

GS Series 1U Switches –
GS7200, GS4008, GS0018

Installation Guide



gnodal
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About This Guide

Conventions

This guide uses the following conventions:



Warning

IMPORTANT SAFETY INSTRUCTIONS

This warning symbol means danger. Before you work on any equipment, be aware of the hazards involved and be familiar with standard practices for preventing accidents.



Caution

This Caution means be careful. Your actions could result in equipment damage or interrupted service.



Note

A note may contain a reference to useful information or related documentation.

Related Documents

Gnodal documentation can be found on the Gnodal web site.

www.gnodal.com/support/

Product Overview

Overview

The family of Gnodal 1U switches offer a range of 10 Gigabit and 40 Gigabit Ethernet Top-Of-Rack solutions.

The Gnodal GS-Series includes the GS7200 with 72 SFP+ 10 GE ports in 1U, the GS4008 with 40 SFP+ 10 GE and 8 QSFP 40 GE ports and the GS0018 with 18 QSFP 40 GE ports. These switches provide a revolutionary Ethernet and network fabric, free from congestion limitations and offering substantial improvement over existing infrastructures in terms of latency and effective bandwidth.

Physical Features

All of the GS-Series 1U switches have redundant cooling provided by three hot swap fan modules and hot swap power supplies provide power redundancy as standard.

Mains power is applied to each power supply via the IEC320 mains inlets on the front of the switch.

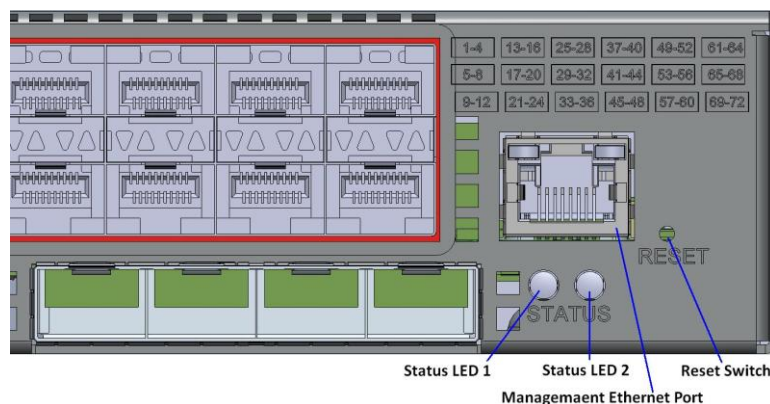
The fan modules are accessible behind the fan door and provide front to back air flow.

Figure 1 - Switch Front View



The 10 GE and 40 GE ports are accessible at the rear of the switch. Port and status LEDs indicate the status of the system and the RJ45 connector provides 10/100/1000 BaseT connectivity for the switch management. The Reset switch is recessed behind a hole in the rear faceplate.

Figure 2 - GS7200 Rear View



Rear Ports

The SFP+ and QSFP ports are located on the rear panel of the various Gnodal switches. Each SFP+ and QSFP port accepts direct attach passive and active copper cables. The SFP+ ports accept class I 10GBASE-SR and 10GBASE-LR optical transceivers up to 1W per port and the QSFP ports accept Class 1, 2 and 3 modules up to 2.5W per port.

Figure 3 – GS7200 Rear Panel - SFP+ port numbering

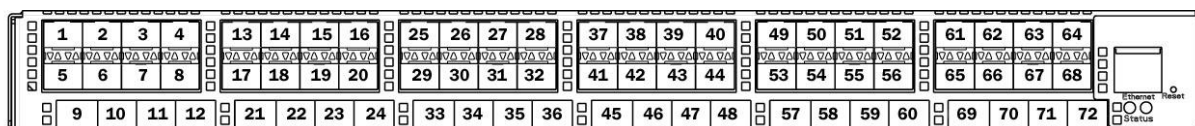
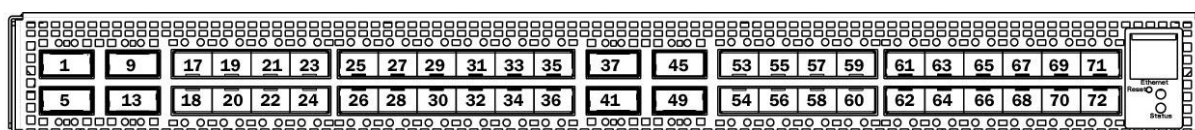
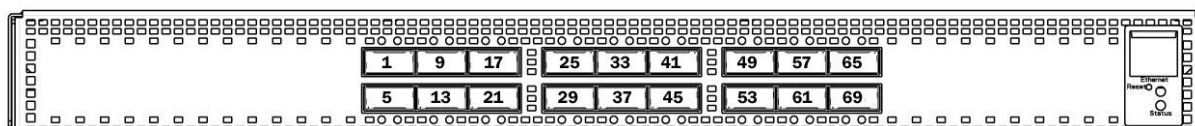


Figure 4 – GS4008 Rear Panel – QSFP and SFP+ port numbering



GS4008 ports 1, 5, 9, 13, 37, 41, 45 and 49 are 40 G QSFP ports. Ports 17 to 36 and 53 to 72 are SFP+ ports.

Figure 5 – GS0018 Rear Panel - QSFP port numbering



Default Login, Password and IP Settings

The Management Interface Ethernet port is setup with a static IP address.

IP address	192.168.1.1
User name	root
Password	admin123

LED Functional Description

Management Interface Port LEDs

LED	Status	Description
Physical Link - Green	Off	No physical link
	On	Physical link connected
Activity - Amber	Off	No traffic
	On and Blinking	Traffic

Status LEDs

The status LEDs indicate the current functional status of the switch during the boot process and once the switch has successfully booted.

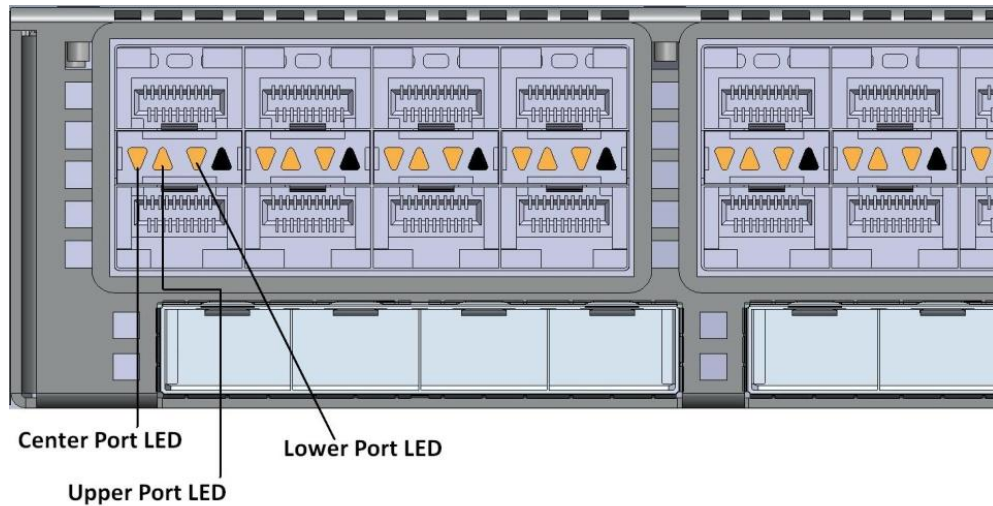
When Status LED 2 is permanently green the switch is operational. LED 2 will go out to indicate when the reset switch is initially pressed and if held for more than 6 seconds the reset to factory default settings will be indicated by BLUE / RED status LED's.

The table below provides an explanation of the status LED indications: -

Status LED's		Description
1 (Blue)	2 (Red/Amber/Green)	
BLUE	GREEN	System operational - Master Controller
OFF	GREEN	System operational - Slave Controller
OFF	FLASHING GREEN	Booting
FLASHING BLUE	FLASHING GREEN	Booting and Restoring Factory Default Settings
OFF	FLASHING AMBER	Booting via TFTP during firmware recovery.
-	AMBER	System alert - Indicates non critical alerts such as temperature warning, single fan failure, single power supply failure. Refer to the Troubleshooting section within this guide
-	SOLID or FLASHING RED	System Fault - system is in a non-functional state. Refer to the Troubleshooting section within this guide
BLUE	OFF	Reset switch pressed, release before 6 seconds to ensure switch is not Reset to Factory Default Settings.
BLUE	RED	System reset pressed for more than 6 sec – Reset to Factory Default Settings
OFF	OFF	No power

Port LEDs

Figure 6 – GS7200 Port LEDs



Once the boot sequence has successfully completed the port LED's indicate the status of the link as shown in the table below.

LED	Status	Description
Physical Link Port LEDs	Off	No physical link or port disabled.
	Green - On	Ethernet physical link connected.
	Green - Flashing	Ethernet physical link connected with active traffic.
	Amber - On	Fabric Physical link connected between Gnodal switch ports.
	Amber - Flashing	Fabric Physical link connected with active traffic between Gnodal switch ports.
	Alternating Flashing Amber and Green	Port negotiating transition to a Fabric link.
	Red	Incompatible cable/module installed.
	Red - Flashing	Module over temperature - powered off.
	Blip Red	Link has gone down

Reset Switch

The Reset switch is recessed within a hole on the rear panel and can be used to perform a system soft reset or to reset the unit to its factory default settings or to initiate a firmware recovery process.

Soft Reset

To perform a soft reset, press and release the Reset switch. When the Reset switch is pressed Status LED 2 will switch off and Status LED 1 will light BLUE. Do not hold in the Reset switch as this will force a reset to the factory default settings.

Allow the switch to complete its boot cycle. Once Status LED 2 is GREEN the switch is ready for use.

Reset to Factory Default Settings

Resetting the unit to its factory default settings will remove switch configurations, SSH keys and reset the Management Interface port IP address to default.

To reset the switch to factory default settings, press and hold the Reset switch for 6 seconds until the status LEDs change from BLUE / OFF to BLUE / RED then release.

The Blue Status LED will flash for the duration of the switch boot cycle to indicate the reset to default settings is in progress.

Firmware Recovery

To perform a firmware recovery, please refer to the Firmware Upgrade User Manual.

Site Preparation

Installation Options

The switch can be installed in the front or rear of a standard 19 inch rack. Rack fixings are not supplied with the rack mount kit as they vary between rack types. You will require four rack fasteners suitable for your chosen rack.

Tools

You will need a #2 Philips screwdriver to install the switch.

Rack Requirements

Ensure your equipment rack is a standard 19-in. (48.3 cm) EIA cabinet or rack.



Note

Mounting rails must conform to the English universal hole spacing per ANSI/EIA-310-D.

Airflow



Caution

The equipment relies upon forced air cooling with airflow through the unit from the front to the rear. Air intake at the front and air outlet vents at the rear and sides of the switch must have adequate clearance to ensure airflow is not restricted once the switch is installed.



Caution

If the unit is installed within a closed rack assembly, the ambient operating temperature of the rack environment may be greater than the ambient temperature of the room. Consideration should be given to ensuring that the equipment is installed in an environment compatible with the maximum ambient temperature of 40°Celsius (104°Fahrenheit).

Power Requirements

Power is supplied through a standard IEC320 sockets on the front of the switch.



Warning

Ensure that the overall loading of the branch circuit is not exceeded by the addition of the switch.

Ensure that the power cable is adequate for the marked power rating of the switch unit.

Connect the power cable to a grounded AC power outlet and to the IEC320 socket on the front panel of the power supply installed in the switch, ensuring that a reliable earth connection is provided.

In USA this equipment must be connected to the supply in accordance with the National Electrical Code; elsewhere the supply connection must be made in accordance with local wiring regulations.



Warning

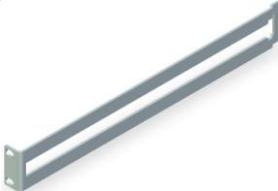
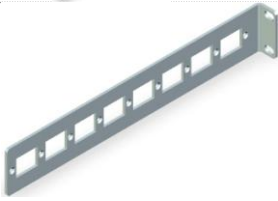
This equipment is provided with power cords with domestic style plugs and intended to be plugged into a standard socket outlet. If alternative power cords suitable for industrial sockets or permanent connection are used, the installation must provide over current protection at a maximum of 16A.

Installing the Switch in a Rack

Package Contents

Included in the standard carton are the following items:

- Gnodal Switch
- Mains Power Cord(s)
- Standard rack mount kit containing: -

2x Front Slide Bracket	
2x Chassis Front Side Brackets	
2x Rear Mounting Bracket	
10x M3x8mm Countersunk Screws	

Switch Rack Installation



Warning

Mounting of the equipment in the rack should be such that a hazardous condition is not achieved due to uneven mechanical loading

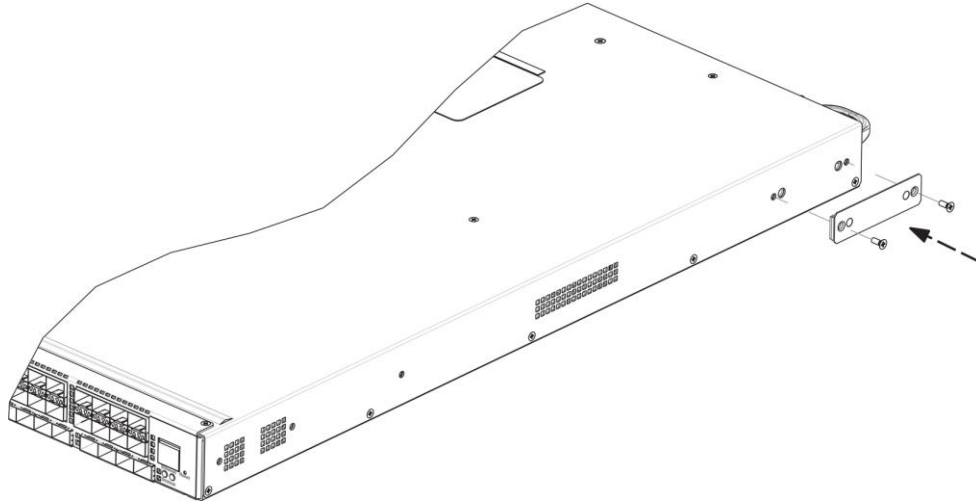
The 1U switches can be installed in the front or rear of a 19 inch rack.

The depth of the Gnodal 1U switch is set by the location of the rear mounting brackets which is attached to the switch by the various holes along its length.

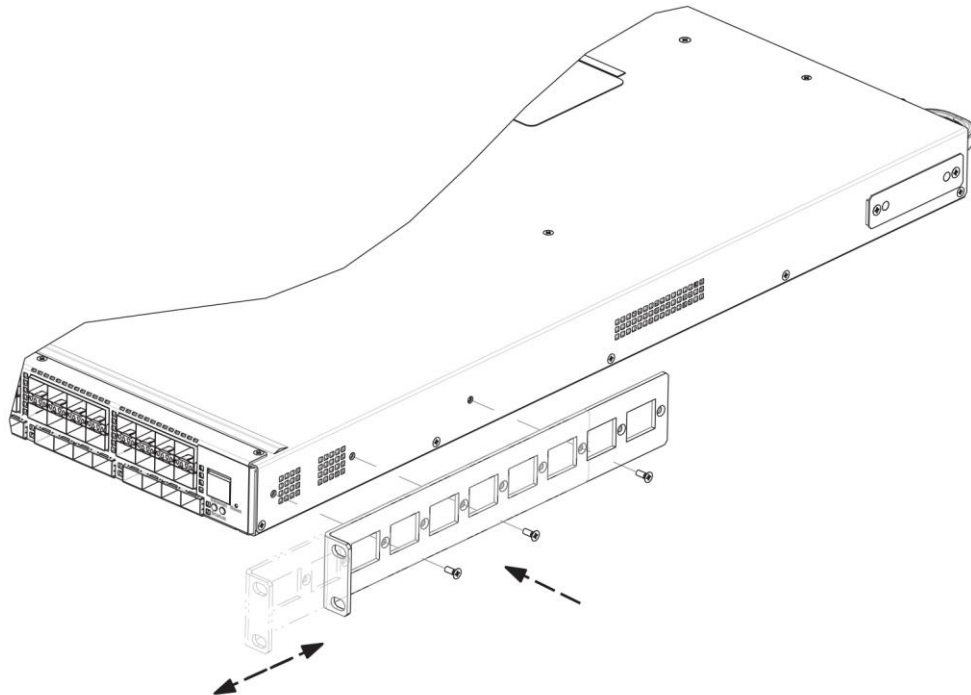
The relative front to back position of the Gnodal 1U switches should be set to ensure the rear face of the switch is flush or proud of the equipment located directly above or below the unit. This ensures suitable clearance for the cables to aid installation and maintenance.

Install the switch in the 19 inch rack as follows:

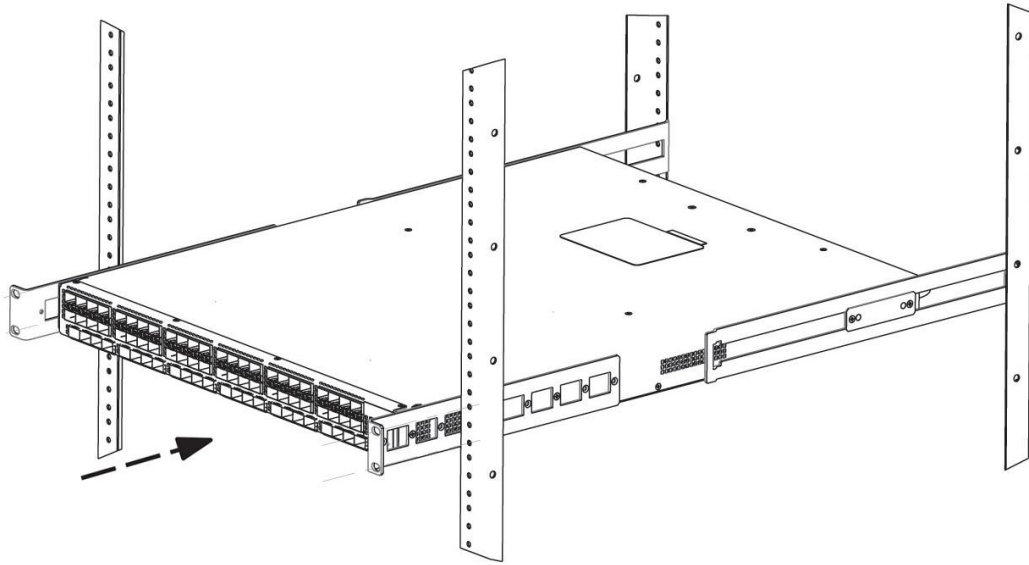
1. Unpack the switch and rack mount kit.
2. Airflow through the switch is from front to rear. The front of the switch should be orientated towards the cold air intake, usually at the front of the rack.
3. Attach the two chassis Front Side Brackets to the front left and right sides of the switch using two M3 x8mm countersunk screws each side.



4. Attach the Left and Right Hand Rear Mounting Brackets to the required recess depth on the rear of the switch using two or three M3 x 8mm countersunk screws to secure the brackets close to the rear face of the unit; the remaining fixings can be used to secure the brackets further down side of the switch if required.



5. Slide the switch in to the rack from the rear and secure the rear mounting brackets in four locations to the rack mounting angles using appropriate fixings for the rack whilst providing suitable support at the front of the switch until the front slide rails are installed.
6. Install the front slide rails by sliding the rails over the front side brackets on the switch and secure with appropriate fixings for the rack.



7. Once installed ensure you have suitable clearance for the cables. If not the location of the switch should be adjusted to avoid cable damage

Connecting and Disconnecting QSFP and SFP+ Cables and Modules

Gnodal recommends the use of approved QSFP and SFP+ direct attach copper cables and optical transceiver modules to ensure acceptable quality of service performance.

Cables and modules inserted in the top row of connectors are orientated with the cable connector edge fingers face down. All connectors below the top row require the cable or module to be inserted upside down compared to the cables or modules inserted in the top row of connectors.

Direct Attach Copper Cables

Direct attach copper cables are hot pluggable.



Note

Avoid running copper data cables close to power cables or high energy sources such as fluorescent lighting.



Caution

Ensure cable bend radius is not exceeded which can result in cable damage.



Caution

Do not twist the connector. If it is necessary to re-orient the connector, start the adjustment further down the cable, at least 75 cm away from the connector, so the twist occurs gradually along the cable.

1. Align the module or cable to the port on the unit in the correct orientation for the port.
2. Carefully insert the module and push fully home until the module is latched into position.

Optical Cable Assemblies and Transceiver Modules



Warning

Danger from Glass Chips - Small fragments of glass fibre are almost invisible. After handling damaged fibre cables, hands should always be wiped clean or washed before making any contact with the eyes. If there is suspicion of a glass chip in the eye, seek medical attention immediately.



Caution

Ensure cable bend radius is not exceeded which can result in cable damage.



Warning

For North American deployment, the modules must have an FDA accession number. The power shall be limited to FDA Class I, or IEC60825-1 Class 1 or Class 1M where FDA Laser Notice 50 has been applied.

Outside of North America, optical modules used should be certified per IEC60825-1 or an equivalent National standard. The laser Class shall be 1 or 1M.

1. Align the SFP+ module or cable to the port on the unit in the correct orientation for the port.
2. Carefully insert the module or cable and push fully home until it is latched into position. If the port LED is lit solid RED, the installed module or cable is not supported and the cable or module will need to be replaced.
3. For transceiver modules, remove the dust cap from the transceiver module and dust cover from the optical cable. Insert the optical cable into the transceiver module. Immediately install a protective covers when cables are removed from the transceiver module to avoid contamination of the optical interface.

Remove the cable or module by pulling on the release lever tape.

Checking Link Cable Connection

When both ends of the QSFP or SFP+ link are live, the LED port indicator will be on or flashing. Reference section Port LEDs. If the LED remains OFF, check that the cable is correctly seated and that the ports are enabled at both ends.

Connecting the Ethernet Management Interface

Connection to the 10/100/1000 BaseT Ethernet Management Interface can be made using a standard RJ-45 Ethernet cable to any Ethernet port in your management network.

You will need to configure this port before connecting the switch to your management network, refer to Configuring Management Interface Port

Power-up and Configuration

This chapter describes the initial switch power-up and configuration. Topics covered include:

- Powering up the switch
- Starting the CLI
- Firmware check and upgrade
- Configuring Management Ethernet Interface
- Setting the date and time
- Enabling the 10G Ethernet ports
- Showing the Ethernet Port Status
- Changing the MTU
- Enabling/Disable Flow Control
- Rebooting the switch
- Display Environmental Information
- Troubleshooting

Where examples are given the user entries are highlighted in **bold** text.

Powering up the Switch



Note

Refer to
Power Requirements section of this guide for site and electrical connection considerations.

1. Connect a suitable power cable to the switch. This equipment must be connected to an earthed mains socket outlet.
2. When power is applied the switch will go through its boot sequence. During the boot sequence the Status LED will be flashing Amber or Green. Should the boot sequence fail the Status LED will be flashing RED or be permanently lit RED.
3. After approximately 2 minutes the boot sequence will complete. Check the Status LED is permanently on and green, indicating the system is operational.

If the unit fails to complete the boot process the port LEDs will indicate a fault code. Refer to the Troubleshooting section within this guide.

Command Line Interface

Starting the CLI



Note For more information refer to the CLI User Manual or configuration guides.

The switch can be managed via the CLI through a SSH or Telnet connection.

Login to the CLI as root and enter the password

```
root@HOST$ ssh root@192.168.1.1
root@192.168.1.1's password:

Aricent Intelligent Switch Solution
ported to Gnodal Ltd. Switches
- Standalone version (2.0) -

iss#
```

Configuring Management Interface Port

Two methods for setting the IP address are to use DHCP or to statically assign the address. The management interface can be initially configured when the switch is in its factory default state.

The switch default static IP address is 192.168.1.1. To restore factory default settings refer to “Reset to Factory Default Settings” section in this manual.

To change the management interface port configuration once a switch configuration has been saved both the Default IP settings and cpu0 IP settings must be changed.

Management Interface Initial Configuration - Static Address

Configuring the Default IP Address will result in the IP address to be written to the NVRAM and this will be used as the IP address of the default interface when the switch is restarted.

Execute the following commands to configure the Default IP Address.

- Enter the Global Configuration mode.

```
iss# configure terminal
```

- Configure the default IP address and subnet mask as 10.0.0.100 and 255.255.0.0, respectively.

```
iss(config)# default ip address 10.0.0.100 subnet-mask 255.255.0.0
```

- Exit from the Global Configuration mode and reload the management stack.

```
iss(config)# end
iss# reload
```

- Once the management stack has restarted view the default IP address and subnet mask by executing the following command.

```
iss# show nvram
Default IP Address           : 10.0.0.100
Default Subnet Mask         : 255.255.0.0
Default IP Address Config Mode : Manual
Default IP Address Allocation Protocol : DHCP
```

```

Switch Base MAC Address      : 00:01:02:03:04:01
Default Interface Name      : Gi0/1
Config Restore Option       : No restore
Config Save Option          : No save
Auto Save                   : Enable
Incremental Save            : Disable
Roll Back                   : Enable
Config Save IP Address      : 0.0.0.0
Config Save Filename        : iss.conf
Config Restore Filename     : iss.conf
PIM Mode                    : Sparse Mode
IGS Forwarding Mode         : MAC based
Cli Serial Console          : Yes
SNMP EngineID               : 80.00.08.1c.04.46.53

```

Management Interface Initial Configuration - DHCP

Configuring the Default IP Address will result in the IP address to be written to the NVRAM and this will be used as the IP address of the default interface when the switch is restarted

Execute the following commands to configure the default dynamic address allocation protocol.

- Enter the Global Configuration mode.

```
iss# configure terminal
```

- Configure the default allocation protocol.

```
iss(config)# default ip address allocation protocol dhcp
```

- Exit from the Global Configuration mode and reload the management stack.

```
iss(config)# end
iss# reload
```

- Once the management stack has restarted view the default IP Address Allocation Protocol by executing the following command

```

iss# show nvram
Default IP Address          : 10.0.0.100
Default Subnet Mask         : 255.255.0.0
Default IP Address Config Mode : Dynamic
Default IP Address Allocation Protocol : DHCP
Switch Base MAC Address     : 00:01:02:03:04:01
Default Interface Name      : Gi0/1
Config Restore Option       : No restore
Config Save Option          : No save
Auto Save                   : Enable
Incremental Save            : Disable
Roll Back                   : Enable
Config Save IP Address      : 0.0.0.0
Config Save Filename        : iss.conf
Config Restore Filename     : iss.conf
PIM Mode                    : Sparse Mode
IGS Forwarding Mode         : MAC based
Cli Serial Console          : Yes
SNMP EngineID               : 80.00.08.1c.04.46.53

```

Change the Management Interface Port Configuration - Static Address

To change the IP address of the management interface port both the Default IP address and cpu0 IP address must be changed.

1. Execute the following commands to configure the Default IP Address.

- Enter the Global Configuration mode.

```
iss# configure terminal
```

- Configure the default IP address and subnet mask as 192.168.10.100 and 255.255.255.0, respectively.

```
iss(config)# default ip address 10.0.0.100 subnet-mask 255.255.0.0
```

- Exit from the Global Configuration mode and reload the management stack.

```
iss(config)# end
```

- View the default IP address and subnet mask by executing the following command.

```
iss# show nvram
Default IP Address           : 192.168.10.100
Default Subnet Mask         : 255.255.255.0
Default IP Address Config Mode : Manual
Default IP Address Allocation Protocol : DHCP
Switch Base MAC Address     : 00:01:02:03:04:01
Default Interface Name      : Gi0/1
Config Restore Option       : No restore
Config Save Option          : No save
Auto Save                   : Enable
Incremental Save            : Disable
Roll Back                   : Enable
Config Save IP Address      : 0.0.0.0
Config Save Filename        : iss.conf
Config Restore Filename     : iss.conf
PIM Mode                    : Sparse Mode
IGS Forwarding Mode         : MAC based
Cli Serial Console          : Yes
SNMP EngineID               : 80.00.08.1c.04.46.53
```

2. Execute the following commands to change the IP address for cpu0 interface.

- Enter the Global Configuration mode.

```
iss# configure terminal
```

The example below configures an IP address of 192.168.10.100, with a netmask of 255.255.255.0.

```
iss(config)# interface cpu0
iss(config-if)# ip address 192.168.10.100 255.255.255.0; end
iss(config-if)# exit
iss(config)# exit
```

Once the new IP address has been set the telnet or SSH session will be lost and you will need to reconnect using the new IP address to then save the settings for the switch management interface by typing:

```
iss# write startup-config
```

```
Building
[OK]
Iss# reload
```

Change the Management Interface Port Configuration - DHCP

To change the IP address of the management interface port both the default IP address and cpu0 IP address must be changed.

1. Execute the following commands to configure the default dynamic address allocation protocol.
 - Enter the Global Configuration mode.

```
iss# configure terminal
```

- Configure the default allocation protocol.

```
iss(config)# default ip address allocation protocol dhcp
```

- Exit from the Global Configuration mode and reload the management stack.

```
iss(config)# end
```

- View the default IP Address Allocation Protocol by executing the following command

```
iss# show nvram
Default IP Address           : 10.0.0.100
Default Subnet Mask          : 255.255.0.0
Default IP Address Config Mode : Dynamic
Default IP Address Allocation Protocol : DHCP
Switch Base MAC Address      : 00:01:02:03:04:01
Default Interface Name       : Gi0/1
Config Restore Option         : No restore
Config Save Option           : No save
Auto Save                     : Enable
Incremental Save              : Disable
Roll Back                     : Enable
Config Save IP Address        : 0.0.0.0
Config Save Filename          : iss.conf
Config Restore Filename       : iss.conf
PIM Mode                      : Sparse Mode
IGS Forwarding Mode           : MAC based
Cli Serial Console            : Yes
SNMP EngineID                 : 80.00.08.1c.04.46.53
```

2. Execute the following commands to change the IP address for cpu0 interface.

```
iss# enable
iss# configure terminal
iss(config)# interface cpu0
iss(config-if)# ip address dhcp
iss(config-if)# exit
iss(config)# exit
```

The telnet or SSH session will be lost and you will need to reconnect using the new IP address to then save the settings for the switch management interface by typing:

```
iss# write startup-config
```

```
Building
[OK]
Iss# reload
```

If you need the MAC address of the switch to determine which IP address has been allocated to the switch by the DHCP server, use the following command

```
iss# show nvram
Default IP Address           : 192.168.1.1
Default Subnet Mask         : 255.255.255.0
Default IP Address Config Mode : Manual
Default IP Address Allocation Protocol : DHCP
Switch Base MAC Address     : 84:c7:27:00:00:01
Default Interface Name      : cpu0
Default RM Interface Name   : NONE
Config Restore Option       : No restore
Config Save Option          : No save
Auto Save                   : Disable
Incremental Save            : Disable
Roll Back                   : Enable
Config Save IP Address      : 0.0.0.0
Config Save Filename        : iss.conf
Config Restore Filename     : iss.conf
PIM Mode                    : Sparse Mode
IGS Forwarding Mode         : MAC based
Cli Serial Console          : Yes
SNMP EngineID               : 80.00.08.1c.04.46.53
SNMP Engine Boots           : 0
Default VLAN Identifier     : 1
Stack PortCount             : 0
ColdStandby                 : Disable
Store Default Value         : Enable
Vrf Unique Mac              : Disable
```

Firmware check and Upgrade

Before using the switch it is advisable to check that the latest firmware is installed. Refer to the Gnodal web site to find the latest product firmware.

To verify the firmware version installed, use the '*show switch*' command

```
GNOS# show switch
```

Switch#	Alias	Status	Role	Priority	Model	Firmware
0		Ready	Master	**15	GS7200	2.2

If a later firmware release is available the product firmware can be upgraded. For more information refer to the Firmware Upgrade User Manual, DOC-90003-00.

Setting the date and time

The example below sets the clock time to 18:05:00 and date to the 4th October 2010.

```
iss# clock set 18:05:00 04 october 2010
iss# show clock
```

Enabling the Ethernet ports

The 10G and 40G Ethernet ports are disabled by default. Ports can be enabled in groups or individually. Firstly enter the Global Configuration Mode:

```
iss# configure terminal
```

The command **interface range Ethernet** is used to select the chassis and range of ports to configure. Switch interfaces can be enabled individually, in groups, or all ports can be selected using the '*' wildcard.

Example 1: Select GS7200 ports 1-72

Select all of the ports on the local GS7200 switch where slot or chassis number = 0 and port range is 1-72

```
iss(config)# interface range Ethernet 0/1-72
```

Example 2: Select all ports on a switch

Select all of the ports on the local GS4008 switch where slot or chassis number = 0. The QSFP ports are selected individually as the port numbers are not sequential and the SFP+ ports are selected as a range of ports.

```
iss(config)# interface range Ethernet 0/*
```

Example 3: GS0018 Select ports individually

Select all of the ports on the local GS0018 switch where slot or chassis number = 0. All of the QSFP ports are selected individually as the port numbers are not sequential.

```
iss(config)# interface range Ethernet 0/1,0/5,0/9,0/13,0/17,0/21,0/25,0/29,0/33,0/37,0/41,0/45,0/49,0/53,0/57,0/61,0/65,0/69
```

Once the interface range has been defined the ports can be enabled and the configuration can be saved.

```
iss(config-if-range)# no shutdown
iss(config-if-range)# exit
iss(config)# exit
iss# write startup-config
Building configuration ...
[OK]
```

Showing the Ethernet Ports Status

The status is reported as connected or not connected. Not connected indicates that the port is either not physically connected or that a port at either end of the cable is not enabled.

```
iss# show interfaces status
```

Port	Status	Duplex	Speed	Negotiation
----	-----	-----	-----	-----
Eth0/1	connected	-	10 Gbps	Auto
Eth0/2	not connected	-	10 Gbps	Auto
Eth0/3	not connected	-	10 Gbps	Auto
Eth0/4	connected	-	10 Gbps	Auto
. . .				

Changing the Maximum Transmission Unit (MTU)

The MTU is set by default to 1500B on the 10G and 40G Ethernet ports. You can change the MTU settings on the ports. Firstly enter the Global Configuration Mode:

```
iss# configure terminal
```

Example: GS7200

Select all of the ports on the local GS7200 switch where slot or chassis number = 0 and port range is 1-72

```
iss(config)# interface range Ethernet 0/1-72
```

Change the MTU value (e.g. 9000 bytes)

```
iss(config-if-range)# mtu 9000
```

Enabling/Disabling Flow Control

You can change the Flow Control settings. Firstly enter the Global Configuration Mode:

```
iss# configure terminal
```

Example: GS7200

Select all of the ports on the local GS7200 switch where slot or chassis number = 0 and port range is 1-72

```
iss(config)# interface range Ethernet 0/1-72
```

Change the Flow Control settings (ex: to disable flow control)

```
iss(config-if-range)# flowcontrol receive off  
iss(config-if-range)# flowcontrol send off
```

Rebooting the switch

The switch can be rebooted via the CLI by typing: -

```
iss# reload
```

Display Environmental Information

The system environmental information displays the system cooling and power status.

```
iss# show env all
RAM Threshold           : 100%
Current RAM Threshold   : 10%
CPU Threshold           : 100%
Current CPU Threshold   : 0%
Fan Status 1           : Operational
Fan Status 2           : Operational
Fan Status 3           : Operational
Min power supply        : 100v
Max power supply        : 250v
Current power supply     : 243v
Max Temperature         : 40C
Min Temperature         : 10C
Current Temperature     : 30C
PETA Chip Temperature   : 36C
Flash Threshold         : 100%
Current Flash Threshold : 1%
Mgmt Port Routing       : Enabled
```

Servicing



Caution

Servicing must only be undertaken by trained and qualified installation and service personnel.



Warning

To avoid the risk of electric shock, the covers of this equipment should not be removed.

Troubleshooting

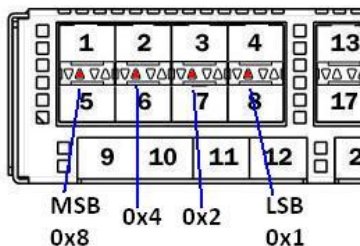
This section describes some basic methods to identify and resolve problems that might occur during the installation or operation of the switch.

For further technical assistance please refer to *Appendix E – Support*.

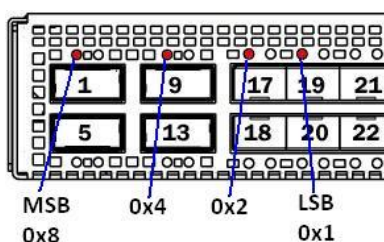
Status LED is Red

If the status LED is RED the system is in a non functional state. A fault code will be indicated on the port LEDs of the switch in a binary format as shown in the illustrations below:

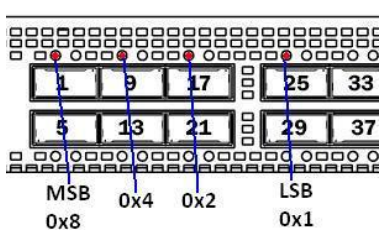
GS7200 – Fault Code LEDs



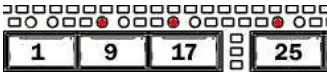
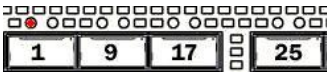
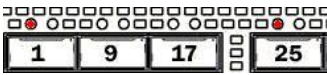
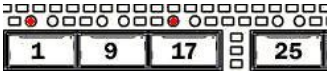
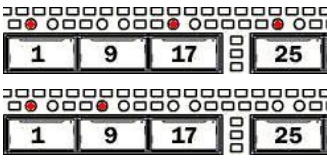
GS4008 – Fault Code LEDs



GS0018 – Fault Code LEDs



Fault Code	Problem	Possible cause / action
0x1 	Fan failures	Multiple Fan Failures – Replace the fan module/s.
0x2 to 0x6 to 	Boot failure	Contact customer support for further assistance.

Fault Code	Problem	Possible cause / action
0x7 	Over temperature alarm	Over temperature alarm condition – If a fan failure alarm has not occurred, check that all of the air vents are not blocked and ensure they are free from obstruction. Overheating can occur if the ambient temperature of the switch exceeds the maximum allowable operating temperature. If the switch is within a closed rack system this could be the air temperature within the rack. In this situation it is necessary to reduce the room or rack temperature to ensure continuous operation.
0x8 	DHCP fail	Occurs during firmware recovery when the switch has no network connectivity or if the switch is unable to get an IP address via DHCP, refer to the Firmware Upgrade User Manual for information on the firmware recovery process. Ensure the switch is connected to the local network. Set up a DHCP server on the local network and ensure that the DHCP server is properly configured.
0x9 	TFTP fail	Occurs during firmware recovery if the switch cannot start the TFTP transfer or if a failure occurs during the TFTP transfer. Ensure the switch is connected to the local network. Set up a TFTP server on the local network and ensure the firmware images are located in the TFTP server outgoing directory.
0xA 	Invalid firmware	Occurs if one of the images of the firmware is corrupted. Obtain the latest firmware upgrade for the switch and upgrade the firmware, refer to the Firmware Upgrade User Manual for information on the firmware recovery process.
0xB and 0xC 	Boot failure	Contact customer support for further assistance.

10GE / 40GE Port not functioning

Symptom	Problem	Possible cause / action
Physical link LED OFF	No physical link	Check the cable or transceiver is connected and latched at both ends. Ensure the device connected to the switch is active. Ensure the port is enabled, refer to Enabling the Ethernet ports . Verify you are using the correct cable or transceiver.

Cannot access the management Ethernet interface

Symptom	Problem	Possible cause / action
No LED's	No physical link	Check the cable is connected to an active Ethernet device.
Management Port Status LED's lit but can not access switch	Incorrect IP address	Reset IP address. If the IP address is not known, reset the unit to its factory default settings to reset the switch management interface port to its default IP, refer to Reset to Factory Default Settings

Replace a Power Supply

The switch is powered by one or two hot swap power supplies, each having its own IEC60320 receptacle. A power supply can be removed and replaced without disrupting the operation of the switch provided a redundant power supply is fitted and operational.

The power supplies are identified as 1 and 2 with supply 1 on the left hand side when viewed from the front of the switch.

The LED on the power supply shall be lit green when it is operational and off or red when there is a fault.

To replace a power supply follow this procedure:

1. Remove the power cord from IEC inlet of the power supply.
2. Move the retaining latch to the left and slide out the power supply from the enclosure.
3. Insert the replacement power supply and connect the power cord.
4. Check the green LED on the replacement power supply and ensure it is illuminated. If the power supply LED is not lit a fault condition exists with the power supply or with the switch and the power must be removed from the effected power supply.

Replace a Fan Module

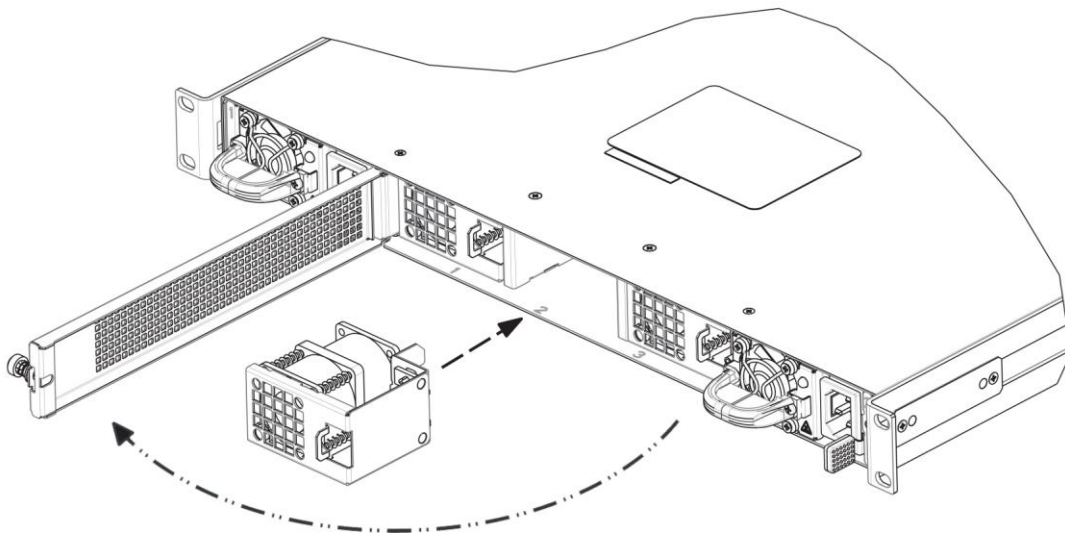


Caution

The switch will operate normally with one fan module removed provided the remaining fan modules are functional. Service personnel must ensure that the faulty fan module is correctly identified prior to removal. If more than one fan module is faulty the switch should be powered down.

There are 3 fan modules in the switch which can be accessed behind the fan door at the front of the switch. Each fan module is identified by slot number, 1, 2 or 3, from left to right when viewed from the front of the switch. The fan slot numbers are visible on the base of the switch chassis when the fan door is open.

1. If more than one fan module is faulty power down the switch by removing the power cord from the power supplies.
2. Undo the fan door fixing and open the door to access the fan modules.
3. Ensure the faulty fan module is correctly identified and pull to remove from the switch chassis.



4. Insert the replacement fan module ensuring it fully engaged.
5. Ensure the fan door is closed and tighten the fixing to secure the fan modules

Appendix A – Declaration of Conformity

Gnodal Ltd, 178 – 180 Hotwell Road, Bristol, BS8 4RP, UK

hereby declare that an example of the product models GS7200, GS4008 and GS0018 1U Rack Mount Ethernet Switches, and with the provision of the limitations stated, has been assessed and found to comply with the Directives and Standards listed:

European Community Directives

2006/95/EC	Low Voltage Directive
2001/95/EC	General Product Safety Directive
2004/108/EC	EMC Directive
2002/95/EC	Restriction Of certain Hazardous Substances Directive (ROHS)

European Community Standards

EN 60950-1:2006 +A11:2009 +A1:2010	Information technology equipment - Safety – Part 1: General Requirements
EN 55022:2006	Class A Information Technology Equipment: Radio disturbance characteristics
EN 55024/A2: 2003	Information Technology Equipment: Immunity characteristics.
EN 61000-3-2: A2 2009	Limits for harmonic current emissions (equipment input current $\leq 16A$ per phase).
EN 61000-3-3: 2008	Limitation of voltage fluctuations and flicker in low voltage supply systems for equipment rated $\leq 16A$

International Standards

IEC 60950-1:2005 2nd Ed. +A1:2009	Information technology equipment – Safety Part 1 General Requirements including national differences
CISPR22:2006	Information Technology Equipment: Radio disturbance characteristics
CISPR24:1997 A2:2002.	Information Technology Equipment: Immunity characteristics

National Standards

UL 60950-1: 2007	Information technology equipment - Safety – Part 1: General Requirements – For North America
CSA C22.2 No. 60950-1:2007	Safety of Information Technology Equipment - Canada
FCC CFR 47 Part 15 Subpart B : 2007	Class A. Radio Frequency Devices - Unintentional Radiators
AS/NZS CISPR22:2002	Information Technology Equipment: Radio disturbance Characteristics – Australia and New Zealand

I hereby declare that the equipment named above has been designed to comply with the relevant sections of the above reference specifications. The units comply with all applicable Essential Requirements for the above reference Directives and standards.

Signed:

Date : 14th July 2011

Name: Fred Homewood

Position: CEO

Appendix B – Safety and EMC Statements

Safety Statements



Warning

Changes or modifications to the equipment not expressly approved by Gnodal, who bear responsibility for the compliance, could void the user's authority to operate the equipment.



Warnung

Änderungen oder Modifizierungen an diesem Gerät, die nicht ausdrücklich von Gnodal, dem Verantwortungsträger für Sicherheit, genehmigt wurden, können zum Entzug der Bedienerlaubnis für dieses Gerät führen.

Electrical Safety

The plug on the power supply cord has been designated the disconnect device, therefore the socket outlet shall be installed near the equipment and shall be easily accessible.

EMC Statements



Warning

This is a class-A product. In a domestic environment this apparatus may cause radio interference. In such circumstances, appropriate measures may need to be taken.

To ensure the operation of the system meets the stated EMC performance:

- Replace cables if they show any signs of damage.
- When optical cables or transceivers are used, all unused ports on the GS7200 and GS0018 must be populated with an EMI port cover, sold separately.

Appendix C – ROHS China

Management Methods for Controlling Pollution by Electronic Information Products (Ministry of Information Industry Order #39)

Phase I labelling requirements: all Electronic Information Products (EIP) must be properly labelled according to the China RoHS standards. Phase I is effective from March 1st 2007.

As part of the China RoHS Phase I labelling requirements, provide the following Hazardous and Toxic Substances table for the GS7200, GS4008 and GS0018 products.

Part	Lead (Pb)	Mercury (Hg)	Cadmium (Cd)	Hexavalent Chromium (Cr6+)	Polybrominated Biphenyls (PBB)	Polybrominated Diphenyl Ethers (PBDE)
GS7200	X	O	O	O	O	O
GS4008	X	O	O	O	O	O
GS0018	X	O	O	O	O	O

X Indicates that the hazardous or toxic substance contained in at least one of the homogeneous materials for this part is above the limit requirement in SJ/T11363-2006.

O Indicates that the hazardous or toxic substance contained in all of the homogeneous materials for this part is below the limit requirement in SJ/T11363-2006.

Appendix D – Specification

Physical

Height x Width x Depth: 1.73" x 17.52" x 22.44" - (4.4cm x 44cm x 57cm)

Weight: 35.4 lbs (16.1 kg)

Airflow: Front-to-Rear (fan side to port side)

Operating Environment

Temperature: 32° to 104°F (0° to 40°C)

Relative humidity: 5 to 85 percent, Non-condensing

Max Operating Altitude: 3000m (9842 ft)

Electrical Characteristics

Voltage Range (Vac): 100 - 240 V

Nominal Frequency (Hz): 50 – 60

GS7200

Max RMS Current steady state : 2.5 A - 1.1A

Maximum Power: 245W

Typ Power with Passive Twinax Copper: 114W

Typ Power with Gnodal 72 x 10G-BASE-SR: 164W

GS4008

Max RMS Current steady state : 2.3 A - 1.0A

Maximum Power: 230W

Typ Power with Passive Twinax Copper: 114W

Typ Power with Gnodal 40 x 10G-BASE-SR and 8 x 40G-BASE-SR4: 156W

GS0018

Max RMS Current steady state : 2.1 A - 0.92A

Maximum Power: 210W

Typ Power with Passive Twinax Copper: 114W

Typ Power with Gnodal 18 x 40G-BASE-SR4: 145W

IEEE Compliance

Data coding & frame transmission

802.3-2008

Jumbo frames up to 9k

Bridge operation:

802.1D-2004. MAC Bridges.

Including 802.1w Rapid Spanning Tree
GVRP / GMRP

802.1Q-2005 Virtual Bridged LANs (VLANs)

Including 802.1s Multiple spanning tree.

802.1AX-2008 Link Aggregation

Also referred to as 802.3ad, 2005.

802.1AB-2005 Connectivity discovery (LLDP)

802.1X-2004 Port based Authentication with EAP

802.1ak-2007 MRP

802.1Q Q-in-Q VLAN Stacking

L2+ Features

Congestion Avoidance

Broadcast Storm & Flood Control

Lossless Transmission Selection

IP Multicast

IGMP Snooping (v1, v2, v3)

MLD snooping (v1, v2)

QoS

802.3x Flow Control

802.1p Prioritized Traffic Type

802.1Qbb Priority Based Flow Control

Security

IP Authorized Managers IPv4 & IPv6

Multiple User Privileges (CLI & Web)

1492 TACACS+

2865 RADIUS

SSL v3

SSH IPv4 & IPv6

RFC 3164 Syslog IPv4 & IPv6

SNMP v1, v2, v3 (IPv4 & IPv6)

Including RFC 1155, 1157, 1212, 1213, 1215, 2089, 2578,
3411, 3412, 3413, 3414, 3415, 3416, 3417, 3584

MIB Support

Including RFC 1213, 1493, 2233, 2618, 2665, 2674, 3412,
3413, 3414, 3415, 3584, 4133, 4363

IEEE 802.1X, 802.1AB, 802.3AD

RSTP, MSTP

DCBX (to manage Priority Based Flow Control)

Management & Administration

10/100/1000BaseT Management Interface (out of band)

Single point, multi-chassis management

Industry standard CLI Console

Multi-session Telnet, SSH with pre-defined commands

WebUI HTTP, HTTPS, SSL with pre-defined pages

Firmware & configuration upgrade through TFTP, SFTP

TCP/IP stack IPv4 and IPv6

DHCP client, server, relay

Port mirroring and SNTPv4

Appendix E – Support

For initial troubleshooting guidance refer to the *Troubleshooting* section within this manual. For information on network / system test and diagnostics refer to the *Network Installation Guide*. For problems associated with the switch software, SNMP, CLI or Web Browser, refer to the *Command Reference Manual*.

Location of Online Documentation and Software

New versions of this and other Gnodal documentation can be found on the Gnodal web site as can details of Gnodal support services:

www.gnodal.com/support/

Customer Support Services

Gnodal support services can be found on the Gnodal web site:

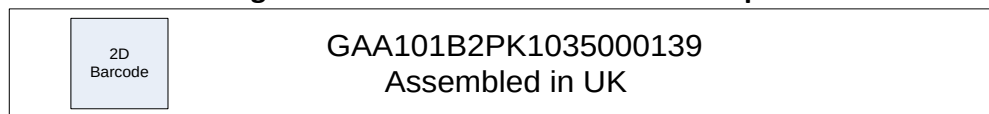
www.gnodal.com/support/

Email technical support at support@gnodal.com.

Identifying Serial Numbers

The serial number, in the form of a barcode label, needs to be identified in order to return items for repair or replacement.

Figure 7 - Serial Number Barcode Example



The label includes the serial number in barcode and text readable format.

The serial number can be found on a label on the top of the switch.

Appendix F – Product Ordering Information

Part No.	Model No.	Description
GX-11101-02	GS7200	1RU TOR switch with 72 SFP+ 10GE ports. Includes rack-mount kit and dual power supplies.
GX-10201-02	GS4008	1RU TOR switch with 40 SFP+ 10GE and 8 QSFP 40GE ports. Includes rack-mount kit and dual power supplies
GX-10301-02	GS0018	1RU TOR switch 18 QSFP 40GE ports. Includes rack-mount kit and dual power supplies

To purchase Gnodal equipment, please email: sales@gnodal.com

or visit our website: www.gnodal.com