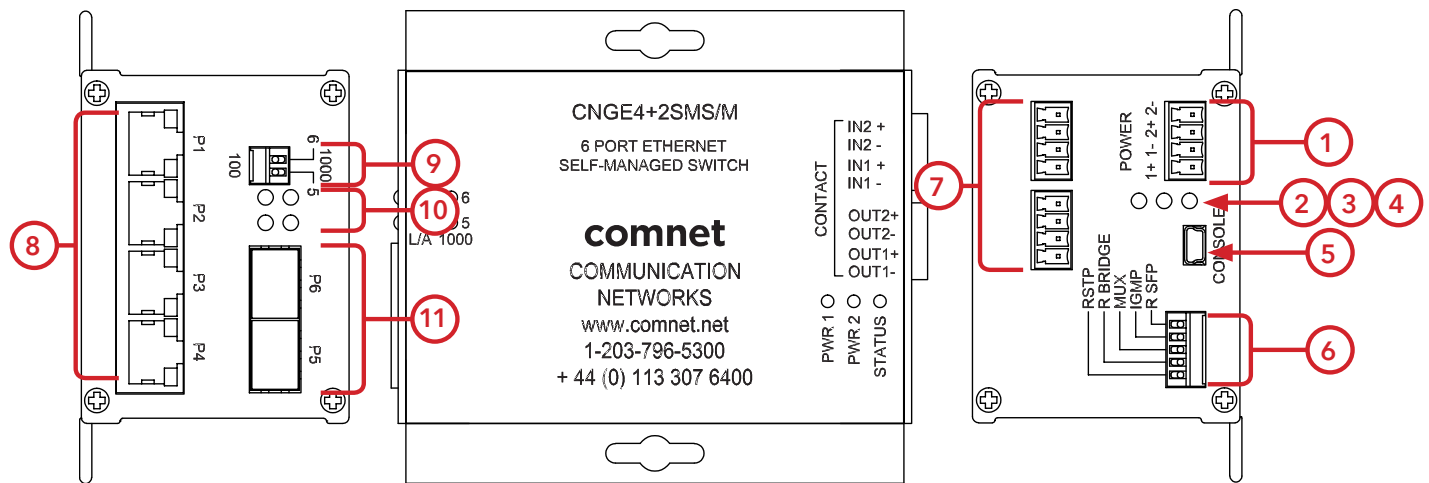
- » 7 × DIP Switches for quick feature selection
- » 2 × Redundant DC power inputs
- » Operating Temperature: -40 – 75°C
- » Storage Temperature: -40 – 85°C
- » Operating Humidity: 5% – 95%, non-condensing
- » 2 × 10/100/1000Base-T(X) Gigabit Ethernet port
- » 2 × 100/1000Base-X SFP
- » 2 × Dry Contact Inputs (PoE models only)
- » 2 × Form A Relays (PoE models only)
- » USB Console Port
- » Dimensions: 4.1 × 3.7 × 1.46 in (10.4 × 9.4 × 3.7 cm)

## Hardware Overview

### Side Panels

The following table describes the ports that are on the sides of the CNGE4+2SMS.

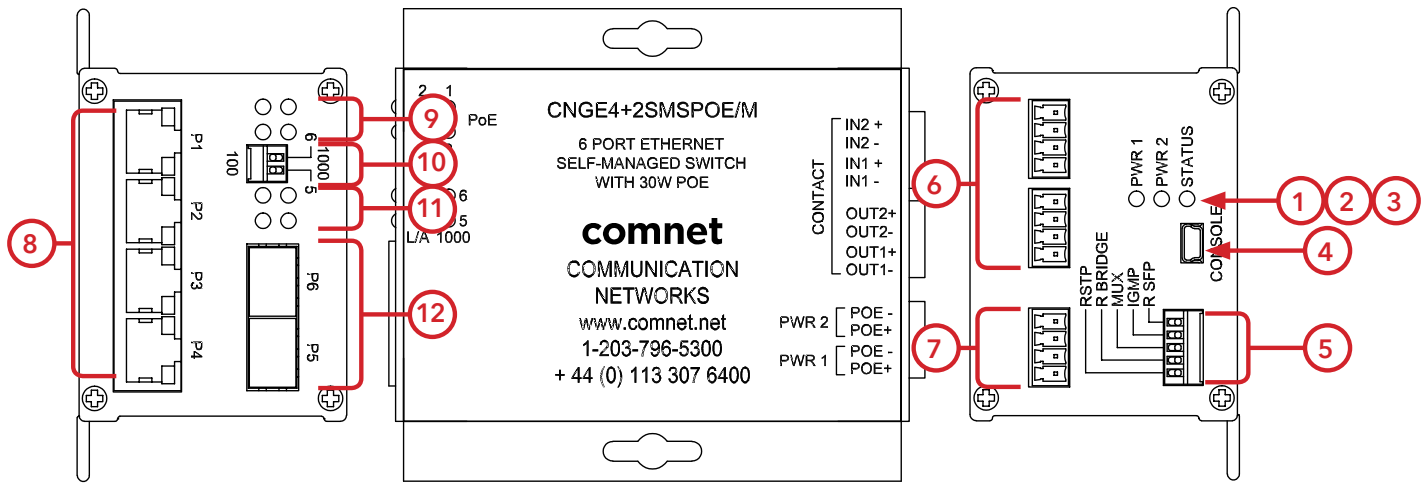
Port	Description
10/100/1000Base-T(X) RJ-45 Ethernet ports	4 × 10/100/1000Base-T(X) RJ-45 fast Ethernet ports support auto-negotiation. Default Settings: Speed: auto Duplex: auto Flow control: disable
SFP Ports	2 × 100/1000Base-X SFP
USB Console	Use the included mini USB cable to manage the switch.



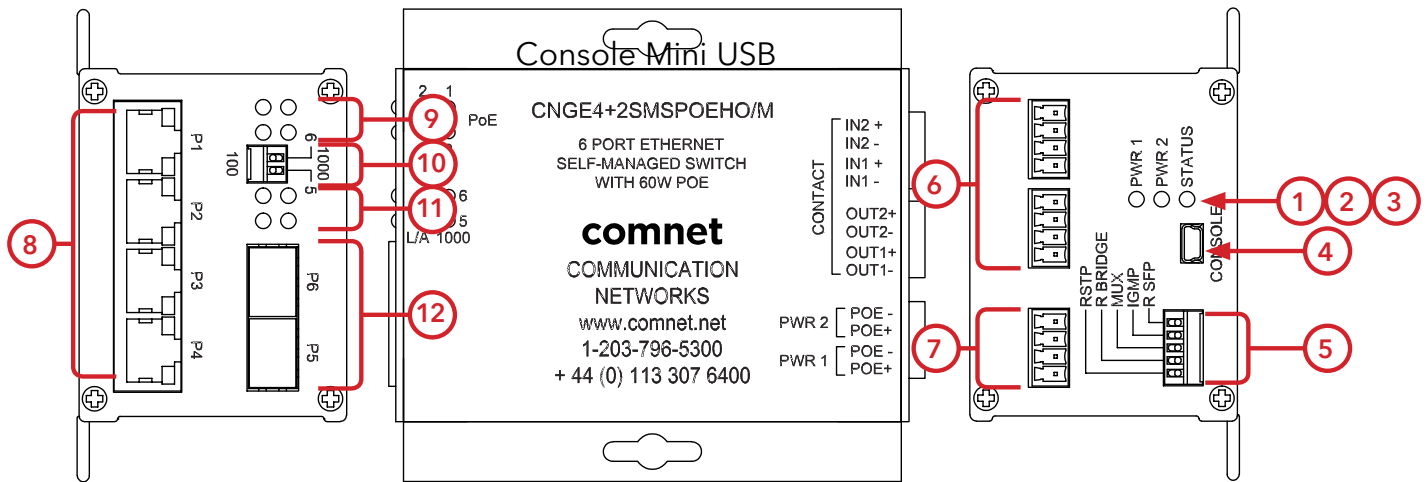
CNGE4+2SMS

1. Power Connections
2. LED for PWR1
3. LED for PWR2
4. LED for STATUS
5. Console Mini USB
6. Configuration DIP switches
7. Contact Closure terminal block
8. RJ-45 Ports 1-4
9. Data Speed DIP switches
10. Link/Activity LEDs for SFP Ports 5 and 6
11. SFP Ports 5 and 6





CNGE4+2SMSPOE



CNGE4+2SMSPOEHO

1. LED for Power 1
2. LED for Power 2
3. LED for Status
4. Console Mini USB
5. Configuration DIP switches
6. Contact Closure terminal block
7. Power connections
8. RJ-45 Ports 1-4
9. PoE Status LEDs for RJ-45 Ports
10. Data Speed DIP switches
11. Link/Activity LEDs for SFP Ports 5 and 6
12. SFP Ports 5 and 6

## Indicating LEDs

LED	Color	Status	Description
PWR1	Green	On	DC Power Input 1 Good
		Off	No power detected
PWR2	Green	On	DC Power Input 2 Good
		Off	No power detected
STATUS	Green	On	Initialization passed
	Red	On	Failed
<b>10/100/1000Base-T(X) Ethernet ports</b>			
LNK/ACT	Green	On	Port link up
		Blinking	Data transmitting
1000 Mbps indicator	Amber	On	Port speed is 1000 Mbps
30W	Amber	On	30W PoE power being supplied (POE units only)
60W	Green	On	60W PoE power being supplied (POEHO units only)
<b>SFP</b>			
LNK/ACT	Green	On	Port link up.
		Blinking	Data transmitted.

## Cables

### Ethernet Cables

The CNGE4+2SMS switches have standard Ethernet ports. According to the link type, the switches use CAT 3, 4, 5, & 5e UTP cables to connect to any other network device (PCs, servers, switches, routers, or hubs). Please refer to the following table for cable specifications.

*Cable Types and Specifications*

Cable	Type	Max. Length	Connector
10BASE-T	Cat. 3, 4, 5 100Ω	UTP 100m (328ft)	RJ-45
100BASE-TX	Cat. 5 100Ω UTP	UTP 100m (328ft)	RJ-45
1000BASE-TX	Cat. 5/Cat. 5e 100Ω UTP	UTP 100m (328ft)	RJ-45

### 10/100/1000BASE-T(X) Pin Assignments

With 100BASE-T(X)/10BASE-T cable, pins 1 and 2 are used for transmitting data, and pins 3 and 6 are used for receiving data.

*10/100 Base-T RJ-45 Pin Assignments*

Pin Number	Assignment
1	TD+
2	TD-
3	RD+
4	Not used
5	Not used
6	RD-
7	Not used
8	Not used

**Note:** "+" and "-" signs represent the polarity of the wires that make up each wire pair.

*1000 Base-T RJ-45 Pin Assignments*

Pin Number Assignment	
1	BI_DA+
2	BI_DA-
3	BI_DB+
4	BI_DC+
5	BI_DC-
6	BI_DB-
7	BI_DD+
8	BI_DD-

The CNGE4+2SMS switches support auto MDI/MDI-X operation. You can use a straight-through cable to connect PC to switch. The following table below shows the 10/100BASE-T(X) MDI and MDI-X port pin-outs:

*10/100 Base-T MDI/MDI-X pin assignments*

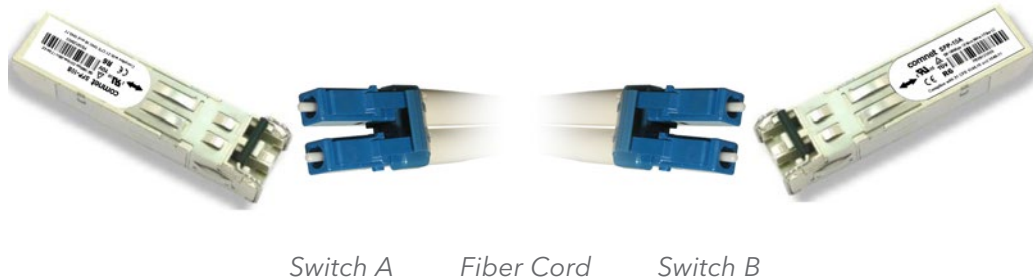
Pin Number	MDI port	MDI-X port
1	TD+ (transmit)	RD+ (receive)
2	TD- (transmit)	RD- (receive)
3	RD+ (receive)	TD+ (transmit)
4	Not used	Not used
5	Not used	Not used
6	RD- (receive)	TD- (transmit)
7	Not used	Not used
8	Not used	Not used

*1000 Base-T MDI/MDI-X pin assignments*

Pin Number	MDI port	MDI-X port
1	BI_DA+	BI_DB+
2	BI_DA-	BI_DB-
3	BI_DB+	BI_DA+
4	BI_DC+	BI_DD+
5	BI_DC-	BI_DD-
6	BI_DB-	BI_DA-
7	BI_DD+	BI_DC+
8	BI_DD-	BI_DC-

## SFP

The Switch has fiber optic ports that utilize SFP connectors. ComNet offers a wide selection of SFP modules that offer different fiber type, connector type and distances. Please remember that the TX port of Switch A should be connected to the RX port of Switch B.



## Console Cable

Each CNGE4+2SMS switch can have the initial network settings configured by the management console port. You can connect them to a PC with USB Ports using the supplied USB to USB Mini B male plug cable.



## DIP Switches

The CNGE4+2SMS's dip switches configure switch features. The DIP Switches are numbered from left to right when viewing the side of the Switch with the backplate on the bottom and the power connections on the left. If "Web Management Enable" is selected in the management software under System Settings, the DIP switch settings will be overridden by any settings made in the browser interface.

DIP Switch Position	Description
1	RSTP enable (down = disabled, up enabled)
2	Port SMS Mux
3	Root Bridge Select
4	Redundant SFP mode
5	IGMP enable
6	SFP Port 3 speed. Up: 1000M/Down: 100M
7	SFP Port 4 speed. Up: 1000M/Down: 100M

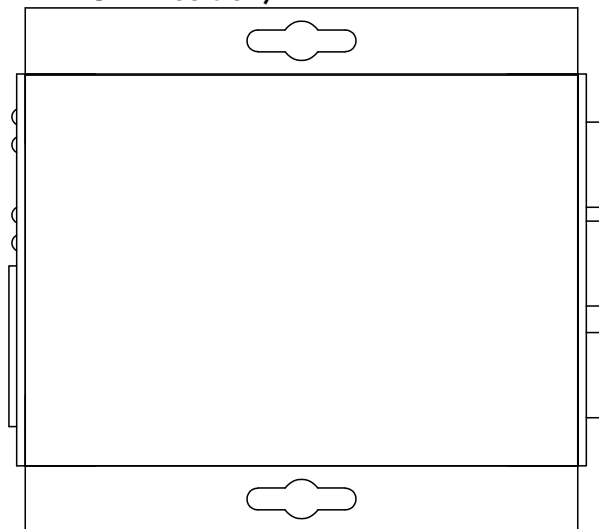
## Switch Function Listing

The switch functions may be set individually or may be combined in the following order to perform enhanced functions above the individual operation. The table below describes the operation of the switch functions. This same table is also available in the help menu of the system webpage.

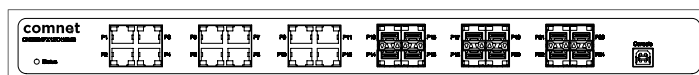
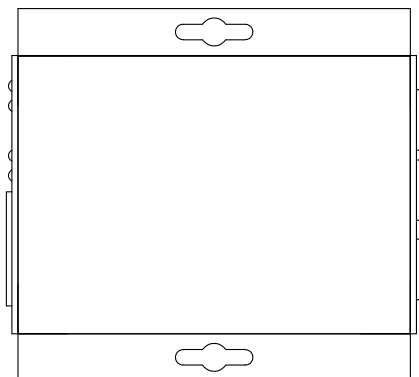
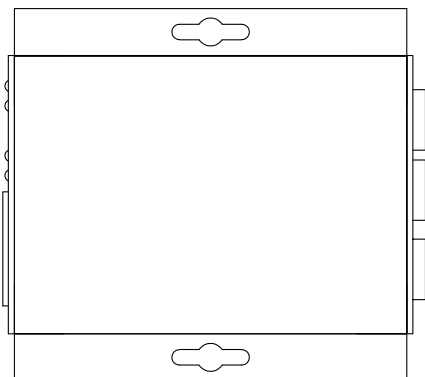
### Summary of the switch configurations (in order of switch priority)

RSTP (Switch 1)	SMS MUX (Switch 2)	ROOT BR (Switch 3)	R SFP (Switch 4)	Resulting Mode	Comment
ON	OFF	OFF	OFF	RSTP	All ring configurations
ON	OFF	ON	OFF	RSTP	RSTP this bridge set to root
OFF	ON	OFF	OFF	SMS	Port 6 is uplink (traffic from ports 1-5 is sent only to port 6)
OFF	ON	OFF	ON	SMS with Redundant SFP	Fiber fail over with ports 1 through 5 isolation
OFF	OFF	OFF	ON	Redundant SFP	Fiber fail over Port 6 is primary port

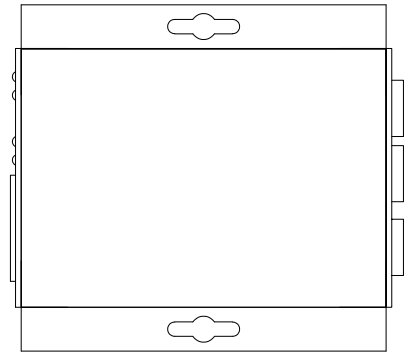
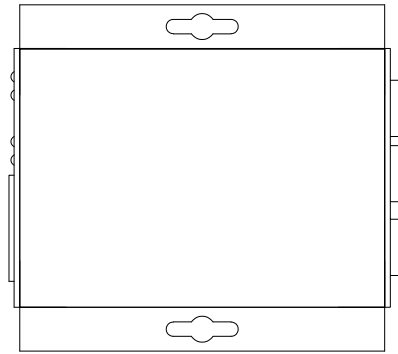
SMS MUX Disabled (DIP Switch 2 in OFF Position)



SMS MUX Enabled (DIP Switch 2 in On Position)

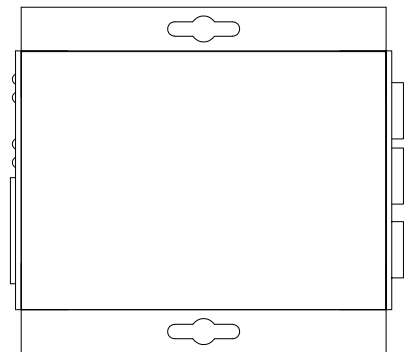
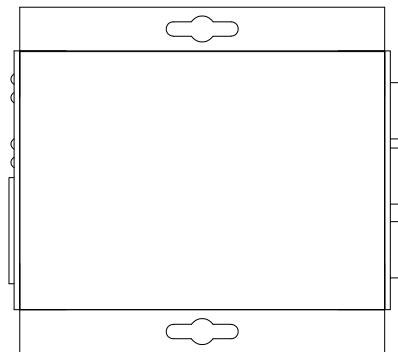


Redundant SFP (RSFP) Enabled (DIP Switch 4 in On Position)



*Note: There is no port isolation between Ports 1 & 2 as shown. Ports 1 & 2 are free to send traffic between each other as per a normal switch.*

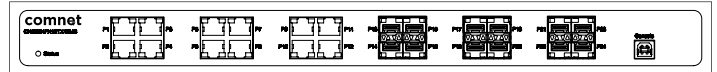
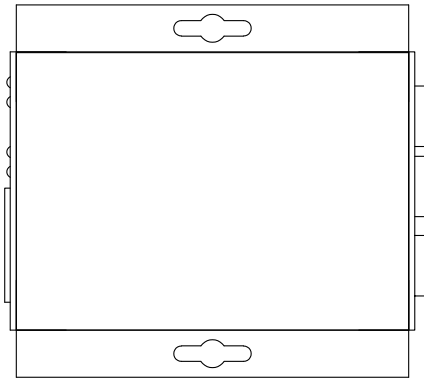
Redundant SFP (RSFP) Enabled (DIP Switch 4 in On Position)



*Note: There is no port isolation between Ports 1 & 2 as shown. Ports 1 & 2 are free to send traffic between each other as per a normal switch.*  
*When Port 4 comes back online all traffic from Ports 1 & 2 is switched back to transmit over Port 4 in less than 1 second.*

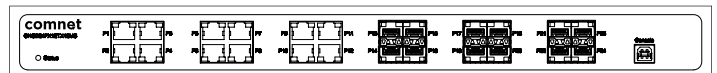
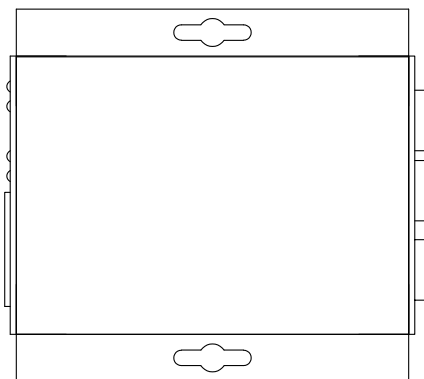


### Redundant SFP (RSFP) Enabled (3rd Party Switch) (DIP Switch 4 in On Position)



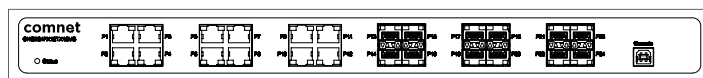
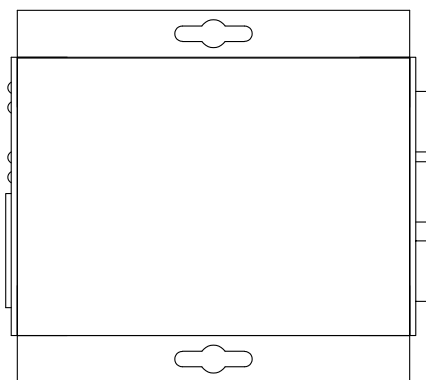
*Note: Disabling MAC Address Learning on the 3rd party switch (if supported) can sometimes allow for faster port switchover times.  
There is no port isolation between Ports 1 & 2 as shown. Ports 1 & 2 are free to send traffic between each other as per a normal switch.*

### Redundant SFP (RSFP) Enabled (3rd Party Switch) (DIP Switch 4 in On Position)



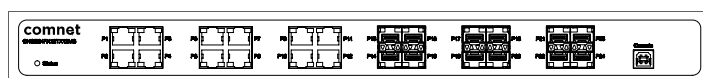
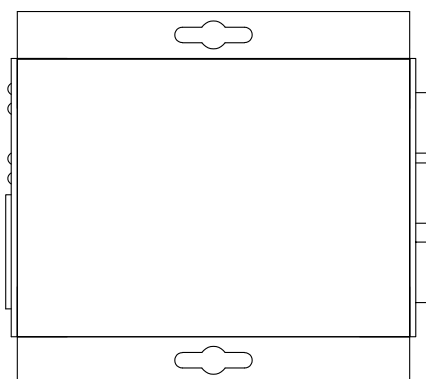
*Note: Disabling MAC Address Learning on the 3rd party switch (if supported) can sometimes allow for faster port switchover times.  
There is no port isolation between Ports 1 & 2 as shown. Ports 1 & 2 are free to send traffic between each other as per a normal switch.  
When Port 4 comes back online all traffic from Ports 1 & 2 is switched back to transmit over Port 4 in less than 1 second.*

### Redundant SFP (RSFP) Enabled + SMS MUX Enabled (3rd Party Switch) (DIP Switch 2 & 4 ON)



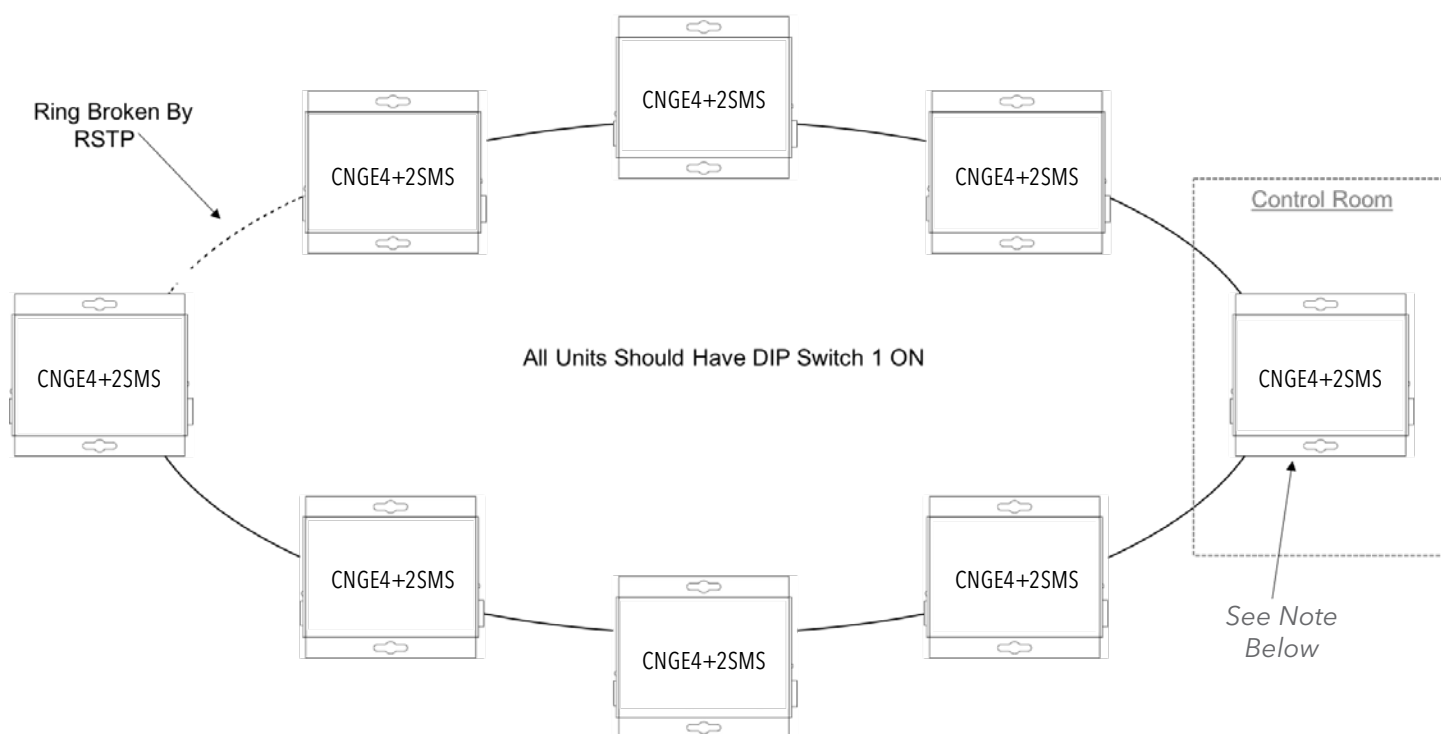
**Note:** *Disabling MAC Address Learning on the 3rd party switch (if supported) can sometimes allow for faster port switchover times.*  
*Multicast traffic is diverted only to port 4 preventing flooding on the local device between Ports 1 & 2. Ports 1 & 2 are isolated from each other.*

## Redundant SFP (RSFP) Enabled + SMS MUX Enabled (3rd Party Switch) (DIP Switch 2 & 4 ON)



**Note:** *Disabling MAC Address Learning on the 3rd party switch (if supported) can sometimes allow for faster port switchover times.*  
*Multicast traffic is diverted only to port 4 preventing flooding on the local device between Ports 1 & 2. Ports 1 & 2 are isolated from each other.*  
*When Port 4 comes back online all traffic from Ports 1 & 2 is switched back to transmit over Port 4 in less than 1 second.*

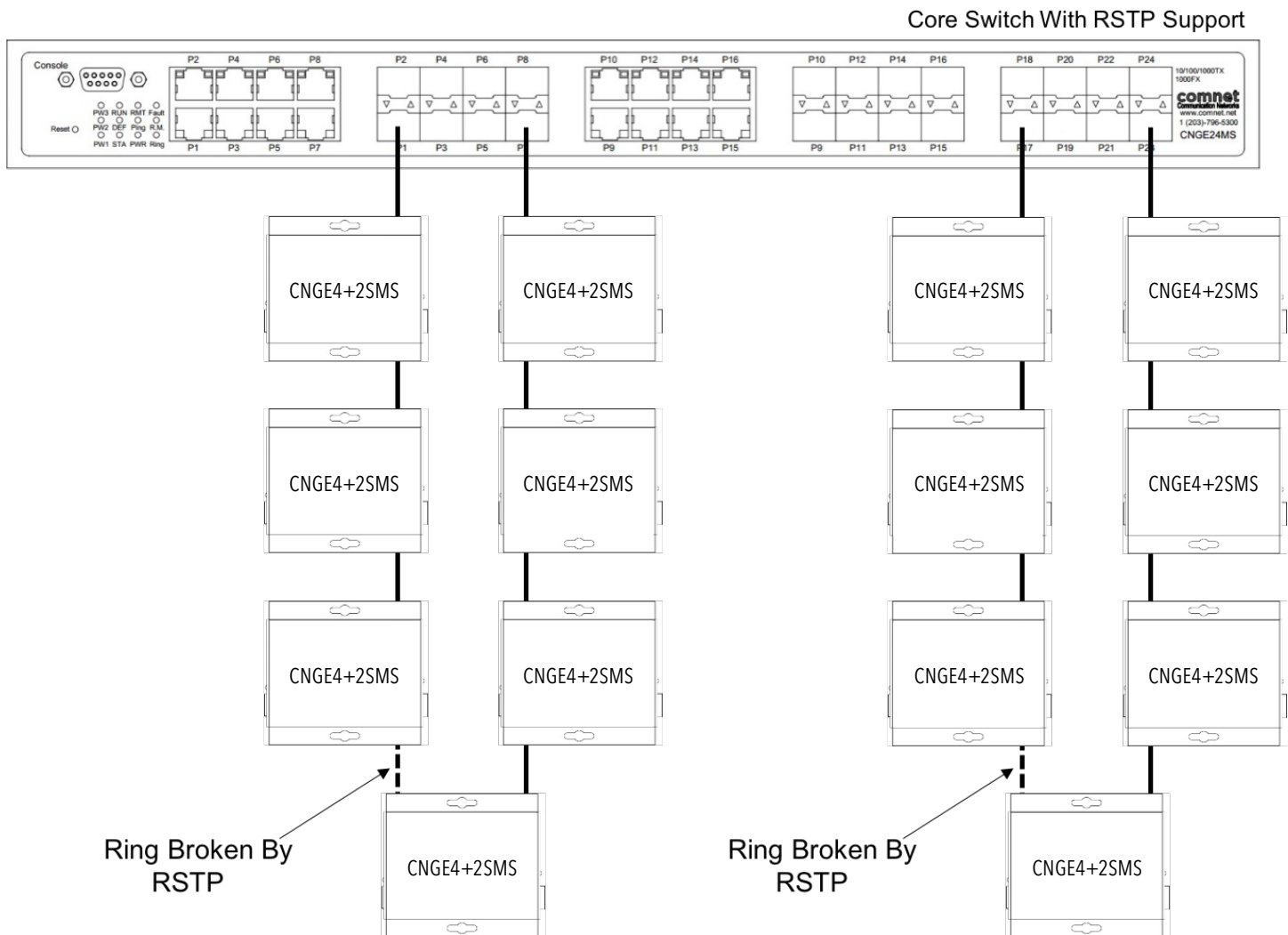
# RSTP Enabled (Single Ring) (DIP Switch 1 ON)



**Attention:** ComNet recommends maximum number of units per ring is limited to 20 devices. Numbers higher than this may cause undesired performance and are not supported by ComNet.

**Note:** The unit at the control room location should have DIP switch 3 ON (ROOT BR). This will force the ring to break at the half way point and ensure most effective load sharing on the network.

# RSTP Enabled (Multiple Rings) (DIP Switch 1 ON)

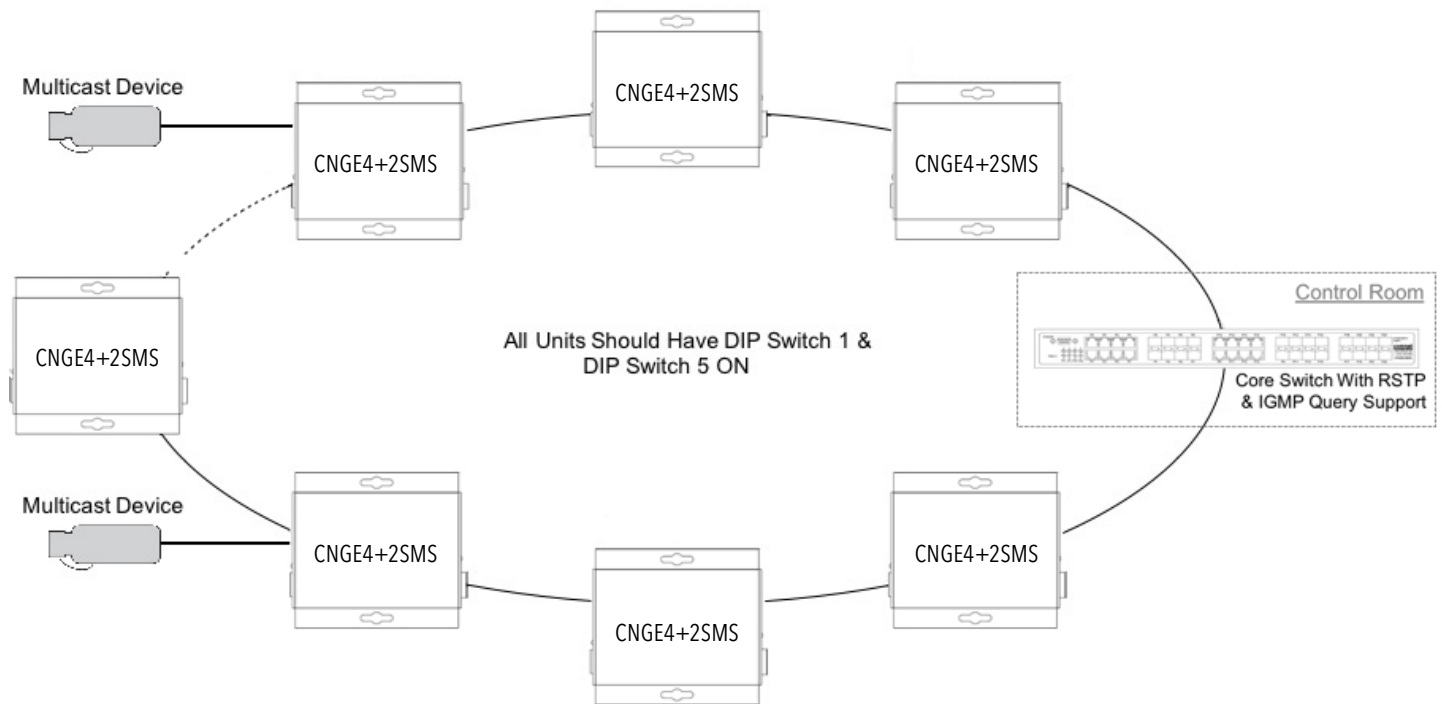


**Attention:** ComNet recommends maximum number of units per ring is limited to 20 devices. Numbers higher than this may cause undesired performance and are not supported by ComNet.

**Attention:** Central switch must be manually configured to be the root bridge. This requirement is mandatory for correct performance in a multiple ring scenario.

**Attention:** ComNet recommends maximum number of rings per core switch is limited to 3-4. The actual number supported will depend on the processing power of the core switch used and other features that may be enabled on the core switch. Please contact ComNet Technical Support to discuss your application prior to ordering.

IGMP & RSTP Enabled (DIP Switch 1 & 5 ON)



**Important Note:** The CNGE4+2SMS supports IGMP snooping only. When using the IGMP function a managed switch must be implemented within the network that is configured as the IGMP Querier as shown. Up to 64 IGMP groups are supported on the CNGE4+2SMS switch.

## WEB Management

*Attention: While installing and upgrading firmware, please remove physical loop connection first.  
DO NOT power off equipment while the firmware is upgrading!*

### Configuration by Web Browser

This section provides instruction on configuration through the Web browser.

#### About Web-based Management

An embedded HTML web site resides in the flash memory on the CPU board. It contains advanced management features and allows you to manage the switch from anywhere on the network through a standard web browser such as Microsoft Internet Explorer.

The Web-Based Management function supports Internet Explorer 5.0 or later.

#### Preparing for Web Management

The default value is as below:

IP Address: 192.168.10.1

Subnet Mask: 255.255.255.0

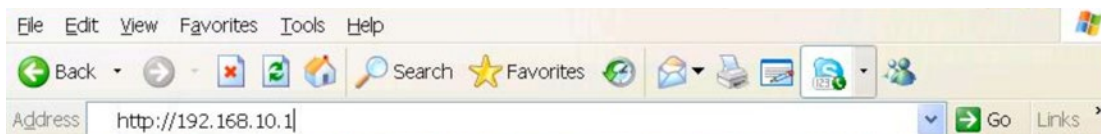
Default Gateway: 192.168.10.254

User Name: admin

Password: admin

## System Login

1. Launch your Web Browser.
2. Type http:// and the IP address of the switch. Press Enter.



3. The login screen appears.
4. Enter username and password. The default username and password is admin.
5. Select Enter or OK button, then the main interface of the Web-based management appears.



*Login screen*

Main Interface

comnet

CNGE4+2SMSPoE Managed Switch

CNGE4+2SMSPoE

System

Port Config

Port Stats

RSTP Config

LLDP Config

Active Ping Check

Authentication

Firmware Upgrade

Factory Defaults

System Reset

Network Configuration

SNMP

Cernet CNGE4+2SMSPoE

Build Version: RC 8

Build Date: Nov 12 2018 10:39:14

This website is used for management and status of the CNGE4+2SMSPoE device

NOTE: Any modifications to RSTP or network configurations require a reboot

All pages include a help page that describes page options

The apply button on each page will save the displayed configuration in persistent storage to maintain the configuration between power cycles

The USB port CLI is also available to configure the network options, the terminal settings are 115K baud 8,N,1 no flow control

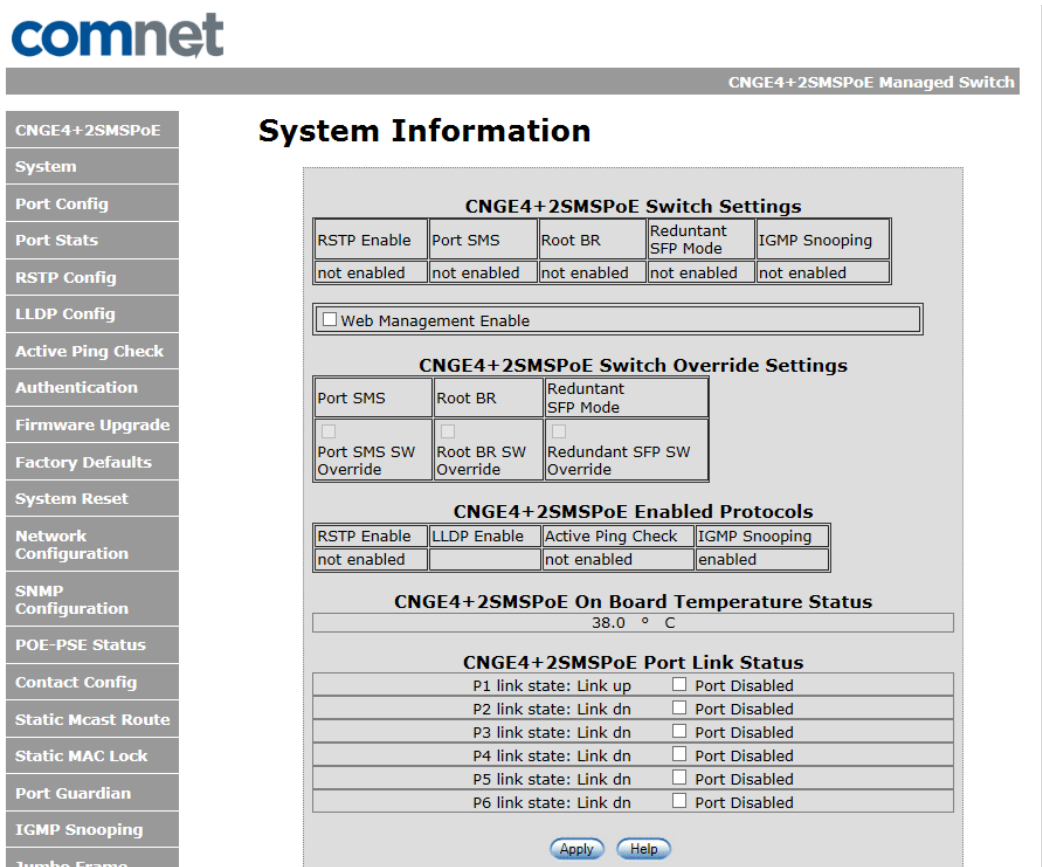
To avoid resubmitting switch configuration, please do not refresh the page. Instead, use the side navigation menu to reload the page.

Main interface



# System Information

The switch system information is provided here.



System Information interface

Label	Description
Switch Settings	Summary table of external switch settings
Web Management Enable	Override the side panel switches setting to use the webpage settings instead.
Switch override	Override individual switch functions
Enabled protocols	Summary table of enabled protocols
Temperature	Unit’s internal board temperature reading
Port link status	Link status and port disable

## Switch Port Configuration

Unless you have reason to change this setting, it is recommended to leave the negotiation set to auto.

The link segment requires forcing the settings. Both ends of the link need to have the same selection.

**comnet**

CNGE4+2SMSPoE Managed Switch

**SwitchPort Configuration**

Port	Negotiation	Speed	Duplex	Flow Control
Port1 ▼	Auto ▼	100 ▼	half ▼	none ▼

With forced half duplex mode, flow control ON is recommended

Apply Help

Please perform a System Reset after applying any changes.

**SwitchPort Status**

Port	Link State	Negotiation	Speed	duplex	flow control
1	Link up	Auto	100mbps	Half	Auto
2	Link dn	-	-	-	-
3		-	-	-	-
4	Link dn	-	-	-	-
5	Link dn	-	-	-	-
6	Link dn	-	-	-	-

*SwitchPort Configuration interface*

# Port Statistics

Use the refresh button to update the port statistics.

comnet

CNGE4+2SMSPoE Managed Switch

CNGE4+2SMSPoE

System

Port Config

Port Stats

RSTP Config

LLDP Config

Active Ping Check

Authentication

Firmware Upgrade

Factory Defaults

System Reset

Network Configuration

SNMP Configuration

POE-PSE Status

Contact Config

Static Mcast Route

Port Statistics

CNGE4+2SMSPoE Port Statistics

Port MIB	Port1	Port2	Port3	Port4	Port5	Port6
Egress Stats						
OutOctets						
OutUnicast						
OutBroadcast						
OutMulticast						
Collisions						
OutFCSErr						
Ingress Stats						
InGoodOctets						
InBadOctets						
InMulticast						
InBroadcast						
InUnicast						
InRxErr						
InFCSErr						

☐ Clear All Port Counters

refresh stats

Port Statistics interface

## RSTP System Configuration

The Rapid Spanning Tree Protocol (RSTP) is an evolution of the Spanning Tree Protocol. It provides faster spanning tree convergence after a topology change. The system also supports STP and the system will auto detect the connected device that is running STP or RSTP protocol.

**comnet**

CNGE4+2SMSPoE Managed Switch

**RSTP - System Configuration**

System Configuration | Port Configuration

☐ Enable RSTP

Priority (0-32768): 32768

Max Age (6-40): 20

Hello Time (1-10): 2

Forward Delay Time(4-30): 15

- Priority must be a multiple of 4096
- $2 * (\text{Forward Delay Time} - 1)$  should be greater than or equal to the Max Age.
- The Max Age should be greater than or equal to  $2 * (\text{Hello Time} + 1)$ .

Apply Help

Please perform a System Reset after applying any RSTP changes. This feature is not compatible with the static MAC lock feature.

**Root Bridge Information**  
Root Bridge ID: 00:00:00:00:00:00

RSTP System configuration interface

Label	Description
Enable RSTP	Select to enable RSTP (only available when the DIP switch settings have been overridden by web management mode. See Page 26.)
Priority	Configure bridge priority, must be a multiple of 4096. If the ROOT BR dip switch is enabled this value will be set to 4096. If the ROOT BR dip switch is disabled this value will be set to 32768 by default.
Root Bridge ID	MAC address of the root bridge

**Important Note:** *RSTP cannot be used in conjunction with the Static MAC Lock feature. A system reset must be performed after making changes to the RSTP settings.*

## RSTP Port Configuration

**comnet**

CNGE4+2SMSPoE Managed Switch

**RSTP - Port Configuration**

System Configuration | Port Configuration

Port: P1 ▼ Priority(0-240): 128 PortAdmin: AutoEdge ▼

priority must be a multiple of 16

Apply Help

Please perform a System Reset after applying any RSTP changes

**RSTP Port Status**

Port	Role	State	Port Admin	Port Priority	STP Neighbor
1	(unk)	Discarding	AutoEdge	128	none
2	(unknown)	Discarding	AutoEdge	128	none
3	(unknown)	Discarding	AutoEdge	128	none
4	(unknown)	Discarding	AutoEdge	128	none
5	(unknown)	Discarding	AdminP2P	128	none
6	(unknown)	Discarding	AdminP2P	128	none

*RSTP Port configuration interface*

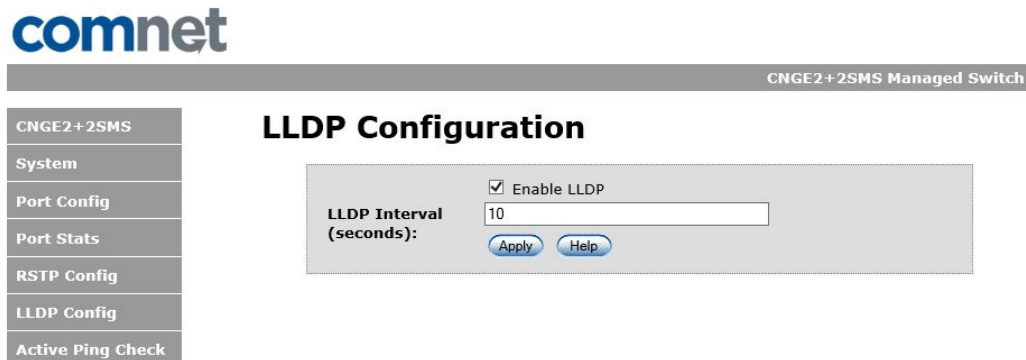
Label	Description
Port Priority	Configure port priority, must be a multiple of 16.
Port Admin	Configure port Admin or Auto Edge status.
Port Status	Summary table of RSTP port status

**Important Note:** A system reset must be performed after making changes to the RSTP settings.

## LLDP

LLDP (Link Layer Discovery Protocol) function allows the switch to advertise its information to other nodes on the network and store the information it discovers.

LLDP is enabled by default with the interval set to 10 seconds.



The screenshot shows the web management interface for a Comnet switch. At the top left is the 'comnet' logo. A horizontal bar at the top right identifies the device as 'CNGE2+2SMS Managed Switch'. On the left side, there is a vertical menu with the following items: 'CNGE2+2SMS', 'System', 'Port Config', 'Port Stats', 'RSTP Config', 'LLDP Config' (which is highlighted), and 'Active Ping Check'. The main content area is titled 'LLDP Configuration'. It contains a checkbox labeled 'Enable LLDP' which is checked. Below this is a text input field for 'LLDP Interval (seconds):' with the value '10' entered. At the bottom of the configuration area are two buttons: 'Apply' and 'Help'.

*LLDP configuration interface*

## Active Ping Check Configuration

### Non PoE Model CNGE4+2SMS

The active ping check function allows the switch to check that a configured IP address is alive on each of the RJ45 ports. If the specified IP address becomes unreachable then the switch will perform the action selected in the Failure Action menu.

**comnet**

CNGE4+2SMSPoE Managed Switch

**Active Ping Check Configuration**

☐ Enable Active Ping Check    10    Interval(10~240)Sec

Port	RemoteIP	Failure Action	Retries 1~5	PoE Action
1	192.168.10.3	No Action ▾	1	Reset Once ▾
2	192.168.10.4	No Action ▾	1	Reset Once ▾
3	192.168.10.5	No Action ▾	1	Reset Once ▾
4	192.168.10.6	No Action ▾	1	Reset Once ▾

Apply Help

Active Ping Check configuration interface

Label	Description
Enable	Select to enable the active ping check function
Interval	Active ping check interval in seconds
Remote IP	Configure IP addresses of remote device to ping
Failure action	Configure action to take upon failure No Action - No action taken SNMP Trap - Issue an SNMP trap Power Down - Turn off the RJ45 port PwrDwn & Trap - Issue an SNMP trap and then turn off the RJ45 port
Retries	Number of times to retry the ping check on failure before proceeding with the selected failure action.

## PoE Model CNGE4+2SMSPOE and CNGE4+2SMSPOEHO



CNGE4+2SMSPoE Managed Switch

CNGE4+2SMSPoE

System

Port Config

Port Stats

RSTP Config

LLDP Config

Active Ping Check

Authentication

Firmware Upgrade

Factory Defaults

### Active Ping Check Configuration

☐ Enable Active Ping Check    10    Interval(10~240)Sec

Port	RemoteIP	Failure Action	Retries 1~5	PoE Action
1	192.168.10.3	No Action ▾	1	Reset Once ▾
2	192.168.10.4	No Action ▾	1	Reset Once ▾
3	192.168.10.5	No Action ▾	1	Reset Once ▾
4	192.168.10.6	No Action ▾	1	Reset Once ▾

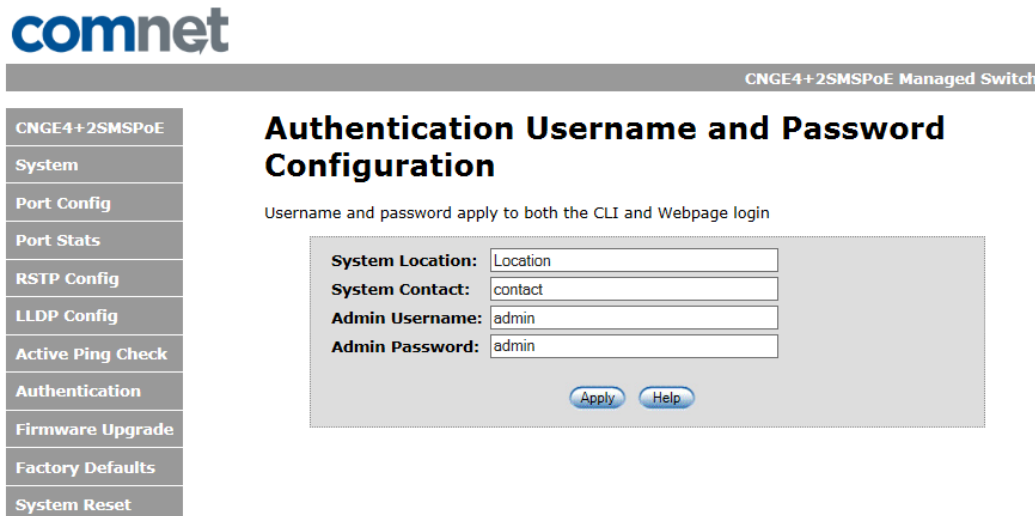
Label	Description
Enable	Select to enable the active ping check function
Interval	Active ping check interval in seconds
Remote IP	Configure IP addresses of remote device to ping
Failure action	Configure action to take upon failure No Action - No action taken SNMP Trap - Issue an SNMP trap POE Reset - Reboot the PoE device Trap & Reset - Issue an SNMP trap and then reboot the PoE device Power Down - Turn off the RJ45 port PwrDwn & Trap - Issue an SNMP trap and then turn off the RJ45 port
Retries	Number of times to retry the ping check on failure before proceeding with the selected failure action.
PoE Action	PoE action to take Reset Once - Reboot the PoE device once Reset Forever - Reboot the PoE device forever until it comes back online Power Down - Turn off the RJ45 port

If power down is selected for PoE action, the PoE power may be turned on remotely using the port power up feature on the PoE-PSE status page.



## Authentication Username and Password Configuration

The username and password entered here are also used in the CLI.

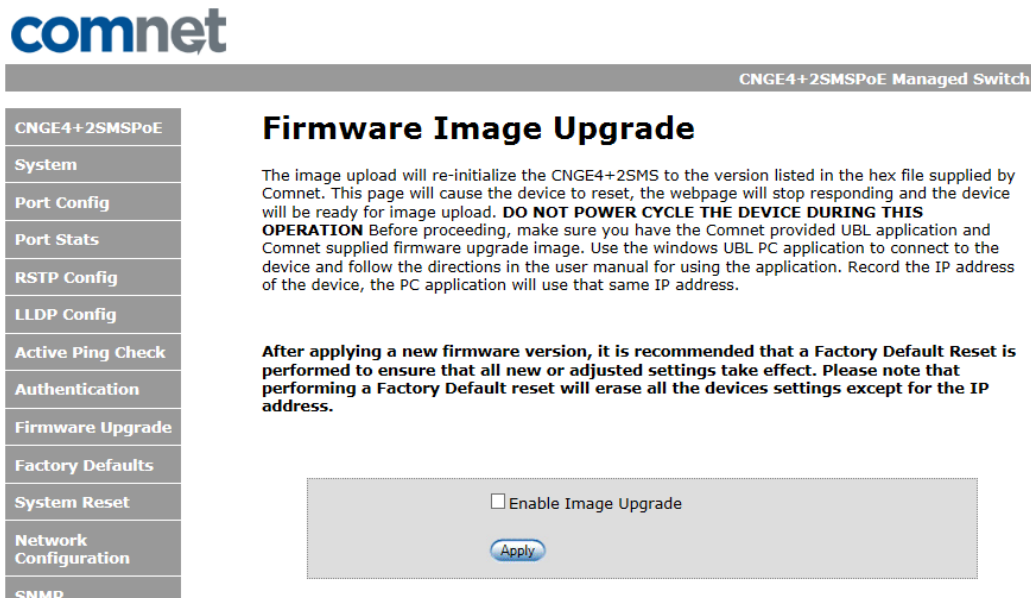


The screenshot displays the comnet web interface for a CNGE4+2SMSPoE Managed Switch. On the left is a navigation menu with the following items: CNGE4+2SMSPoE, System, Port Config, Port Stats, RSTP Config, LLDP Config, Active Ping Check, Authentication, Firmware Upgrade, Factory Defaults, and System Reset. The main content area is titled "Authentication Username and Password Configuration". Below the title, a note states: "Username and password apply to both the CLI and Webpage login". The configuration form contains four fields: "System Location" with the value "Location", "System Contact" with the value "contact", "Admin Username" with the value "admin", and "Admin Password" with the value "admin". At the bottom of the form are two buttons: "Apply" and "Help".

*Authentication Username and Password configuration interface*

## Upgrade Firmware

Upgrade Firmware allows you to update the firmware of the switch. Before updating, have your Windows firmware update application ready and the firmware image is available. RSTP is not available during the firmware update process so please, observe the network topology before upgrading.



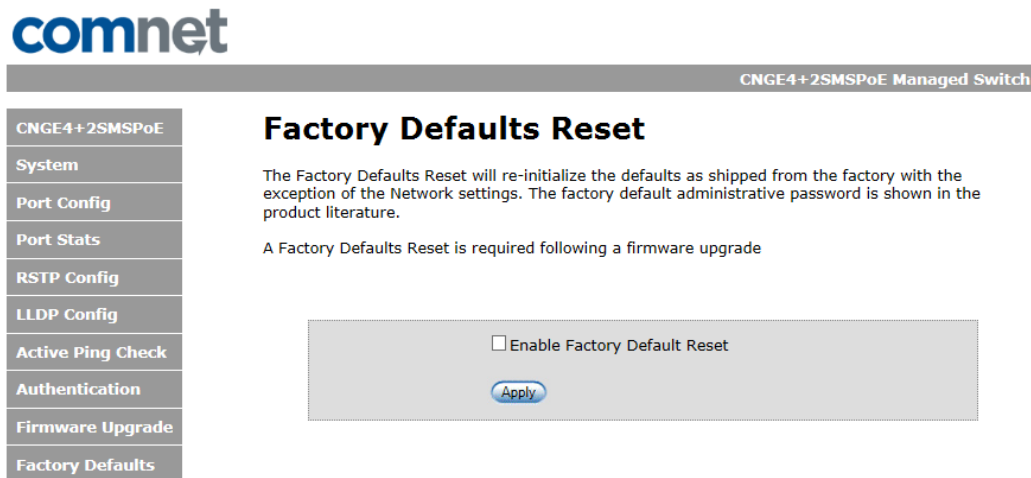
Update Firmware interface

Details on how to upload the new image is located in Firmware Upgrade section on Page 51.

After applying a new firmware version, it is recommended that a Factory Default Reset is performed to ensure that all new or adjusted settings take effect. Please note that performing a Factory Default reset will erase all the devices settings except for the IP address.

**Warning** Do not enable the firmware update process unless you have a firmware file available and are ready to upgrade the unit. Once this process is started it cannot be cancelled and if a new firmware is not uploaded to the unit it will be necessary to return the unit to the factory for re-programming.

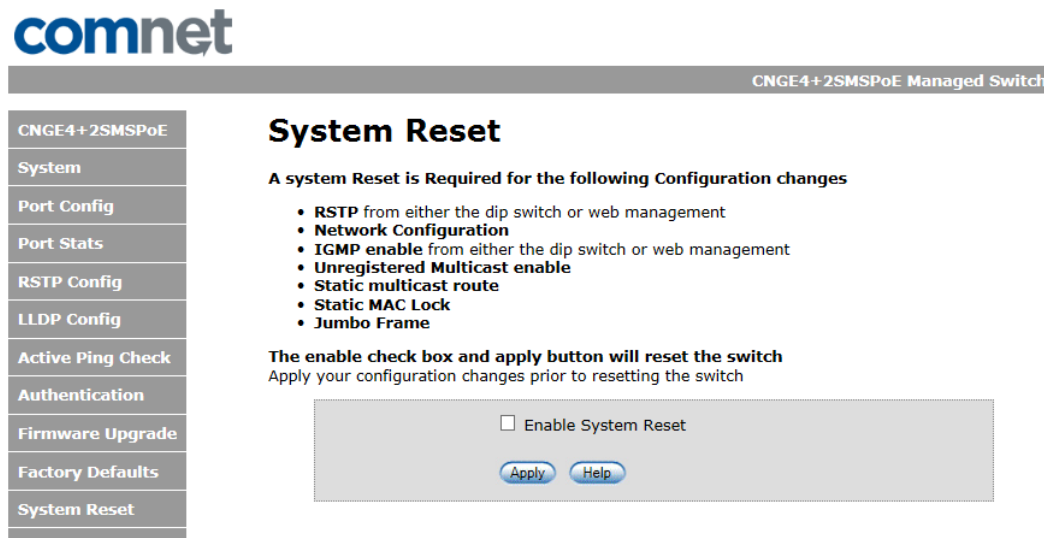
## Factory Defaults



*Factory Defaults Reset interface*

This function restores the system configuration back to the factory default values. All parameters will revert back to the original factory default values except the network configuration settings.

## System Reset



*System Reset interface*

**This feature will perform a system reset.**

Some system configuration changes require a system reset to take effect:

- RSTP changes
- File System updates
- Network configuration changes
- IGMP changes
- Static Mack Lock changes
- Static Mcast routing

After a system reset there may be a delay of up to 15 seconds before the device becomes responsive again.

## Network Interface Configuration



CNGE4+2SMSPoE Managed Switch

CNGE4+2SMSPoE

System

Port Config

Port Stats

RSTP Config

LLDP Config

Active Ping Check

Authentication

Firmware Upgrade

Factory Defaults

System Reset

Network Configuration

SNMP Configuration

POE-PSE Status

### Interface Configuration

This page allows for changing the network configuration settings.

**CAUTION:** Incorrect settings may cause the board to lose network connectivity. Recovery options will be provided on the next page.

Enter the new settings for the network interface below:

Please perform a System Reset after applying any Network Interface changes.

**MAC Address:** 00:22:3b:08:00:06

**Host Name:**

☐ Enable DHCP

**IP Address:**

**Gateway:**

**Subnet Mask:**

**Primary DNS:**

**Secondary DNS:**

*Interface Configuration interface*

Label	Description
Host Name	Assign a name to the device (this is used for CLI and SNMP functions)
Enable DHCP	To enable or disable the DHCP client function. When DHCP client function is enabled, the switch will be assigned the IP address from the network DHCP server. The default IP address will be replaced by the IP address which the DHCP server has assigned.
IP Address	Assign the IP address that the switch will use. If DHCP client Function is enabled, you do not need to assign the IP address.
Gateway	Assign the network gateway for the switch.
Subnet Mask	Assign the subnet mask for the switch.
Primary DNS	Assign the primary DNS IP address
Secondary DNS	Assign the secondary DNS IP address
Apply	Select Apply to set the configurations.

**Important Note:** A system reset must be performed after making changes to the network settings.

## SNMP

Simple Network Management Protocol (SNMP) is the protocol developed to manage nodes (servers, workstations, routers, switches and hubs etc.) on an IP network. SNMP enables network administrators to manage network performance, find and solve network problems, and plan for network growth. Network management systems learn of problems by receiving traps or change notices from network devices implementing SNMP.

### SNMP - Config

*SNMP Community Configuration interface*

The following table describes the labels in this screen.

Label	Description
SNMP V1/V2c Community	The switch supports one Read and one Write SNMP community string. Community string names are limited to 8 characters. To disable a community string leave its entry blank.
SNMP trap enable	Enable SNMP traps to be sent to the manager
Manager IP address	IP address of the management software
Apply	Select Apply to activate the configurations.
Help	Show help file.

## CNGE4+2SMSPOE[HO] PoE-PSE-Status Information

The screenshot shows the web interface of a comnet switch. On the left is a navigation menu with options: CNGE4+2SMSPoE, System, Port Config, Port Stats, RSTP Config, LLDP Config, Active Ping Check, Authentication, Firmware Upgrade, Factory Defaults, System Reset, Network Configuration, and SNMP Configuration. The main content area is titled 'POE-PSE System Information'. Inside this area is a sub-section titled 'CNGE4+2SMSPOE PSE Status' which contains a table with power and PD class information for ports 1 through 4, and checkboxes for power cycling each port. At the bottom of this section are 'Apply' and 'Help' buttons.

CNGE4+2SMSPOE PSE Status			
Port 1 power : 0.00 Watts	<input type="checkbox"/>	Port 1 Power Cycle	
Port 2 power : 0.00 Watts	<input type="checkbox"/>	Port 2 Power Cycle	
Port 3 power : 0.00 Watts	<input type="checkbox"/>	Port 3 Power Cycle	
Port 4 power : 0.00 Watts	<input type="checkbox"/>	Port 4 Power Cycle	
Port 1 PD class: None			
Port 2 PD class: None			
Port 3 PD class: None			
Port 4 PD class: None			

Apply Help

Label	Description
Port Power	Displays the amount of power being used on the port in watts
Port Power DN	Turns off PoE power to the associated port
Port Power UP	Turns on PoE power to the associated port
Port PD Class	Displays the PoE class being used by the PoE device
Force PoE Mode	Enables 60 W of PoE in manual forced mode (HO models only).

**Warning - please use this feature with caution and ensure it's only enabled when a 60 W PoE device is attached. It should only be enabled if the 60 W devices fail to power up without this option enabled.**

Apply	Select Apply to activate the selected configurations
Help	Show help file

CNGE4+2SMSPOE[HO] PoE Contact Information

comnet

CNGE2+2SMSPOEHO Managed Switch

CNGE2+2SMSPOE

System

Port Config

Port Stats

RSTP Config

LLDP Config

Active Ping Check

Authentication

Firmware Upgrade

Factory Defaults

System Reset

Network Configuration

SNMP Configuration

POE-PSE Status

Contact Config

Static Mcast Route

Static MAC Lock

Port Guardian

IGMP Snooping

POE Contact Configuration

CNGE2+2SMSPOEHO Contact Configuration

Output 1 Contact

☐ PS1 Fault

☐ PS2 Fault

☐ ActPing 1 loss

☐ ActPing 2 loss

☐ Port 1 loss

☐ Port 2 loss

☐ Port 3 loss

☐ Port 4 loss

Output 2 Contact

☐ PS1 Fault

☐ PS2 Fault

☐ ActPing 1 loss

☐ ActPing 2 loss

☐ Port 1 loss

☐ Port 2 loss

☐ Port 3 loss

☐ Port 4 loss

CNGE2+2SMSPOEHO Contact Override

Contact 1 Manual Override

☐ Con 1 ovrd

☒ Con 1 closed

Contact 2 Manual Override

☐ Con 2 ovrd

☒ Con 2 closed

CNGE2+2SMSPOEHO Contact Status

Input Contact 1: Contact not Active

Input Contact 2: Contact not Active

Output Contact 1: Contact Closed

Output Contact 2: Contact Closed

Apply

Help

Click to refresh the page

Label	Description
Output Contact	The faults that trigger the output contacts are fully configurable by selecting the source(s) to monitor
Contact Override	The contacts may also be forced to an opened or closed state, the state box checked will close the contact when override is selected
Contact status	The input and output contact states are displayed

TECH SUPPORT: 1.888.678.9427

INS\_CNGE4+2SMS\_REV- 02/19/13 PAGE 40



## Port Guardian

The Port Guardian feature provides a high security managed port lock out mode and when enabled will power down the port as soon as a link loss status is detected when a cable is disconnected. This provides high security against network attack by an intruder who accesses the edge device and disconnects it to then try and connect their own intrusion device (laptop, network sniffer etc.).

To reset a port from a lock out state the network administrator can issue an SNMP reset or can reset a port by using the CLI via the USB serial port. In PoE models a reset can also be initiated by using one of the contact inputs.



CNGE2+2SMSPOEHO Managed Switch

CNGE2+2SMSPOE

[System](#)  
[Port Config](#)  
[Port Stats](#)  
[RSTP Config](#)  
[LLDP Config](#)  
[Active Ping Check](#)  
[Authentication](#)  
[Firmware Upgrade](#)  
[Factory Defaults](#)  
[System Reset](#)  
[Network Configuration](#)  
[SNMP Configuration](#)  
[POE-PSE Status](#)  
[Contact Config](#)

### Port Guardian

This page allows for enabling a Port lock feature on any ports

☒ Enable Port Guardian

**Port Enable**

Port 1	Port 2	Port 3	Port 4
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

☐ Initial Port Power Down Enable

☐ Power Cycle Reset

☐ Contact Input 1 Reset
 ☐ Contact Input 2 Reset

**Port Fault Status**

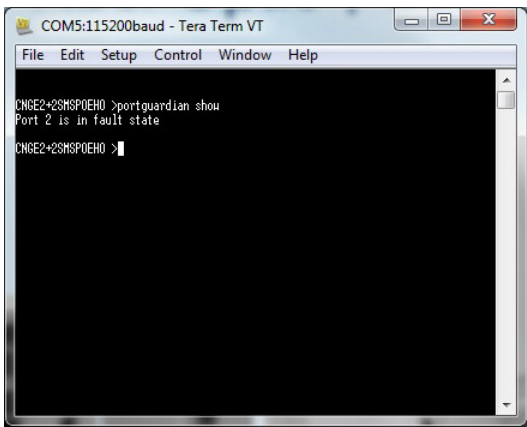
Port 1	Port 2	Port 3	Port 4
-	-	-	-

Label	Description
Enable	Enable the Port Guardian feature
Port Enable	Enable the Port Guardian feature on each port
Initial Port Power Down	If enabled, then any ports which are enabled for Port Guardian will be put into lock out state in the event of a power cycle. These ports would then need to be re-enabled by the administrator after a power cycle event.
Power Cycle Reset	If enabled, any ports which were in lock out state will be re-enabled after a power cycle
Contact Input Reset	If enabled, closing the relevant contact input will reset any ports that were previously in lock out state (PoE Models Only)
Port Fault Status	Shows the state of each port
Apply	Select <b>Apply</b> to activate the selected configurations
Help	Show Help file

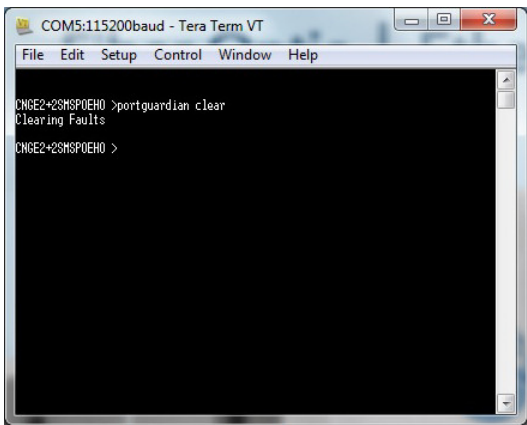
# Port Guardian - CLI Reset

The Port Guardian feature can be cleared from the USB serial port connection on the unit through the CLI and also the port status can be displayed to show any ports that are in lock out state.

To access the Port Guardian CLI commands connect to the CLI using the procedure described in the Command Line Interface Management section on page 48 and then use the commands described below.

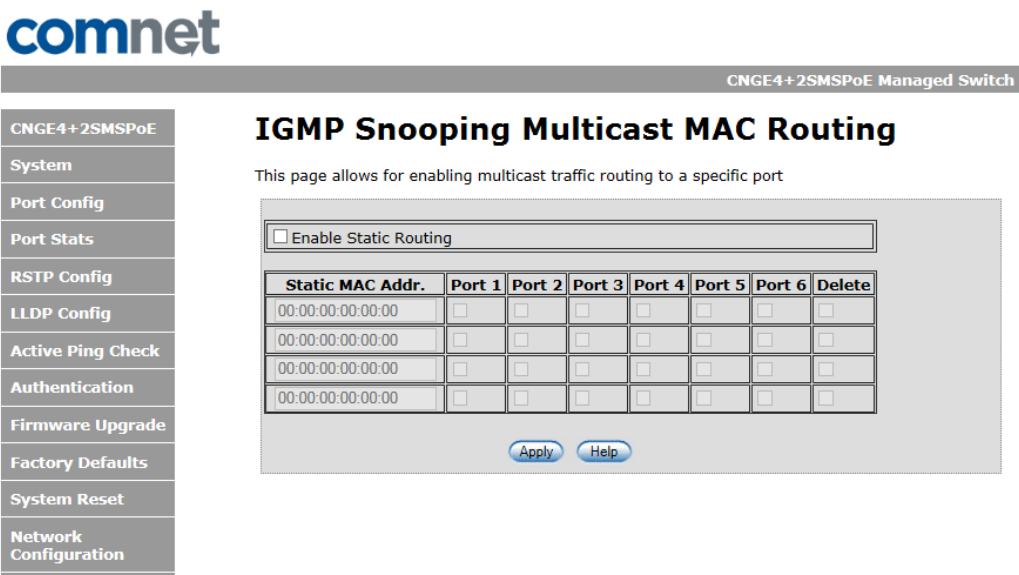


Command	Description
<i>portguardian show</i>	Will display any ports that are currently in port lockout fault state.



Command	Description
<i>portguardian clear</i>	Will clear any ports that were previously in port lockout fault state.

# Static Multicast MAC Routing Per Port

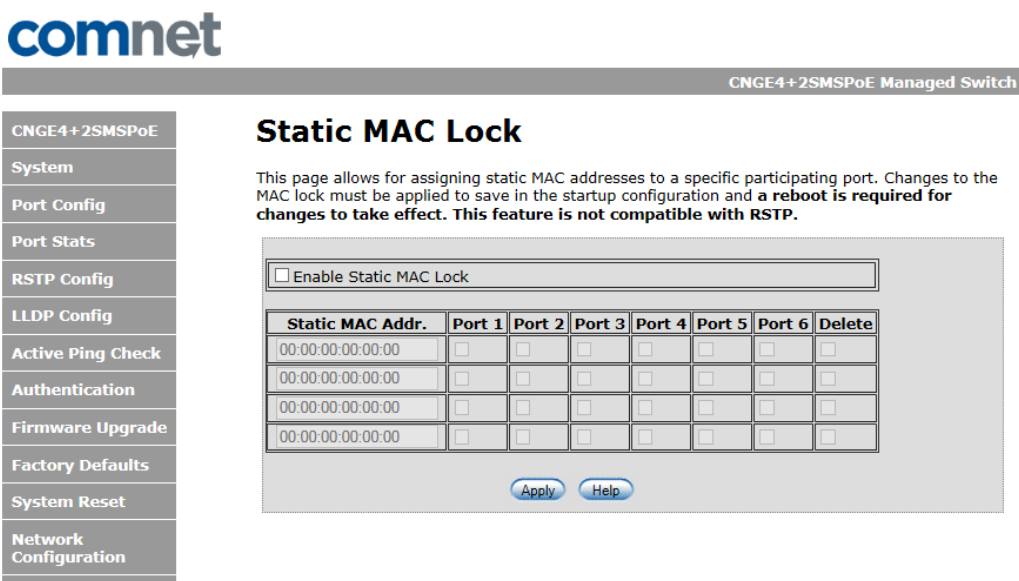


Static Multicast MAC Routing interface

Label	Description
Enable	Enable static multicast MAC routing
MAC Addr.	Destination Multicast MAC address of the stream
Port Number	Ports to be included in the multicast route
Apply	Select Apply to activate the configurations.
Help	Show help file.

**Important Note:** A system reset must be performed after making changes to the MAC routing settings.

# Static MAC Lock Configuration



Static MAC Lock Configuration interface

Label	Description
Enable	Enable static MAC locking
MAC Addr.	MAC address of the device that is allowed to forward and receive traffic. Packets will be dropped for MAC addresses not listed in the table
Port Number	Ports to be included in the locked list
Apply	Select Apply to activate the configurations.
Help	Show help file.

**Important Note:** RSTP cannot be used in conjunction with the Static MAC Lock feature. A system reset must be performed after making changes to the static MAC lock settings.

IGMPv2 Snooping



CNGE4+2SMSPoE Managed Switch

CNGE4+2SMSPoE
System
Port Config
Port Stats
RSTP Config
LLDP Config
Active Ping Check
Authentication
Firmware Upgrade
Factory Defaults
System Reset
Network Configuration
SNMP Configuration
POE-PSE Status
Contact Config
Static Mcast Route
Static MAC Lock
Port Guardian
IGMP Snooping
Jumbo Frame

IGMPv2 Multicast Routing

This page allows for enabling routing of mulitcast traffic to specific ports

IGMP Snooping Enable

☒ Enable IGMP Snooping

Interval Time outs

3

Group Time out(minutes)

5

Port Time out(minutes)

Unregistered Multicast Flooding

☒ Enable Unregistered Multicast Flooding

Assigned Router Ports

Port1	Port2	Port3	Port4	Port5	Port6
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

Multicast Groups

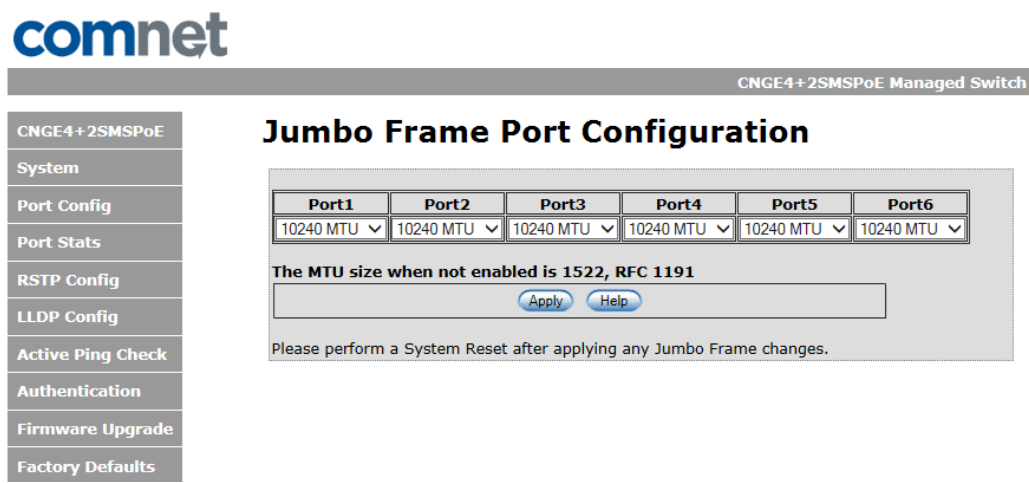
Multicast Group Addr.	Port 1	Port 2	Port 3	Port 4	Port 5	Port 6
0.0.0.0						
0.0.0.0						
0.0.0.0						
0.0.0.0						
0.0.0.0						
0.0.0.0						
0.0.0.0						
0.0.0.0						
0.0.0.0						
0.0.0.0						
0.0.0.0						
0.0.0.0						
0.0.0.0						
0.0.0.0						
0.0.0.0						
0.0.0.0						
0.0.0.0						
0.0.0.0						

IGMPv2 Multicast Routing interface

Label	Description
Enable	Enable IGMP Snooping
Group timer	Must be set above the general query interval
Port Timer	Expected wait interval of membership reports for a specific group
Unregistered Flooding	Allow unregistered multicast traffic to propagate across ports
Assigned router port	Router ports forward membership reports
Multicast Groups	The IP address of the groups are displayed along with the port assignment, 64 multicast groups are supported and the table spans across 3 pages.
Apply	Select <b>Apply</b> to activate the configurations.
Help	Show help file.

***Important Note:** A system reset must be performed after making changes to the IGMP settings.*

# Jumbo Frame support



Jumbo Frame Port Configuration interface

Label	Description
MTU size	the drop down box allows for maximum frame size, the default is the maximum frame size 10,240. Not enabled defaults the maximum frame size to 1522 MTU.
Apply	Select <b>Apply</b> to activate the configurations.
Help	Show help file.

**Important Note** A system reset must be performed after making changes to the Jumbo Frame settings.

# Command Line Interface Management

## Configuration by Command Line Interface (CLI).

### About CLI Management

Besides WEB-base management, the CNGE4+2SMS also supports CLI management for network configuration. You can use USB console to manage the switch by CLI.

CLI Management by USB Console (115200, 8, none, 1, none)

Before configuring by USB console, use a USB mini B cable to connect the switch's Console port to your PC's USB port.

Follow the steps below to access the console via USB mini B cable.

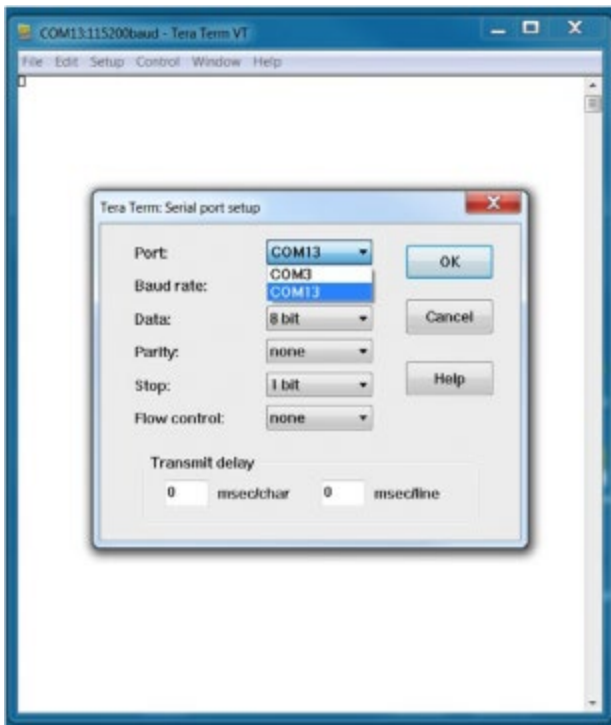
Step 1. Connect the USB cable between the PC and the CNGE4+2SMS. If the device driver is not found, the product CD includes the windows .inf driver.

Step 2. From the Windows desktop, select on Start -> Tera Term

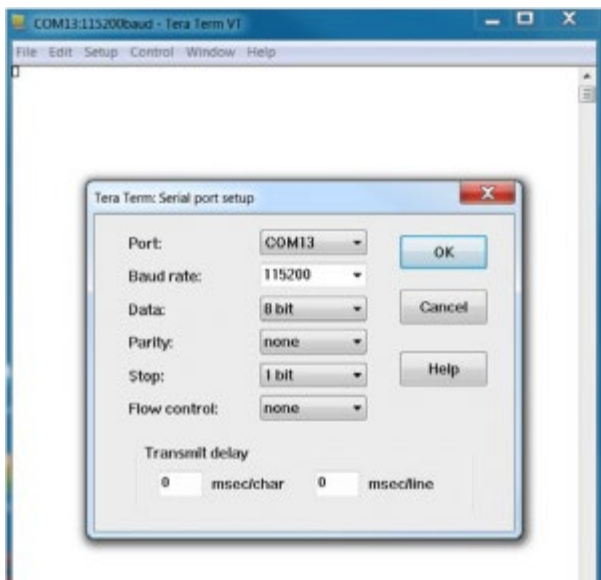




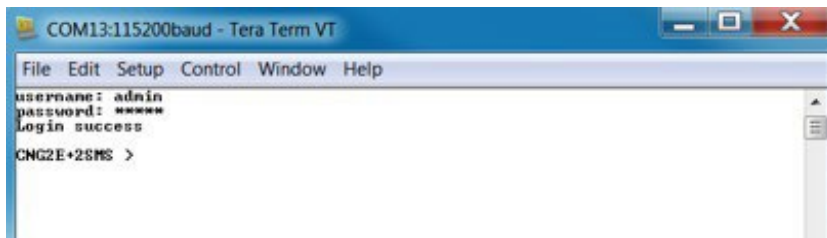
Step 3. Select the COM port number



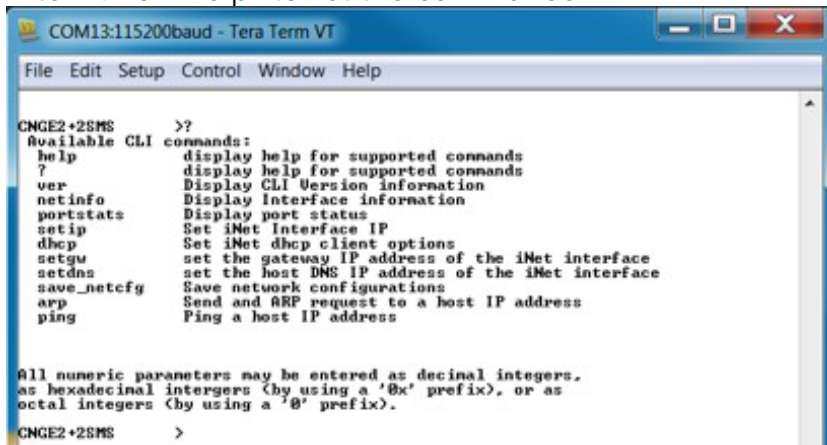
Step 4. The COM port properties setting, 115200 for Bits per second, 8 for Data bits, None for Parity, 1 for Stop bits and none for Flow control.



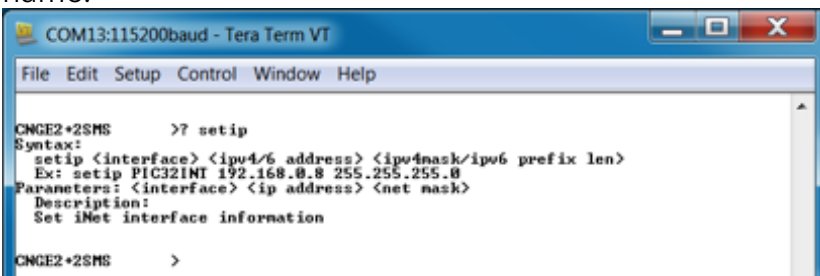
Step 5. Hit enter to initiate the connection and receive the username prompt. After entering the username and password the console will be presented with a CLI prompt.



Enter "?" or "help" to list the commands



More detailed help for each command is available using help in front of the command name.



Issuing a "netinfo" command will display the ip address of the switch

To change the network configuration using the CLI, the following commands must be used:

- setip
- setgw
- setdns

Save\_netcfg if you want to save these changes in the startup configuration. Not using this command will not save the changes persistently.

# Firmware Upgrade Procedure



CNGE2+2SMS Managed Switch

CNGE2+2SMS
System
Port Config
Port Stats
RSTP Config
LLDP Config
Active Ping Check
Authentication
Firmware Upgrade
Factory Defaults
System Reset
Network Configuration

## Firmware Image Upgrade

The image upload will re-initialize the CNGE2+2SMS to the version listed in the hex file supplied by Comnet. This page will cause the device to reset, the webpage will stop responding and the device will be ready for image upload. Use the windows PC application to connect to the device and follow the directions in the user manual for using the application. Record the IP address of the device, the PC application will use that same IP address.

**After applying a new firmware version, it is recommended that a Factory Default Reset is performed to ensure that all new or adjusted settings take effect. Please note that performing a Factory Default reset will erase all the devices settings except for the IP address.**

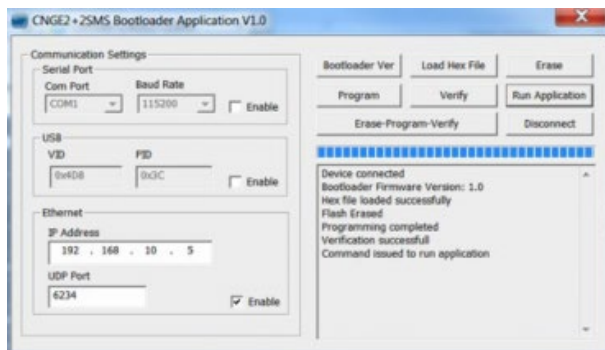
☐ Enable Image Upgrade  

Apply

*Push Bootloader Image Uploader interface*

The steps for upgrading the unit with the push boot loader are as follows;

1. Bring up the web server and open the FileSystem Upload page click the Enable Image upload check box and hit apply.
2. Open the Windows bootloader application, click the enable Ethernet check box and adjust the IP address to the target IP



3. Click the "Load Hex File" and select the new firmware file.
  - Click Erase
  - Click Program
  - Click Verify
  - Click run application

Note: The "Erase-Program-Verify" button is not supported at this time. Please use the individual buttons.

**Warning: Do not enable the firmware update process unless you have a firmware file available and are ready to upgrade the unit. Once this processed is started it cannot be cancelled and if a new firmware is not uploaded to the unit it will be necessary to return the unit to the factory for re-programming.**

## Technical Specifications

### Technology

Ethernet Standards	IEEE 802.3 for 10BASE-T IEEE 802.3u for 100BASE-TX and 100BASE-FX IEEE 802.3z for 1000BASE-X IEEE 802.3ab for 1000BASE-T IEEE 802.1w for RSTP (Rapid Spanning Tree Protocol) IEEE 802.1AB for LLDP (Link Layer Discovery Protocol) IEEE 802.3at for Power Sourcing Equipment (PSE) and PoE ( $\leq 30$ W per port) IEEE 802.3x Flow Control and Back Pressure
--------------------	--

Software Features	RSTP (IEEE 802.1D/w) Port Configuration, Status, Statistics, Security PoE Configuration, Status, Health Check SNMP Enable/Disable Ports Port Guardian Physical Port Lockout IGMP Snooping v2 SNMP Trap LLDP Static Multicast MAC Routing Static MAC Lock Security Active Ping Check with SNMP Trap, Port Reset & Port Shutdown capability
-------------------	--

### Interface

SFP	2 × 100/1000Base-X SFP
RJ45 Ports	2 × 10/100/1000Base-T(X), Auto MDI/MDIX
LED Indicators	Per Unit : Power × 2 (Green)  RJ45 Ports: Per Port : Link/Activity(Green/Blinking Green), 1000 Mbps indicator (Amber)  SFP Ports: Per Port : Link/Activity(Green/Blinking Green)

### Power Requirements

Power Input Voltage	Dual 48 to 57 VDC PoE, 9 to 36 VDC or 24 VAC non PoE
Current Draw	3.5A max, with PoE, 1A w/out PoE
Reverse Polarity Protection	Present (On Terminal Block of Non-PoE Models Only)

### Environmental

Operating Temperature	-40 to +75 °C
Storage Temperature	-40 to +85 °C
Operating Humidity	5% to 95%, non-condensing

## Mechanical

Dimension 4.1 × 3.7 × 1.46 in (10.4 × 9.4 × 3.7 cm)

Casing Aluminum

## Regulatory Approvals

EMC EN50130-4:2011  
EN55024:2010  
EN55022:2010

EMS EN 55022:2010 Radiated Emissions  
EN 55022:2010 Conducted Emissions  
EN 61000-3-2:2006+A2:2009 Harmonic Current Emissions  
EN 61000-3-3:2013 Voltage Fluctuations  
EN 61000-4-2:2009 ESD  
EN 61000-4-3:2006 + A2:2010 Radiated Electromagnetic Field Immunity  
EN 61000-4-4:2012 EFT  
EN 61000-4-5:2006 Surge Immunity  
EN 61000-4-8:2010 Magnetic Field Immunity  
EN 61000-4-11:2004 Voltage Dips and Fluctuations  
EN 50130-4:2011 Mains Supply Variations

Safety EN 60950-1 SELV

Warranty Lifetime



## MECHANICAL INSTALLATION INSTRUCTIONS

### ComNet Customer Service

Customer Care is ComNet Technology's global service center, where our professional staff is ready to answer your questions at any time.

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