GST *series*

A Network Systems Solution
UNICOM ™

SmartGST-2402

24 Port 10/100Base-TX Switch
with Dual Port 100/1000 Module Slot

GEP-31124T-1

A Network Systems Solution
UNICOM ™

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USER'S MANUAL

1. Introduction

Welcome to the World of Network Switching. In modern business, communication and information sharing are fundamental to success. Computer networks have proven to be one of the fastest ways of communication.

The SmartGST-2402 is a multi-port Switch that can be used to build high-performance switched workgroup networks. It is a store-and-forward device that offers low latency for high-speed networking and is targeted at workgroup, department, or backbone computing environments.

Figure 1-1. SmartGST-2402

The SmartGST-2402's "store-and-forward" switching scheme allows the switch to auto-learn and store source address in an 8K-entry MAC address table.

MDI (Medium Dependent Interface) Port is also called an "uplink port". The MDI port does not cross the transmission and reception lines, which is done by the regular ports (MDI**-X** ports) that connect to end stations. In general, **MDI** means connecting to another Hub or Switch while **MDIX** means connecting to a workstation or PC. Therefore, **Auto MDI/MDIX** means that you can connect to another Switch or workstation without changing non-crossover or crossover cabling.

The SmartGST-2402 has twenty four auto-sensing 10/100Base-TX RJ-45 ports plus one module slot for optional dual port 100Base-FX, 1000T, and 1000SX/LX Mini GBIC modules. This enables high performance expansion

connections over long distances.

Features

- IEEE802.3 10Base-T, IEEE802.3u 100Base-TX/FX, IEEE802.3ab 1000Base-T, IEEE802.3z Gigabit fiber
- Twenty-four 10/100TX ports plus one expansion slot with RS-232 for management
- Expansion modules available: 100FX, 1000T, 1000SX/LX
- IEEE802.3x Flow control:
  - ➢ Pause-frame for full duplex mode
  - ➢ Backpressure for half duplex mode
- Store-and-forwarding switching architecture for abnormal packet filtering
- High switch fabric up to 8.8Gbps
- 8K-entry MAC address table
- 2.5Mbits memory buffer
- Broadcast Storm filter supported
- Support PortBase VLAN
- Class of service supported
- IEEE802.3ad Port trunk supported
- Non-Blocking full wire speed architecture
- Fan free design
- Ingress and egress bandwidth control

Software Features

Management	In-Band Local Console (RS-232)
Port configuration	Link speed, link mode, Port disable/Enable, Port Flow control disable/Enable, Port Auto negotiation
Port Trunk	IEEE802.3ad port trunk. Trunk groups up to 8. Maximum trunk port members up to 4. Trunk 1 (#1,#2), Trunk 2 (#3,#4), Trunk 3 (#5~#8), Trunk 4 (#9~#12), Trunk 5 (#13~#16), Trunk 6 (#17~#20), Trunk 7 (#21~#24), Trunk 8 (Exp. module port #25, #26)
VLAN	Port Based VLAN VLAN entry up to 26
QoS	3 Types of quality of service: 1. Port based priority. 2. TCP/IP TOS/DiffServ (DS) priority field. 3. 802.1p priority tag
Class of Service	System provides two queues for High and Low priority. Support priority weighted ration (H /L): 1:0 (always high priority), 4:1 (4 High priority, 1 Low priority packet), 8:1 (8 High priority, 1 Low priority packet), 16:1 (16 High priority, 1 Low priority packet)
Bandwidth Control	Each port's bandwidth is independently configurable on both ingress and egress traffic. Each port's bandwidth can be configured as: 128kbps, 256Kbps, 512Kbps, 1Mbps. 2Mbps, 4Mbps, or 8Mbps Independently
Broadcast Storm	Disable or Enable.

Package Contents

Unpack the contents of the SmartGST-2402 and verify them against the checklist below.

- SmartGST-2402 Fast Ethernet Switch
- Power Cord
- Four Rubber Feet
- RS-232 cable
- User Guide
- Rack mount kit

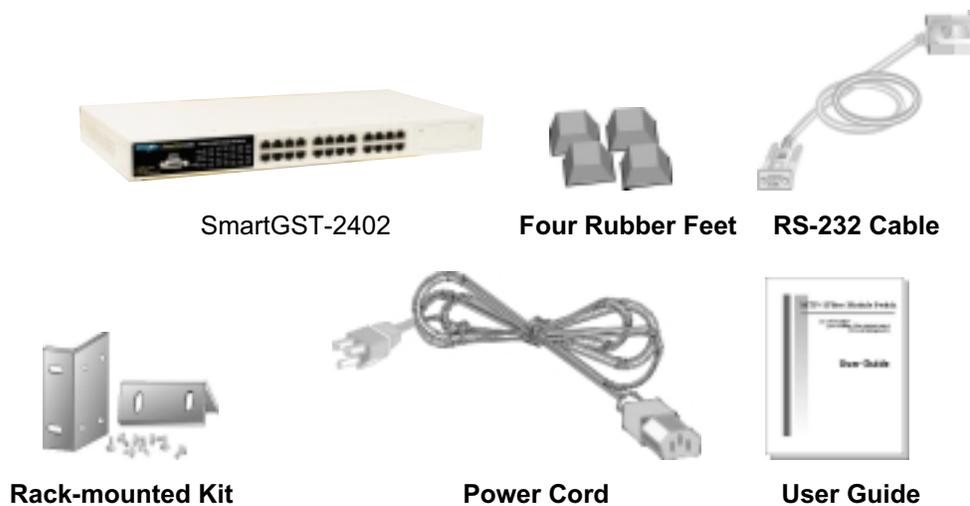| SmartGST-2402	**Four Rubber Feet**	**RS-232 Cable**
Rack-mounted Kit	**Power Cord**	**User Guide**

Figure 1-2. Package Contents

Compare the contents of your SmartGST-2402 package with the standard checklist above. If any item is missing or damaged, please contact your local dealer for service.

Ethernet Switching Technology

Ethernet Switching Technology dramatically boosted the total bandwidth of a network, eliminated congestion problems inherent with CSMA/CD (Carrier Sense multiple access with Collision Detection) protocol, and greatly reduced unnecessary transmissions.

This revolutionized networking. First, by allowing two-way, simultaneous transmissions over the same port (Full-duplex), which essentially doubled the bandwidth. Second, by reducing the collision domain to a single switch-port, which eliminated the need for carrier sensing. Third, by using the store-and-forward technology's approach of inspecting each packet to intercept corrupt or redundant data. By employing address learning, this switching eliminated unnecessary transmission that slowed the network.

Auto-negotiation regulates the speed and duplex of each port, based on the capability of both devices. Flow-control allows transmission from a 100Mbps node to a 10Mbps node without loss of data. Auto-negotiation and flow-control may need to be disabled for some networking operations involving legacy equipment. Disabling the auto-negotiation is accomplished by fixing the speed or duplex of a port.

Ethernet Switching Technology supplies higher performance at lower costs than other solutions. Wider bandwidth, no congestion, and the reduction in traffic is why switching is replacing expensive routers and inefficient hubs as the ultimate networking solution. Switching brings a whole new way of thinking to networking.

2. Hardware Description

This Section describes the hardware of the SmartGST-2402 and gives a physical and functional overview of this switch.

The physical dimensions: **440mm x 161mm x 44mm (L x W x H)**

Front Panel

The Front Panel of the SmartGST-2402 consists of twenty-four 10/100Base-TX RJ-45 ports (Auto MDI/MDIX) and one expansion slot. The LED Indicators are also located on the front panel of the Switch.
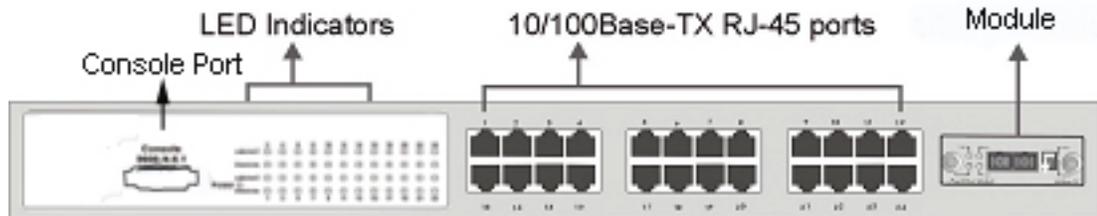

Figure 2-1. The Front panel of SmartGST-2402

RJ-45 Ports (Auto MDI/MDIX): Twenty-Four 10/100 N-way auto-sensing for 10Base-T or 100Base-TX connections.

Module (Optional): 2 port 100Base-FX (SC/MM), 2 port 100Base-FX (SC/SM), 2 port 100/1000Base-T, 2 port 1000Base-SX (SC/MM), or 1000Base-LX (SC/SM).

LED Indicators

The LED Indicators give real-time information of systematic operation status. The following table provides a description of LED status.
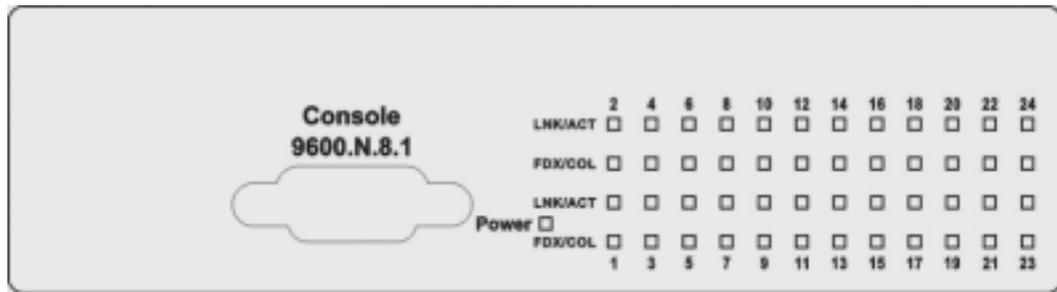
Figure 2-2. LED indicators

LED	Status	Description
Power	Green	Power On
	Off	Power is not connected
LNK/ACT	Green	The port is connecting with the device.
	Blinks	The port is receiving or transmitting data.
	Off	No device attached.
FDX/COL	Orange	The port is operating in Full-duplex mode.
	Blinks	Collision of Packets occurs in the port.
	Off	in half-duplex mode

Table 2-1. The Description of LED Indicators

Rear Panel

as shown in Figure 2-3. The Switch will work with AC in the range 100-240V AC, 50-60Hz.

On/Off Switch

Figure 2-3. The Rear Panel of SmartGST-2402

Desktop Installation

Set the Switch on a sufficiently large flat space with a power outlet nearby. The surface where you put your Switch should be clean, smooth, level and sturdy. Make sure there is enough clearance around the Switch to allow attachment of cables, power cord and allow air circulation.

Attaching Rubber Feet

A. Make sure mounting surface on the bottom of the Switch is grease and dust free.
B. Remove adhesive backing from your Rubber Feet.
C. Apply the rubber feet to each corner on the bottom of the Switch. These footpads can protect the Switch from shock/vibration.
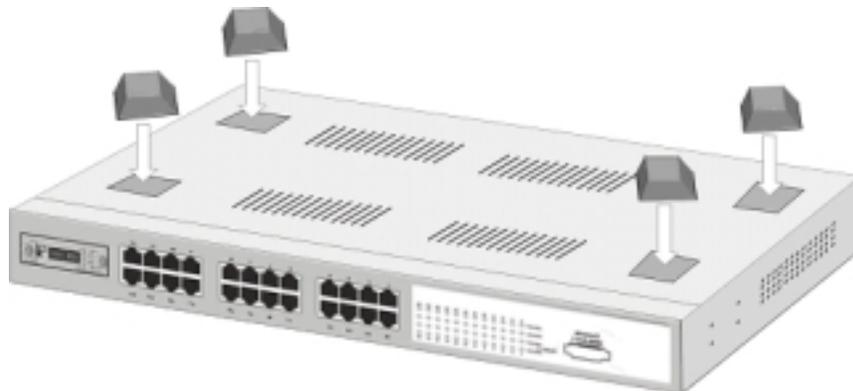
Figure 2-4. Attaching Rubber Feet to each corner on the bottom of the Switch

Rack-mounted Installation

The SmartGST-2402 comes with a rack-mounting kit and can be mounted in any EIA standard size, 19" Rack. The Switch can be placed in a wiring closet with other equipment.

Perform the following steps to rack mount the switch:

A. Position one bracket to align with the holes on one side of the switch and secure it with the smaller bracket screws. Then attach the remaining bracket to the other side of the Switch.

Figure 2-4. Attach mounting brackets with screws

B. After attaching mounting brackets, position the SmartGST-2402 in the rack by lining up the holes in the brackets with the appropriate holes on the rack. Secure the Switch to the rack with a screwdriver and the rack-mounting screws.

Figure 2-5. Mounting the Switch in an EIA standard 19" Rack

Note: For proper ventilation, allow about at least 4" (10 cm) of clearance on the front and 3.4" (8 cm) on the back of the Switch. This is especially important for enclosed rack installations.

Power On

Connect the power cord to the power socket on the rear panel of the Switch. The other side of power cord connects to the power outlet. The internal power supply of the Switch works with voltage range of AC in the 100-240VAC, frequency 50~60Hz.

Check the power indicator on the front panel to see if power is properly supplied.

3. Network Application

This section provides a few samples of network topology in which the Switch is used. The SmartGST-2402 is designed as a segment switch. With its large address table (8k MAC address) and high performance, it is ideal for interconnecting networking segments.

PC, workstations, and servers can communicate with each other by directly connecting with SmartGST-2402. The switch automatically learns node addresses, which are subsequently used to filter and forward all traffic based on the destination address.

By using any port as an uplink port, the Switch can connect with another switch or hub and interconnect other small-switched workgroups to form a larger switched network. Switches can also be interconnected using the fiber port. The distance between two switches via fiber cable can be up to 2 kilometers (Multi-Mode fiber) or 30 kilometers (Single Mode fiber).

Small Workgroup

The SmartGST-2402 can be used as a standalone switch to which personal computers, servers, and/or printer servers, are directly connect to form a small workgroup.
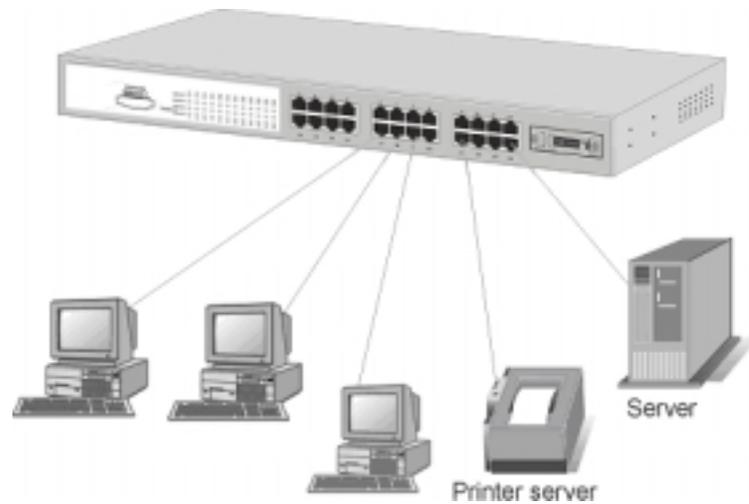
Figure 3-1. Small Workgroup Application

Segment Bridge

This switch is an ideal solution for departmental users in corporate backbones where large data broadcasts are constantly broadcast.

In the illustration below, two Ethernet switches with PCs, a print server, and a local server are all connected to the Switch. All the devices in this network can communicate with each other through the Switch. Connecting servers to the Switch allow other users to access the data on server.
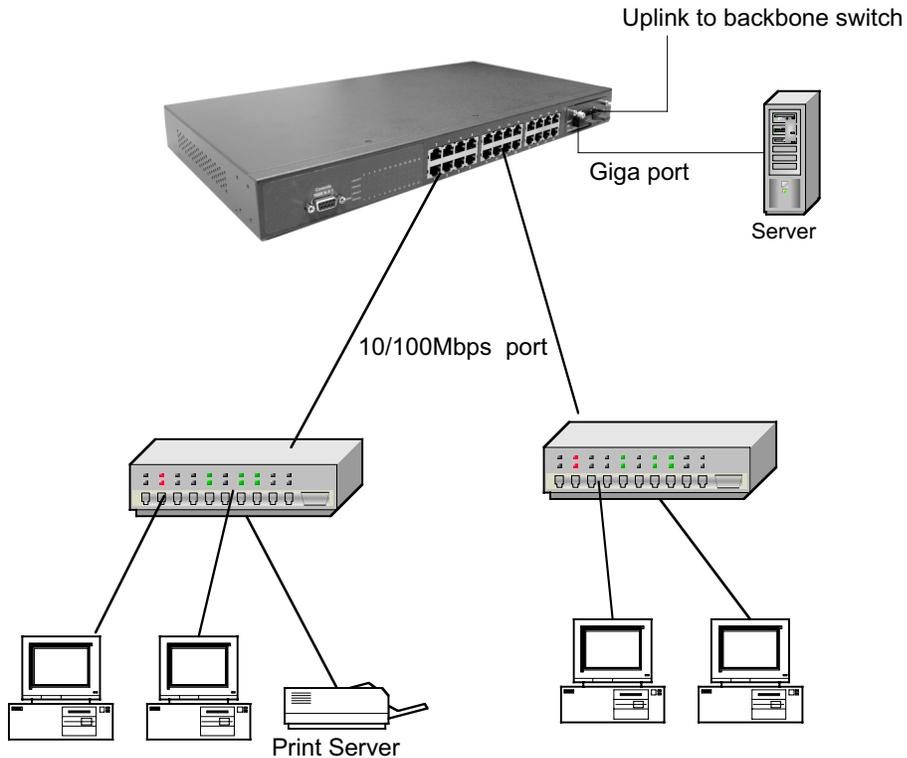
Figure 3-2. Department Bridge Application

Connecting to the Switch

The Console port is a female DB-9 connector that enables a connection to a PC or terminal for monitoring and configuring the Switch. Use the supplied RS-232 cable to connect a terminal or PC to the Console port.

The Console configuration (out of band) allows you to set the Switch for "remote terminal" as if the console terminal were directly connected to it.

4. Console Management

Login in the Console Interface

When the connection between Switch and PC is ready, turn on the PC and run a terminal emulation program or **Hyper Terminal** and configure its **communication parameters** to match the following default characteristics of the console port:

Baud Rate: 9600 bps

Data Bits: 8

Parity: none

Stop Bit: 1

Flow control: None

Figure 4-1. The settings of communication parameters

After finishing the parameter settings, click "**OK**". When the blank screen shows up, press Enter key to bring out the console management main screen. Then, press any key to enter the function management screen.

24 + 1 slot for 2 port module

Enter any key into Main Menu.

Console main screen

Main Menu

There are 8 selections as follow.

- ■ **[1] Port Status:** it displays status of the ports
- ■ **[2] Port Configuration:** configure the port status.
- ■ **[3] Trunk Configuration:** configure Trunk function.
- ■ **[4] Trunk Status:** display Trunk Link fault information and Network Loop fault port detected information.
- ■ **[5] QoS:** configure QoS function and setup the ports priority.
- ■ **[6] Priority Tag Insert/Remove:** configure the ports tagging control
- ■ **[7] System:** enable VLAN function and broadcast storm filtering control, setup the name of switch, and reset switch to default configuration.
- ■ **[8] VLAN Member Setup:** Configuring PortBase VLAN group.
- ■ **[9] Save:** save the configuration that user has made.

Main menu line interface

Control Key description:

The control keys provided in all menus:

- **I/M/J/L:** Move the vernier to up, down, left, and right.
- **Enter:** Edit finish or OK in function screen.
- **Space:** Toggle selected item to next configure or change the value.
- **0:** to exit the current action mode.
- **E:** to edit the parameter or configuration.
- **Space:** to toggle state.
- **Enter:** Refresh the screen display.
- **1/2:** Up page and next page.

Port Status

It displays the status of the ports. Enter the "**1**" to enter the **Port Status** display interface. In the Port Status interface, using the **"2"** to view next page. Using the "**1**" to go back to previous page.

- ■ **Speed:** display port connection speed.
- ■ **Duplex:** display port duplex mode.
- ■ **Link:** display port statuses link status. When the port is connecting with the device and work normally, the link status is "**UP**". Opposite is "**Down**".
- ■ **Flow Control:** display the flow control status is "enable" or "disable".
- ■ **Auto Negotiation:** display the auto negotiation status.
- ■ **Trunk:** display the port belongs in which trunk group if the port were added into a trunk group.

```
24+1slot                     Switch-A                    Version: 1.08
---------------------------------------------------------------------
Port Status (Read Only) (Auto-refresh)
---------------------------------------------------------------------
Port # | Speed | Duplex | Link | Flow Control | Auto Negotiation | Trunk
Port.01 | 10M  | Half   | Down | Enable       | Enable           |
Port.02 | 10M  | Half   | Down | Enable       | Enable           |
Port.03 | 10M  | Half   | Down | Enable       | Enable           |
Port.04 | 10M  | Half   | Down | Enable       | Enable           |
Port.05 | 10M  | Half   | Down | Enable       | Enable           |
Port.06 | 10M  | Half   | Down | Enable       | Enable       _   |
Port.07 | 10M  | Half   | Down | Enable       | Enable           |
Port.08 | 10M  | Half   | Down | Enable       | Enable           |
---------------------------------------------------------------------


 Function Key
[1/2]PageUp/PageDown [0]Return [Enter]Refresh Screen
```

Port status interface

Port Configuration

You can configure speed, status, flow control, Tx bandwidth, and Rx bandwidth of each port using the control key to set up the configuration.

```
24·1slot                      Switch-A                  Version: 1.08
─────────────────────────────────────────────────────────────────────
Config Port

Port #  |Enabled |  Speed          | Flow Control | Rx Bandwidth | Tx Bandwidth
        |        |  advertisement  |              |              |
─────────────────────────────────────────────────────────────────────
Port.01 |Enable  |  Auto 100F      | Enable       | disable      | disable
Port.02 |Enable  |  Auto 100F      | Enable       | disable      | disable
Port.03 |Enable  |  Auto 100F      | Enable       | disable      | disable
Port.04 |Enable  |  Auto 100F      | Enable       | disable      | disable
Port.05 |Enable  |  Auto 100F      | Enable       | disable      | disable
Port.06 |Enable  |  Auto 100F      | Enable       | disable      | disable
Port.07 |Enable  |  Auto 100F      | Enable       | disable      | disable
Port.08 |Enable  |  Auto 100F      | Enable       | disable      | disable
─────────────────────────────────────────────────────────────────────



Function Key
[I/M/J/L]Up/Down/Left/Right [1/2]PageUp/PageDown [0]Return [Enter]Refresh Screen
[Space]Toggle State
```

Port configuration interface

- ■ **Enable:** enabling or disabling this port.
- ■ **Speed advertisement:** select speed and duplex mode of port.
- ■ **Flow Control:** enabling or disabling the Flow Control function.
- ■ **Rx Bandwidth:** set up the receive bandwidth.
- ■ **Tx Bandwidth:** set up the transceiver bandwidth.

[Note] You must to enable the Flow control for Rx/Tx bandwidth to work.

Trunk Configuration

It supports 8-trunk groups as follows:

Trunk1	Port 1, 2
Trunk 2	Port 3, 4
Trunk 3	Port 5, 6, 7, 8
Trunk 4	Port 9, 10, 11, 12
Trunk 5	Port 13, 14, 15, 16
Trunk 6	Port 17, 18, 19, 20
Trunk 7	Port 21, 22, 23, 24
Trunk 8	Port 25, 26

All trunk groups default to disabled status. Use the "**Space**" key to change the

trunk status to "**Enable**".

Trunk Configuration interface

Trunk Status

This window displays the trunk link warning information. When the trunking group has detected an error, the information will be displayed in this section.

Trunk Status interface

QoS

You can configure QoS functions.

- **TOS/Diff Serv. Priority:** enabling or disabling TOS/Diff service priority.
- **802.1p Priority:** enabling or disabling 802.1p priority function.
- **Priority Weight Ration (High: Low):** select the priority weight ration mode – 1:0, 4:1, 8:1, or 16:1. The default value is 16:1.
  - ➢ 1:0: the switch will process all high priority packets.
  - ➢ 4:1: the switch will process 4 high priority packet first, the process 1 low priority packet.
  - ➢ 8:1: the switch will process 8 high priority packet first, the process 1 low priority packet.
  - ➢ 16:1: the switch will process 16 high priority packet first, the process 1 low priority packet.
- **Force Set High Priority Port:** set port to be high priority level

```
24+1slot               Switch-A              Version: 1.08

QoS Configuration

Function                        | State

TOS/Diff Serv. Priority         | Disable
802.1p Priority                 | Disable
Priority Weighted Ration(High:Low) |  16:1
                                |
                                |
                                |

Force Set High-Priority Port

[ ]Port01  [ ]Port05  [ ]Port09  [ ]Port13  [ ]Port17  [ ]Port21  [ ]Port 25
[ ]Port02  [ ]Port06  [ ]Port10  [ ]Port14  [ ]Port18  [ ]Port22  [ ]Port 26
[ ]Port03  [ ]Port07  [ ]Port11  [ ]Port15  [ ]Port19  [ ]Port23
[ ]Port04  [ ]Port08  [ ]Port12  [ ]Port116 [ ]Port20  [ ]Port24

Function Key
[I/M/J/L]Up/Down/Left/Right [0]Return [Enter]Refresh Screen
[Space]Toggle State
```
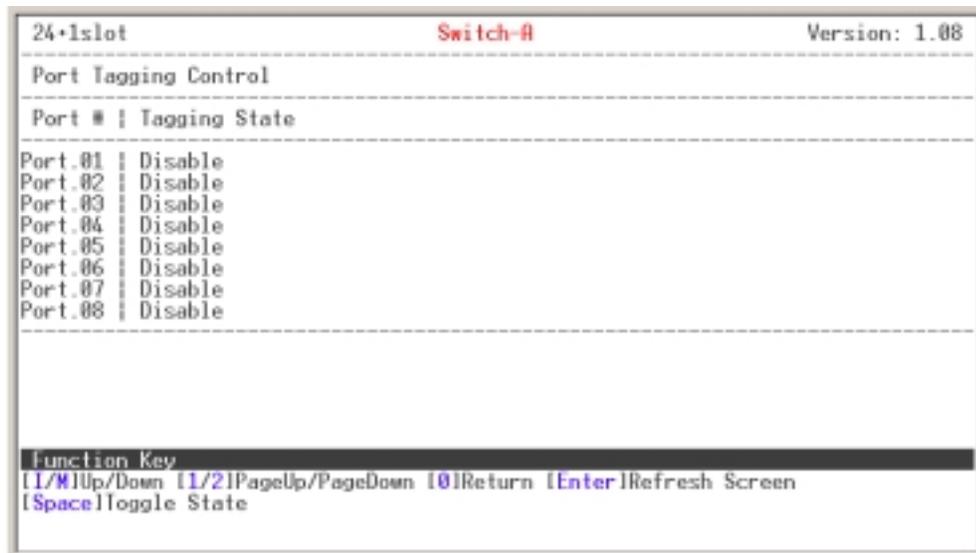
QoS configuration interface

Priority Tag Insert/Remove

Sets each port's tagging control. There are four choices of port tagging control:

- **Disable:** No port tagging control on this port.
- **Remove tag:** Removes the packet's tag as the packet passes through this port.
- **Insert Tag (high priority only):** Inserts the packet's tag as the packet passes through the high priority port.
- **Insert Tag (All frame):** Inserts the packet's tag when the packet passes through this port.

Priority Tag Insert/Remove interface

System

You can enable VLAN function and broadcast storm filtering control, set up the name of the switch, and reset the switch to default value. Enter the selection number to configure.

- **VLAN Function:** enter "**1**" to change the value.
- **Switch Name:** enter "**2**" to change the switch name. The default switch

name is "Switch-A".

- ■ **Broadcast Storm Filtering Control:** enter "**3**" to change the value.
- ■ **Load Factory Default Setting:** enter "**1**" to set the switch configuration value to default value.

```
24+1slot                    Switch-A              Version: 1.08
─────────────────────────────────────────────────────────────────
System Control
─────────────────────────────────────────────────────────────────
Function                              | State
─────────────────────────────────────────────────────────────────
[1] VLAN Function                     | Disable
─────────────────────────────────────────────────────────────────
[2] Switch Name                       | Switch-A
─────────────────────────────────────────────────────────────────
[3] Broadcast Storm Filtering Control | Disable
─────────────────────────────────────────────────────────────────
[4] Load Factory Default Setting      |
                                      |
                                      |
                                      |
─────────────────────────────────────────────────────────────────


Function Key
[0] Return [Enter] Refresh Screen
[1..4] press item symbol
```

System interface

VLAN Member Setup

Configuring Port-Base VLAN group.

Add VLAN Group

1. Enter "**E**" to switch to Edit Mode.
2. Press "**A**" to start adding a VLAN group.
3. Use "**L**" and "**J**" to move to the port that you want to add into a VLAN group and use "**space**" key to mark the port.
4. When finished selecting VLAN members, press " **U**" to update the VLAN table.
5. The VLAN group list will be displayed.

Add VLAN Group interface

Delete VLAN Group

1. Press "**E**" to Edit mode.

2. Press "**D**" and enter the VLAN Entry No.

3. Press " **Enter**". The system will ask you to confirm the deletion. Enter "**y**" to confirm the deletion.

4. Press "**Enter**" the VLAN group will be deleted.

5. Press "**U**" to update the VLAN information to system.

VLAN deletion interface

Save

Save all configurations changes. Without saving the configuration, the new setting will not take effect. If you turn off the device without saving the configurations, all changes will be permanently lost

5. Troubleshooting

This section is intended to help you solve the most common problems of the SmartGST-2402.

Incorrect connections

These ports can auto-detect straight or crossover cables when you link this switch with other Ethernet device. Always use the correct UTP or STP RJ-45 cable. 10/100Mbps ports (Fast Ethernet) use two pair cable and 1000T ports (Gigabit Ethernet) use four pair cable. If the RJ-45 connector pins are not at right position then the link will fail. For fiber connections, please notice that fiber cable mode and fiber module should be match.

■ Faulty or loose cables

Look for loose or obviously faulty connections. If they appear to be OK, make sure the connections are snug. If that does not correct the problem, try a different cable.

■ Non-standard cables

Non-standard and miswired cables may cause numerous network collisions and other network problem and can seriously impair network performance. A Category 5 cable tester is a recommended tool for every 100Base-T network installation.

■ Improper Network Topologies

It is important to make sure that you have a valid network topology. Common topology faults include excessive cable length and too many repeaters (hubs)

between end nodes. In addition, you should make sure that your network topology contains no data path loops. Between any two ends nodes, there should be only one active cabling path at any time. Data path loops will cause broadcast storms that will severely impact your network performance.

Diagnosing LED Indicators

The Switch can be easily monitored through panel indicators to assist in identifying problems, which describes common problems you may encounter and where you can find possible solutions.

If the power indicator does turn on when the power cord is plugged in, you may have a problem with power outlet, or power cord. However, if the Switch powers off after running for a while check for loose power connections, power losses or surges at power outlet. IF you still cannot resolve the problem, contact your local dealer for assistance.

■ Cabling

RJ-45 ports: use unshielded twisted-pair (UTP) or shield twisted-pair (STP) cable for RJ-45 connections: 100_ Category 3, 4 or 5 cable for 10Mbps connections or 100_ Cat-5 or Cat-5e cable for 100Mbps connections. Also be sure that the length of any twisted-pair connection does not exceed 100 meters (328 feet). Gigabit port should use Cat-5e or cat-6 cable for 1000Mbps connections. The length does not exceed 100 meters. For more information please refer to Appendix section.

6. Technical Specification

This section provides the specifications of SmartGST-2402, and the following table lists these specifications.

Standard	IEEE802.3 10BASE-T IEEE802.3u 100BASE-TX/100BASE-FX IEEE802.3ab 1000BASE-T IEEE802.3z Gigabit fiber IEEE802.3x Flow control and Back pressure IEEE802.3ad Port Trunk IEEE802.1p Class of service
LED Indicators	System: power 10/100Base-TX: Link/Activity, Full Duplex/Collision 100FX: Link/Activity, Full Duplex Gigabit SX/LX: Link/Activity 1000Base-T: 100, 1000, Link/Activity, Full Duplex/Collision
Connector	10/100TX: 24 x RJ-45 100FX(Multi mode) module: 1 or 2 x SC/MT-RJ 100FX(Single mode) module: 1 or 2 x SC Gigabit SX module: 2 x SC. Gigabit LX module: 2 x SC. 1000T module: 2 x RJ-45
Switch architecture	Store and Forward
Back-plane	8.8Gbps with full wire speed
MAC address	8K Mac with Auto Learning
Memory	2.5Mbits

Power	100~240VAC 50/60Hz
Power Consumption	20Watts(Maximum)
Dimensions	440mm x 161mm x 44mm (L x W x H)
EMI & Safety	FCC Class A, CE, UL, cUL, CE/EN60950

Appendix

Console Port Pin Assignments

The DB-9 serial port on the front panel is used for out-of-band console configuration. The menu-driven console configuration program can be accessed from a terminal or a PC running a terminal emulation program. The pin assignments used to connect to the serial port are provided in the following tables:
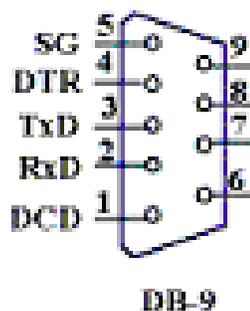

Figure 6-1. DB-9 Console Port Pin Numbers

■ **DB-9 Port Pin Assignments**

EIA Circuit	CCITT Signal	Description	Switch's DB9 DTE Pin #	PC DB9 DTE Pin #
BB	104	RxD (Received Data)	2	2
BA	103	TxD (Transmitted Data)	3	3
AB	102	SGND (Signal Ground)	5	5

■ **Console Port to 9-Pin DTE Port on PC**

9-Pin Serial Port	CCITT Signal PC's 9-Pin	DTE Port
2 RXD	<---------RXD ------------	3 TxD
3 TXD	-----------TXD ---------->	2 RxD
5 SGND	-----------SGND ----------	5 SGND

Cables

The RJ-45 ports on the switch support automatic MDI/MDI-X operation, so you can use standard straight-through or crossover twisted-pair 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, 5 100-ohm UTP	100 m (328 ft)	RJ-45
100BASE-TX	Cat. 5 100-ohm UTP	100 m (328 ft)	RJ-45
100BASE-FX	50/125 or 62.5/125 micron core multimode fiber (MM)	2 km (1.24 miles)	SC or ST

Cable specification table

100BASE-TX/10BASE-T Pin Assignments

With a 100BASE-TX/10BASE-T cable, pins 1 and 2 are used for transmitting

data while pins 3 and 6 are used for receiving data.

■ **RJ-45 Pin Assignments**

Pin Number	Assignment
1	Tx+
2	Tx-
3	Rx+
6	Rx-

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

All ports on this switch support automatic MDI/MDI-X operation. In straight-through cables, pins 1, 2, 3, and 6, at one end of the cable, are connected straight through to pins 1, 2, 3 and 6 at the other end of the cable. The table below shows the 10BASE-T/ 100BASE-TX MDI and MDI-X port pin outs:

Pin MDI-X	Signal Name	MDI Signal Name
1	Receive Data plus (RD+)	Transmit Data plus (TD+)
2	Receive Data minus (RD-)	Transmit Data minus (TD-)
3	Transmit Data plus (TD+)	Receive Data plus (RD+)
6	Transmit Data minus (TD-)	Receive Data minus (RD-)