eWorx SE500 Series Switches

User Manual

B+B SmartWorx

Powered by ADVANTECH

Advantech B+B SmartWorx Americas
707 Dayton Road
Ottawa, IL 61350 USA
Phone (815) 433-5100
Fax (815) 433-5105

Advantech B+B SmartWorx European Headquarters
Westlink Commercial Park
Oranmore, Co. Galway, Ireland
Phone +353 91-792444
Fax +353 91-792445

www.advantech-bb.com
support@advantech-bb.com

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DECLARATION OF CONFORMITY

CE

This product has passed the CE test for environmental specifications when shielded cables are used for external wiring. We recommend the use of shielded cables. This kind of cable is available from Advantech. Please contact your local supplier for ordering information.
This product has passed the CE test for environmental specifications. Test conditions for passing included the equipment being operated within an industrial enclosure. In order to protect the product from being damaged by ESD (Electrostatic Discharge) and EMI leakage, we strongly recommend the use of CE-compliant industrial enclosure products.

FCC Class A

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Safety Instructions

- Read these safety instructions carefully.
- Keep this user manual for later reference.
- Disconnect this equipment from any AC outlet before cleaning. Use damp cloth. Do not use liquid or spray detergents for cleaning.
- For plug-in equipment, the power outlet socket must be located near the equipment and must be easily accessible.
- Keep this equipment away from humidity.
- Put this equipment on a reliable surface during installation. Dropping it or letting it fall may cause damage.
- The openings on the enclosure are for air convection. Protect the equipment from overheating. DO NOT COVER THE OPENINGS.
- Make sure the voltage of the power source is correct before connecting the equipment to the power outlet.
- Position the power cord so that people cannot step on it. Do not place anything over the power cord.
- All cautions and warning on the equipment should be noted.
- If the equipment is not used for a long time, disconnect it from the power source to avoid damage by transient over voltage.
- Never pour any liquid into an opening. This may cause fire or electrical shock.
- Never open the equipment. For safety reasons, the equipment should be opened only by qualified service personnel.

- If one of the following situations arises, get the equipment checked by service personnel:
  - The power cord or plug is damaged.
  - Liquid has penetrated into the equipment.
  - The equipment has been exposed to moisture.
  - The equipment does not work well, or you cannot get it to work according to the user manual
  - The equipment has been dropped and damaged.
  - The equipment has obvious signs of breakage.
- Instructions for installation in a pollution Degree 2 environment or equivalent statement.
- PoE requirements:
  This product was in-door used and not connected to outside plant, so user manual shall have the description as below or equivalent: “The equipment is to be connected only to PoE networks without routing to the outside plant.”
- Do NOT LEAVE THIS EQUIPMENT IN AN ENVIRONMENT WHERE THE STORAGE TEMPERATURE MAY GO BELOW -40°C(-40°F) OR ABOVE 75°C(167°F) THIS COULD DAMAGE THE EQUIPMENT. THE EQUIPMENT SHOULD BE IN A CONTROLLED ENVIRONMENT.

PRODUCT WARRANTY – LIMITED LIFETIME

Effective for products of Advantech B+B SmartWorx shipped on or after May 1, 2013, Advantech B+B SmartWorx warrants that each such product shall be free from defects in material and workmanship for its lifetime. This limited lifetime warranty is applicable solely to the original user and is not transferable. Power supplies are exempt from the limited lifetime warranty and are covered by a six year warranty.

This warranty is expressly conditioned upon proper storage, installation, connection, operation and maintenance of products in accordance with their written specifications.

Pursuant to the warranty, within the warranty period, Advantech B+B SmartWorx, at its option will:

1. Replace the product with a functional equivalent;

2. Repair the product; or

3. Provide a partial refund of purchase price based on a depreciated value.

Products of other manufacturers sold by Advantech B+B SmartWorx are not subject to any warranty or indemnity offered by Advantech B+B SmartWorx, but may be subject to the warranties of the other manufacturers.

Notwithstanding the foregoing, under no circumstances shall Advantech B+B SmartWorx have any warranty obligations or any other liability for: (i) any defects resulting from wear and tear, accident, improper use by the buyer or use by any third party except in accordance with the written instructions or advice of the Advantech B+B SmartWorx or the manufacturer of the products, including without limitation surge and overvoltage conditions that exceed specified ratings, (ii) any products which have been adjusted, modified or repaired by any party other than Advantech B+B SmartWorx or (iii) any descriptions, illustrations, figures as to performance, drawings and particulars of weights and dimensions contained in the Advantech B+B SmartWorx' catalogs, price lists, marketing materials or elsewhere since they are merely intended to represent a general idea of the products and do not form part of this price quote and do not constitute a warranty of any kind, whether express or implied, as to any of the Advantech B+B SmartWorx's products.

THE REPAIR OR REPLACEMENT OF THE DEFECTIVE ITEMS IN ACCORDANCE WITH THE EXPRESS WARRANTY SET FORTH ABOVE IS ADVANTECH B+B SMARTWORX SOLE OBLIGATION UNDER THIS WARRANTY. THE WARRANTY CONTAINED IN THIS SECTION SHALL EXTEND TO THE ORIGINAL USER ONLY, IS IN LIEU OF ANY AND ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, AND ALL SUCH WARRANTIES AND INDEMNITIES ARE EXPRESSLY DISCLAIMED, INCLUDING WITHOUT LIMITATION (I) THE IMPLIED WARRANTIES OF FITNESS FOR A PARTICULAR PURPOSE AND OF MERCHANTABILITY AND (II) ANY WARRANTY THAT THE PRODUCTS ARE DO NOT INFRINGE OR VIOLATE THE INTELLECTUAL

PROPERTY RIGHTS OF ANY THIRD PARTY. IN NO EVENT SHALL ADVANTECH B+B SMARTWORX BE LIABLE FOR LOSS OF BUSINESS, LOSS OF USE OR OF DATA INTERRUPTION OF BUSINESS, LOST PROFITS OR GOODWILL OR OTHER SPECIAL, INCIDENTAL, EXEMPLARY OR CONSEQUENTIAL DAMAGES. ADVANTECH B+B SMARTWORX SHALL DISREGARD AND NOT BE BOUND BY ANY REPRESENTATIONS, WARRANTIES OR INDEMNITIES MADE BY ANY OTHER PERSON, INCLUDING WITHOUT LIMITATION EMPLOYEES, DISTRIBUTORS, RESELLERS OR DEALERS OF ADVANTECH B+B SMARTWORX WHICH ARE INCONSISTENT WITH THE WARRANTY, SET FORTH ABOVE.

RETURNS POLICY

Eligible items returned within 30 days of purchase qualify for a full refund (less shipping charges). Advantech B+B SmartWorx has the option to accept returns of products 30 days after the date of purchase and such returns are subject to a restocking fee of up to 20%. Software is not returnable if opened. Advantech B+B SmartWorx will not accept returns of products that were modified by a customer. All custom orders are non-returnable and non-cancelable.

REPAIR SERVICE: We offer a repair service for our products. Please call, FAX, or e-mail to request a Return Material Authorization (RMA) number and routing instructions. Shipping charges and any duties, taxes or brokerage fees are the customer's responsibility.

RETURN AND REPAIR CONTACT INFORMATION

Phone: (815) 433-5100 7:00 AM - 7:00 PM CST

Fax: (815) 433-5109

Email: orders@advantech-bb.com

1 PRODUCT OVERVIEW

1.1 SUPPORTED MODELS

SUPPORTED MODELS
SEC510-2SFP-T
SEG510-2SFP-T
SECP510-2SFP-T
SEGP510-2SFP-T

Table 1: Wide Temperature Models

1.2 SPECIFICATIONS

Specifications	Description	
Interface	I/O Port	8 x RJ45 + 2 x Combo (RJ45/Fiber)
	Power Connector	6-pin removable screw terminal (power & relay)
Physical	Enclosure	Metal Shell
	Protection Class	IP30
	Installation	DIN-Rail and Wall mount
	Dimensions (W x H x D)	74 x 152 x 105mm
LED Display	System LED	SYS, R.M, PWR1, PWR2, Alarm
	Port LED	Speed, Link, Activity
Environment	Operating Temperature	Standard Temperature: -10°C ~ 60°C (14°F ~ 140°F) Wide Temperature: -40°C ~ 75°C (-40°F ~ 167°F)
	Storage	-40°C ~ 85°C (-40°F ~ 185°F)

	Temperature	
	Ambient Relative Humidity	10 ~ 95% (non-condensing)
Switch Properties	MAC Address	8K-entry
	Switching Bandwidth	● SEC510-2SFP-T: 5.6 Gbps ● SECP510-2SFP-T: 5.6 Gbps ● SEG510-2SFP-T: 20 Gbps ● SEGP510-2SFP-T: 20 Gbps
Power	Power Consumption	12.1 W@48Vdc (System)
	Power Input	● SEC510-2SFP-T: 12V~48V (8.4V to 62.4V) ● SECP510-2SFP-T: 24V~48V (16.8V to 62.4V) ● SEG510-2SFP-T: 12V~48V (8.4V to 62.4V) ● SEGP510-2SFP-T: 24V~48V (16.8V to 62.4V)
Certifications	Safety	UL508
	EMC	CE, FCC
	EMI	EN 55011/ 55022 Class A, EN 61000-6-4, FCC Part 15 Subpart B Class A
	EMS	● EN 55024/ EN 61000-6-2 ● EN 61000-4-2 (ESD) Level 3 ● EN 61000-4-3 (RS) Level 3; ● EN 61000-4-4 (EFT) Level 3 ● EN 61000-4-5 (Surge) Level 3; ● EN 61000-4-6 (CS) Level 3 ● EN 61000-4-8 (Magnetic Field) Level 3
	Shock	IEC 60068-2-27
	Freefall	IEC 60068-2-32
	Vibration	IEC 60068-2-6

Table 2: Specifications

1.3 HARDWARE VIEWS

1.3.1 FRONT VIEW

The following view applies to SEC510-2SFP-T and SEG510-2SFP-T.

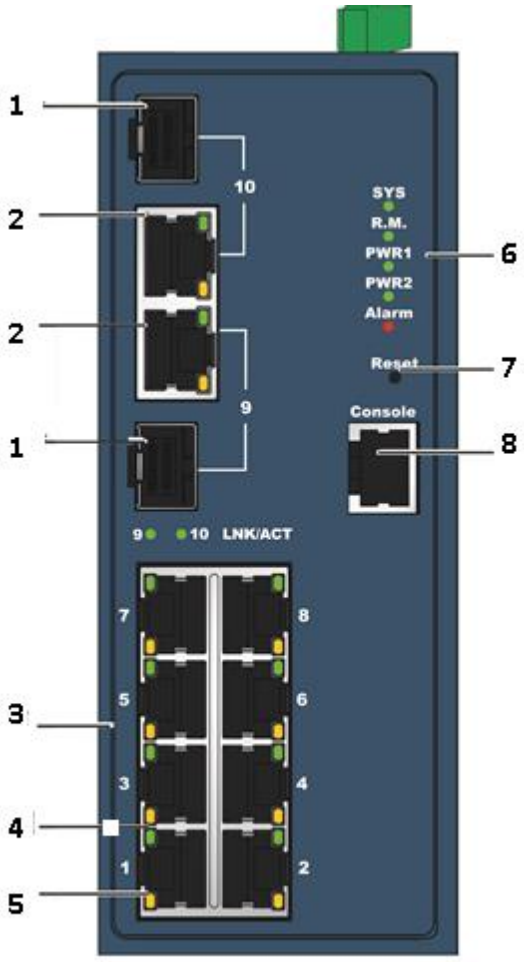

Figure 1: Front View

No.	Item	Description
1	ETH port	Fiber ports x 2
2	ETH port	RJ45 ports x 2
3	ETH port	RJ45 ports x 8
4	LNK/ACT LED	Link activity LED
5	Speed LED	• Orange: 100M • Green: 1G
6	System LED panel	See System LED Panel for further details.
7	Reset button	Button allows for system soft reset or factory default reset.
8	Console serial port	Console cable port to COM port (DB9 male) on computer to RS232 managed switch (RJ45 female).

Table 3: Front View Table

System LED Panel

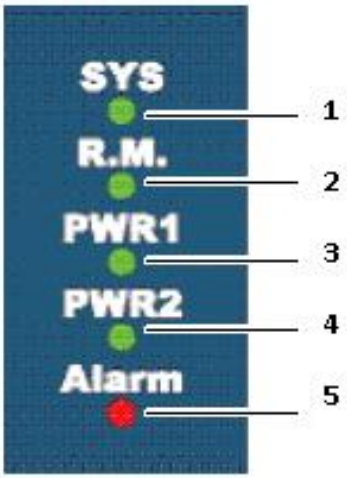

Figure 2: System LED Panel

No.	LED Name	LED Color	Description
1	SYS	Solid green	System is operating normally
		Off	System is powered down / system crash / operation initiating
2	R.M.	Solid green	Active when determining ring master
3	PWR1	Solid green	Powered up
		Off	Powered down or not installed
4	PWR2	Solid green	Powered up
		Off	Power down or not installed
5	Alarm	Solid red	SFP ports is disconnected or the link is down, for port 9 and 10 only
		Off	Normal operation

Table 4: System LED Panel

System LED Panel (only for SECP510-2SFP-T and SEGP510-2SFP-T)

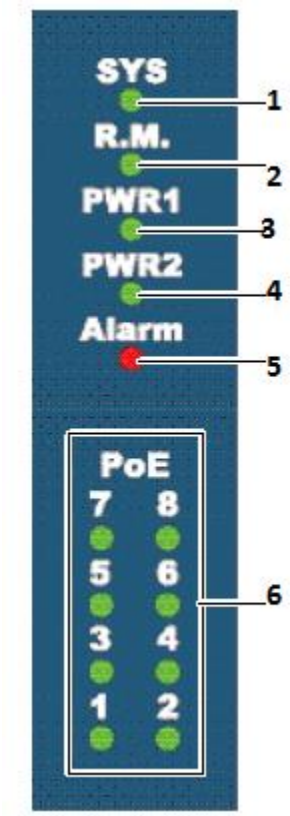

Figure 3: System LED Panel

No.	LED Name	LED Color	Description
1	SYS	Solid green	System is operating normally
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3	PWR1	Solid green	Powered up
		Off	Powered down or not installed
4	PWR2	Solid green	Powered up
		Off	Power down or not installed
5	Alarm	Solid red	SFP port is disconnected or the link is down, for port 9 and 10 only
		Off	Normal operation
6	PoE (depending the PoE ports)	Solid green	PoE activated.
		Off	PoE non-working.

Table 5: System LED Panel

1.3.2 REAR VIEW

The following view applies to SEC510-2SFP-T, SEG510-2SFP-T, SECP510-2SFP-T and SEGP510-2SFP-T.

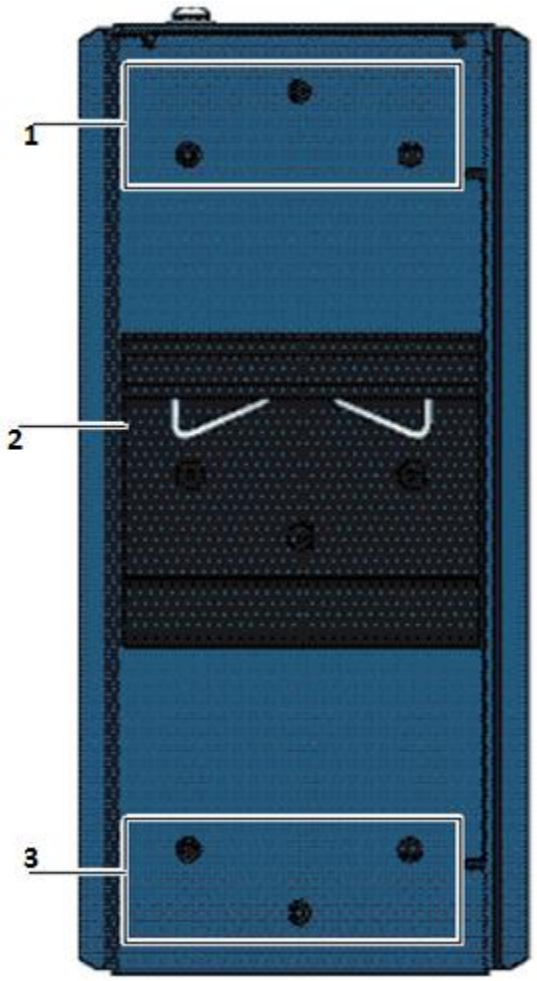

Figure 4: Rear View

No.	Item	Description
1	Wall mounting holes	Screw holes (x6) used in the installation of a wall mounting plate
2	DIN-Rail mounting plate	Mounting plate used for the installation to a standard DIN rail

Table 6: Rear View

1.3.3 TOP VIEW

The following view applies to SEC510-2SFP-T and SEG510-2SFP-T.

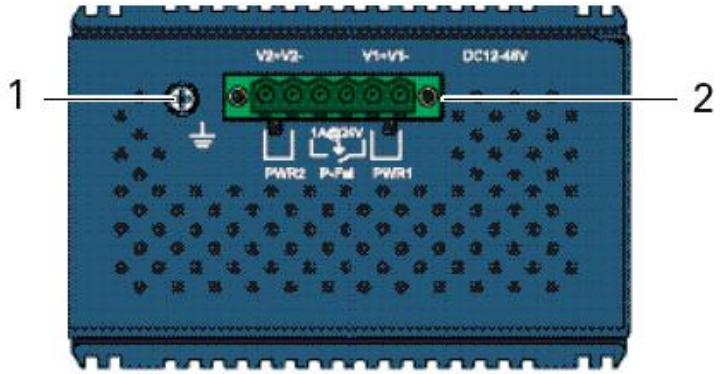

Figure 5: Top View

No.	Item	Description
1	Ground terminal	Screw terminal used to ground chassis
2	Terminal block	Connect cabling for power and alarm wiring

Table 7: Top View

The following view applies SECP510-2SFP-T and SEGP510-2SFP-T.

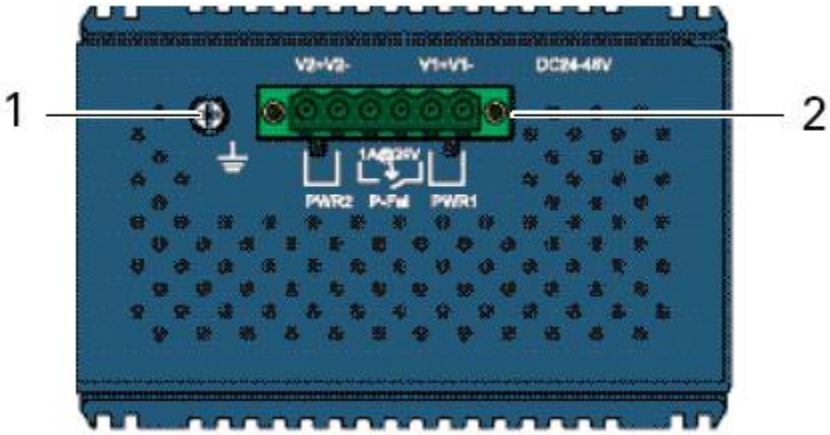

Figure 6: Top View

No.	Item	Description
1	Ground terminal	Screw terminal used to ground chassis
2	Terminal block	Connect cabling for power and alarm wiring

Table 8: Top View

1.4 PACKING LIST

The product package you have received should contain the following items. If any of them are not included or damaged, please contact your local vendor for support.

- 1 x Industrial Ethernet Switch
- 2 x Wall-mounting Bracket
- 1 x DIN-Rail mounting Bracket and Screws
- 1 x Quick Start Guide

Software is downloadable from the website.

2. SWITCH INSTALLATION

2.1 INSTALLATION GUIDELINES

The following guidelines are provided to optimize the device performance. Review the guidelines before installing the device.

- Make sure cabling is away from sources of electrical noise. Radios, power lines, and fluorescent lighting fixtures can interference with the device performance.
- Make sure the cabling is positioned away from equipment that can damage the cables.
- Operating environment is within the ranges listed range, see “Specifications” on page 1.
- Relative humidity around the switch does not exceed 95 percent (noncondensing).
- Altitude at the installation site is not higher than 10,000 feet.
- In 10/100 and 10/100/1000 fixed port devices, the cable length from the switch to connected devices cannot exceed 100 meters (328 feet).
- Make sure airflow around the switch and respective vents is unrestricted. Without proper airflow the switch can overheat. To prevent performance degradation and damage to the switch, make sure there is clearance at the top and bottom and around the exhaust vents.

2.1.1 CONNECTING HARDWARE

In this instruction, it will explain how to find a proper location for your Modbus Gateways, and how to connect to the network, hock up the power cable, and connect to the SE500 Series.

2.2 VERIFYING SWITCH OPERATION

Before installing the device in a rack or on a wall, power on the switch to verify that the switch passes the power-on self-test (POST). To connect the cabling to the power source see 2.7 Power Supply Installation.

At startup (POST), the System LED blinks green, while the remaining LEDs are a solid green. Once the switch passes POST self-test, the System LED turns green. The other LEDs turn off and return to their operating status. If the switch fails POST, the System LED switches to an amber state. After a successful self-test, power down the switch and disconnect the power cabling.

The switch is now ready for installation on its final location.

2.3 INSTALLING THE SWITCH

2.3.1 DIN RAIL MOUNTING

The DIN rail mount option is the quickest installation option. Additionally, it optimizes the use of rail space.

The metal DIN rail kit is secured to the rear of the switch. The device can be mounted onto a standard 35mm (1.37”) x 75 mm (3”) height DIN rail. The devices can be mounted vertically or horizontally. Refer to the following guidelines for further information.

A corrosion-free mounting rail is advisable.

When installing, make sure to allow for enough space to properly install the cabling.

Installing the DIN-Rail Mounting Kit

1. Insert the top back of the mounting bracket over the DIN rail.
2. Push the bottom of the switch towards the DIN rail until it snaps into place.

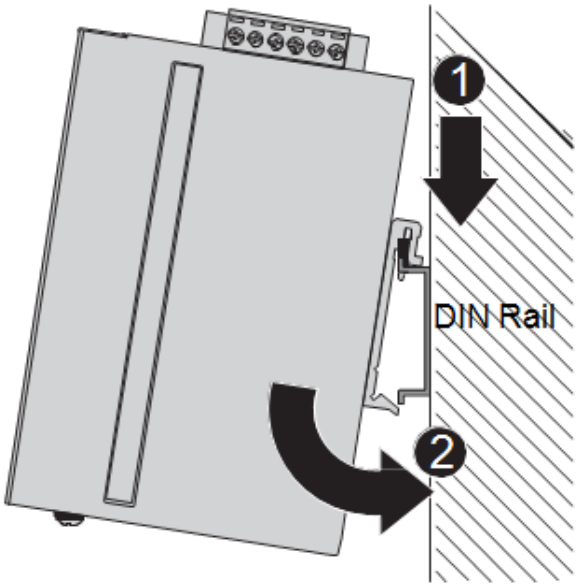

Figure 7: Installing the DIN-Rail Mounting Kit

Removing the DIN-Rail Mounting Kit

1. Push the switch down to free the bottom of the plate from the DIN rail.
2. Rotate the bottom of the device towards you and away from the DIN rail.
3. Once the bottom is clear of the DIN rail, lift the device straight up to unhook it from the DIN rail.

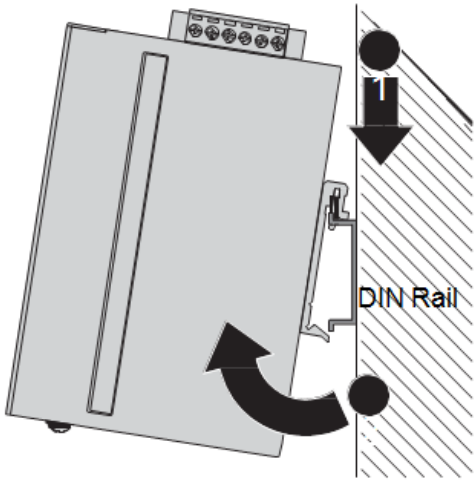

Figure 8: Removing the DIN-Rail

2.3.2 WALL-MOUNTING

The wall mounting option provides better shock and vibration resistance than the DIN rail vertical mount.

When installing, make sure to allow for enough space to properly install the cabling.

Before the device can be mounted on a wall, you will need to remove the DIN rail plate.

1. Rotate the device to the rear side and locate the DIN mounting plate.
2. Remove the screws securing the DIN mounting plate to the rear panel of the switch.
3. Remove the DIN mounting plate. Store the DIN mounting plate and provided screws for later use.
4. Align the wall mounting plates on the rear side. The screw holes on the device and the mounting plates must be aligned, see the following illustration.
5. Secure the wall mount plates with M3 screws, see the following figure.

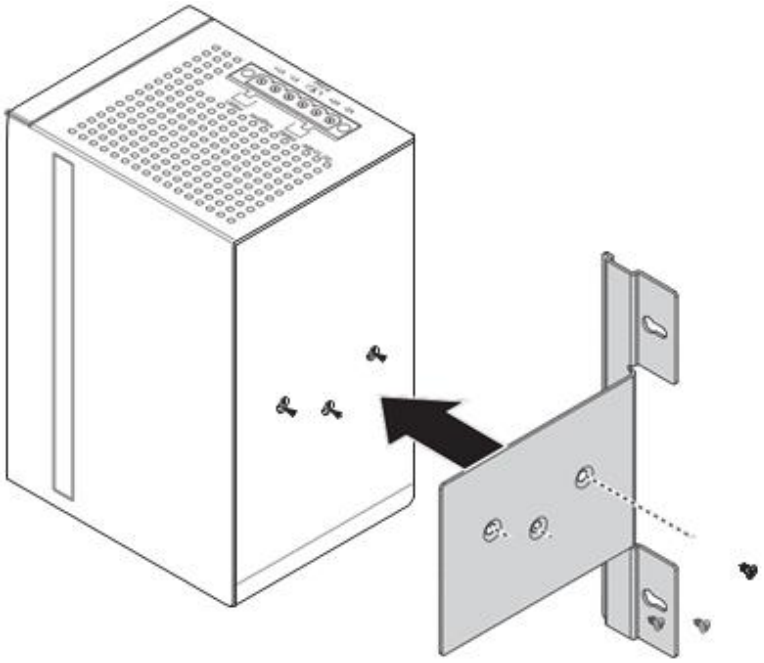

Figure 9: Installing Wall Mount Plates

Once the wall mounting plates are secure on the device, you will need to attach the wall screws (x6).

6. Locate the installation site and place the switch against the wall, making sure it is the final installation location.
7. Use the wall mount plates as a guide to mark the locations of the screw holes.
8. Drill four holes over the four marked locations on the wall, keeping in mind that the holes must accommodate wall sinks in addition to the screws.
9. Insert the wall sinks into the walls.
10. Insert the screws into the wall sinks. Leave a 2 mm gap between the wall and the screw head to allow for wall mount plate insertion.

Figure 10: Securing Wall Mounting Screws

- *Make sure the screws dimensions are suitable for use with the wall mounting plate.*

  Do not completely tighten the screws into the wall. A final adjustment may be needed before fully securing the wall mounting plates on the wall.

11. Align the wall mount plate over the screws on the wall.
12. Install the wall mount plate on the screws and slide it forward to lock in place, see the following figure.

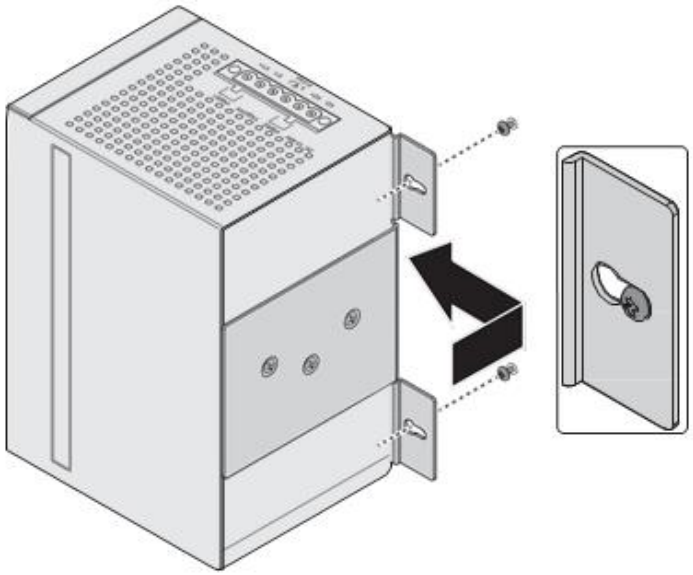

Figure 11: Wall Mount Installation

13. Once the device is installed on the wall, tighten the screws to secure the device.

2.4 INSTALLING AND REMOVING SFP MODULES

Up to two fiber optic ports are available (dependent on model) for use in the switch. Refer to the technical specifications for details.

The Gigabit Ethernet ports on the switch are 100/1000Base SFP Fiber ports, which require using the 100M or 1G mini-GBIC fiber transceivers to work properly. Advantech provides completed transceiver models for different distance requirement.

The concept behind the LC port and cable is quite straight forward. Suppose that you are connecting devices I and II; contrary to electrical signals, optical signals do not require a circuit in order to transmit data. Consequently, one of the optical lines is used to transmit data from device I to device II, and the other optical line is used transmit data from device II to device I, for full-duplex transmission.

Remember to connect the Tx (transmit) port of device I to the Rx (receive) port of device II, and the Rx (receive) port of device I to the Tx (transmit) port of device II. If you make your own cable, we suggest labeling the two sides of the same line with the same letter (A-to-A and B-to-B, as shown below, or A1-to-A2 and B1-to-B2).

This is a Class 1 Eye-Safe Laser/LED product. To avoid causing serious damage to your eyes, do not stare directly into the Laser Beam.

2.4.1 INSTALLING SFP MODULES

To connect the fiber transceiver and LC cable, use the following guidelines:

1. Remove the dust plug from the fiber optic slot chosen for the SFP transceiver.

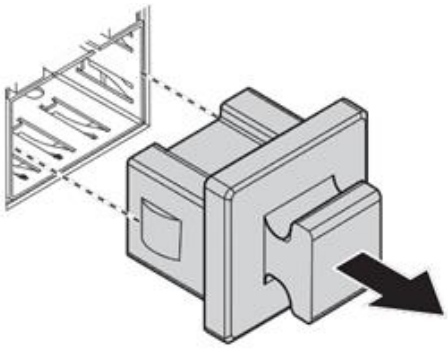

Figure 12: Removing the Dust Plug from an SFP Slot

Do not remove the dust plug from the SFP slot if you are not installing the transceiver at this time. The dust plug protects hardware from dust contamination.

2. Position the SFP transceiver with the handle on top, see the following figure.
3. Locate the triangular marking in the slot and align it with the bottom of the transceiver.
4. Insert the SFP transceiver into the slot until it clicks into place.
5. Make sure the module is seated correctly before sliding the module into the slot.
   A click sounds when it is locked in place.

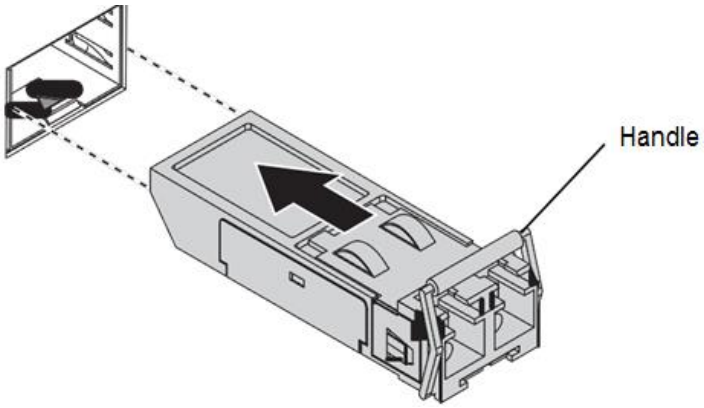

Figure 13: Installing an SFP Transceiver

If you are attaching fiber optic cables to the transceiver, continue with the following step. Otherwise, repeat the previous steps to install the remaining SFP transceivers in the device.

6. Remove the protective plug from the SFP transceiver.

Do not remove the dust plug from the transceiver if you are not installing the fiber optic cable at this time. The dust plug protects hardware from dust contamination.

7. Insert the fiber cable into the transceiver. The connector snaps into place and locks.

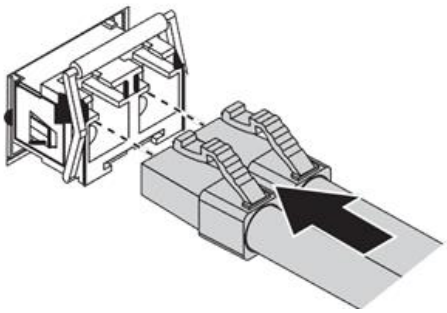

Figure 14: Attaching a Fiber Optic Cable to a Transceiver

8. Repeat the previous procedures to install any additional SFP transceivers in the switch.

The fiber port is now set up.

2.4.2 REMOVING SFP MODULES

To disconnect an LC connector, use the following guidelines:

1. Press down and hold the locking clips on the upper side of the optic cable.
2. Pull the optic cable out to release it from the transceiver.

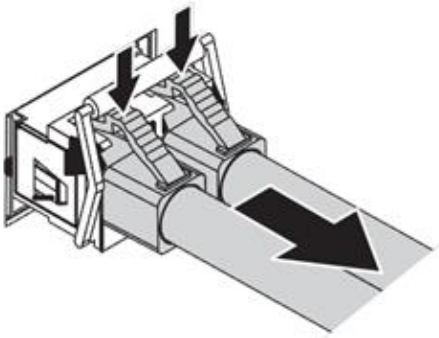

Figure 15: Removing a Fiber Optic Cable to a Transceiver

3. Hold the handle on the transceiver and pull the transceiver out of the slot.

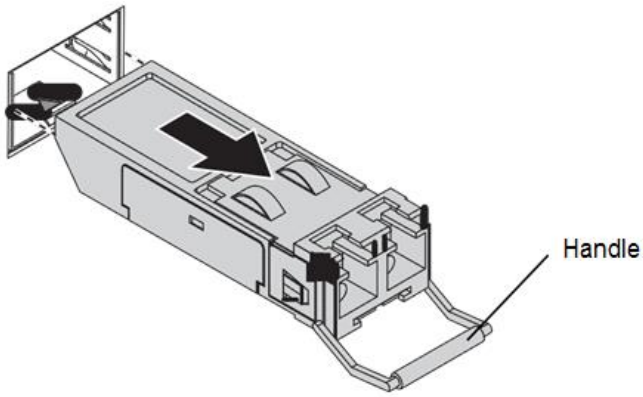

Figure 16: Removing an SFP Transceiver

Replace the dust plug on the slot if you are not installing a transceiver. The dust plug protects hardware from dust contamination.

2.5 CONNECTING THE SWITCH TO ETHERNET PORTS

2.5.1 RJ45 ETHERNET CABLE WIRING

For RJ45 connectors, data-quality, twisted pair cabling (rated CAT5 or better) is recommended. The connector bodies on the RJ45 Ethernet ports are metallic and connected to the GND terminal. For best performance, use shielded cabling. Shielded cabling may be used to provide further protection.

Straight-thru Cable Wiring		Cross-over Cable Wiring	
Pin1	Pin 1	Pin 1	Pin 3
Pin 2	Pin 2	Pin 2	Pin 6
Pin 3	Pin 3	Pin 3	Pin 1
Pin 6	Pin 6	Pin 6	Pin 2

Table 9: RJ45 Ethernet Wiring for Reference

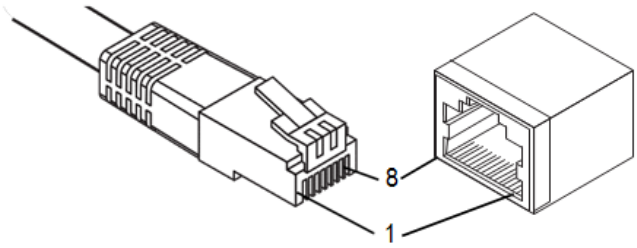

Figure 17: Ethernet Plug & Connector Pin Position

Maximum cable length: 100 meters (328 ft.) for 10/100/1000BaseT.

2.6 CONNECTING THE SWITCH TO CONSOLE PORT

The industrial switch supports a secondary means of management. By connecting the RJ45 to RS232 serial cable between a COM port on your PC (9-pin D-sub female) and the switch's RJ45 (RJ45) port, a wired connection for management can be established.

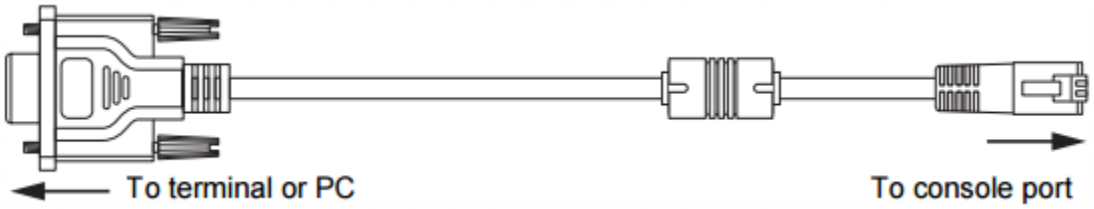

Figure 18: Serial Console Cable

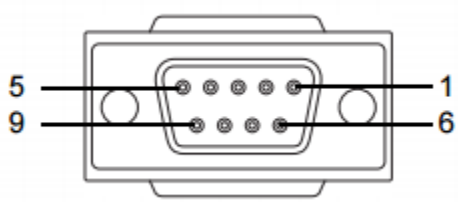

Figure 19: DB 9 Pin Position

DB9 Connector	RJ45 Connector
NC	1. Orange/White
NC	2. Orange
2	3. Green/White
NC	4. Blue
5	5. Blue/White
3	6. Green
NC	7. Brown/White
NC	8. Brown

Table 10: Pin Assignment

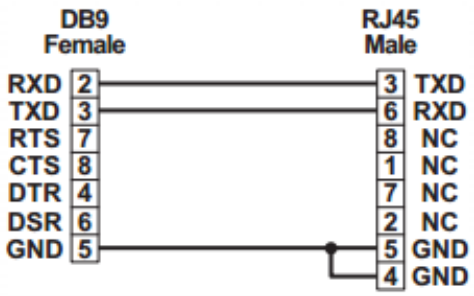

Figure 20: Pin Assignment

2.7 POWER SUPPLY INSTALLATION

2.7.1 OVERVIEW

Power down and disconnect the power cord before servicing or wiring the switch

Do not disconnect modules or cabling unless the power is first switched off.
The device only supports the voltage outlined in the type plate. Do not use any other power components except those specifically designated for the switch device.

Disconnect the power cord before installation or cable wiring.

The switches can be powered by using the same DC source used to power other devices. A DC voltage range of 12 to 48 VDC (Non PoE) or 24 to 48 VDC (PoE) must be applied between the V1+ terminal and the V1- terminal (PW1), see the following illustrations. A Class 2 power supply is required to maintain a UL60950 panel listing. The chassis ground screw terminal should be tied to the panel or chassis ground. A redundant power configuration is supported through a secondary power supply unit to reduce network down time as a result of power loss.

SEC510-2SFP-T and SEG510-2SFP-T support 12 to 48 VDC and SECP510-2SFP-T and SEGP510-2SFP-T support 24 to 48 VDC. Dual power inputs are supported and allow you to connect a backup power source.

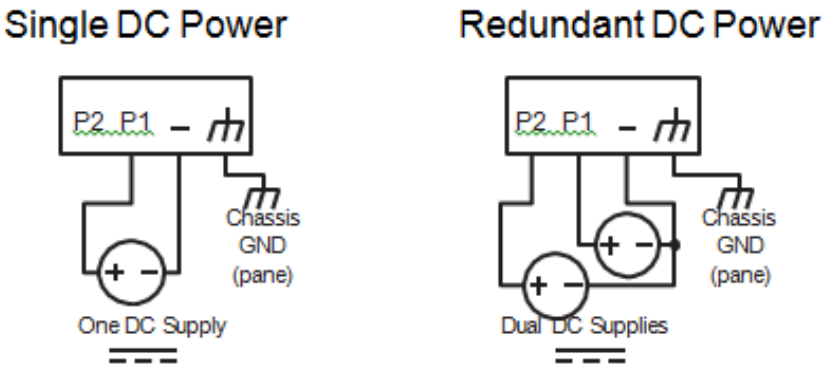

Figure 21: Power Wiring for SE500 Series

2.7.2 CONSIDERATIONS

Take into consideration the following guidelines before wiring the device:

- The Terminal Block (CN1) is suitable for 12-24 AWG (3.31 - 0.205 mm^2). Torque value 7 lb-in.
- The cross sectional area of the earthing conductors shall be at least 3.31 mm^2.
- Calculate the maximum possible current for each power and common wire. Make sure the power draw is within limits of local electrical code regulations.
- For best practices, route wiring for power and devices on separate paths.
- Do not bundle together wiring with similar electrical characteristics.
- Make sure to separate input and output wiring.
- Label all wiring and cabling to the various devices for more effective management and servicing.

Routing communications and power wiring through the same conduit may cause signal interference. To avoid interference and signal degradation, route power and communications wires through separate conduits

2.73 GROUNDING THE DEVICE

Do not disconnect modules or cabling unless the power is first switched off.
The device only supports the voltage outlined in the type plate. Do not use any other power components except those specifically designated for the switch device.

Before connecting the device properly ground the device. Lack of a proper grounding setup may result in a safety risk and could be hazardous.

Do not service equipment or cables during periods of lightning activity.

Do not service any components unless qualified and authorized to do so.

Do not block air ventilation holes.

Electromagnetic Interference (EMI) affects the transmission performance of a device. By properly grounding the device to earth ground through a drain wire, you can setup the best possible noise immunity and emissions.

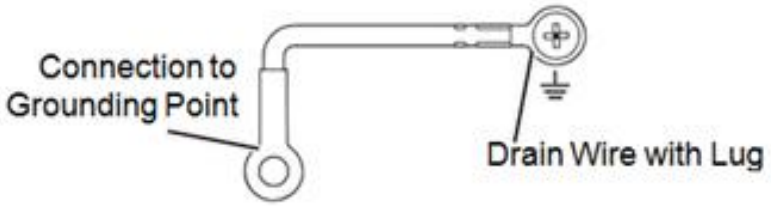

Figure 22: Grounding Connection

By connecting the ground terminal by drain wire to earth ground the switch and chassis can be ground.

Before applying power to the grounded switch, it is advisable to use a volt meter to ensure there is no voltage difference between the power supply's negative output terminal and the grounding point on the switch.

2.7.4 WIRING A RELAY CONTACT

The following section details the wiring of the relay output. The terminal block on the SE500 Series is wired and then installed onto the terminal receptor located on the SE500 Series.

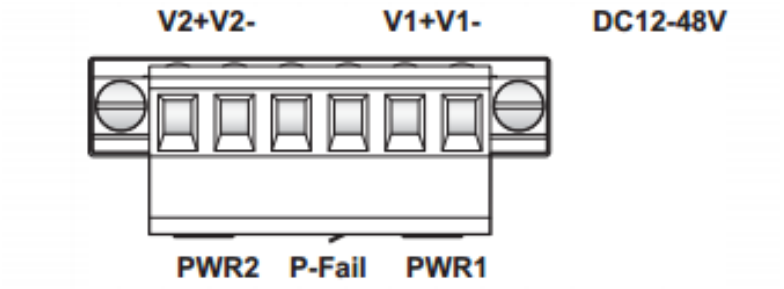

Figure 23: Terminal Receptor for Non-PoE models

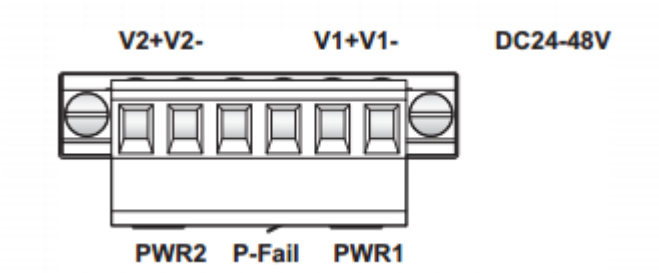

Figure 24: Terminal Receptor: Relay Contact for PoE models

The terminal receptor includes a total of six pins: two for PWR1, two for PWR2 and two for a fault circuit.

2.7.5 WIRING THE POWER INPUTS

Do not disconnect modules or cabling unless the power is first switched off.
The device only supports the voltage outlined in the type plate. Do not use any other power components except those specifically designated for the switch device.

Power down and disconnect the power cord before servicing or wiring the switch.

There are two power inputs for normal and redundant power configurations. The power input 2 is used for wiring a redundant power configuration. See the following for terminal block connector views.

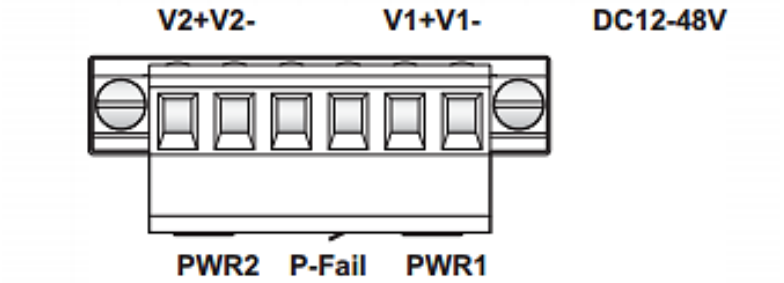

Figure 25: Terminal Receptor: Power Input Contacts for Non PoE models

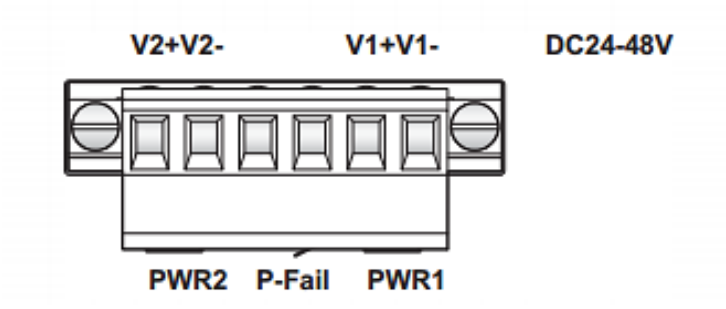

Figure 26: Terminal Receptor: Power Input Contacts for PoE models

To wire the power inputs:

Make sure the power is not connected to the switch or the power converter before proceeding.

1. Loosen the screws securing terminal block to the terminal block receptor.
2. Remove the terminal block from the switch.

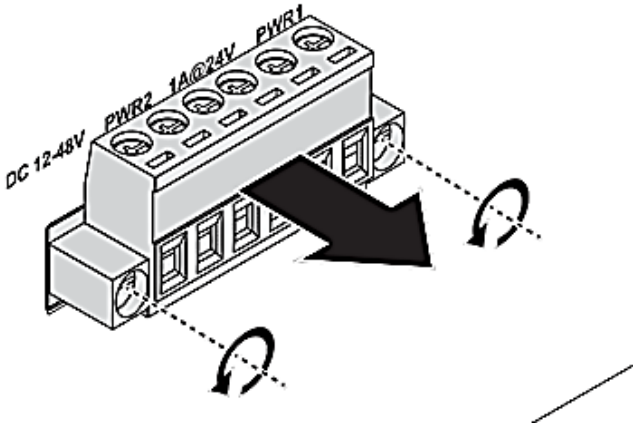

Figure 27: Removing a Terminal Block

3. Insert a small flat-bladed screwdriver in the V1+/V1- wire-clamp screws, and loosen the screws.
4. Insert the negative/positive DC wires into the V+/V- terminals of PW1. If setting up power redundancy, connect PW2 in the same manner.
5. Tighten the wire-clamp screws to secure the DC wires in place.

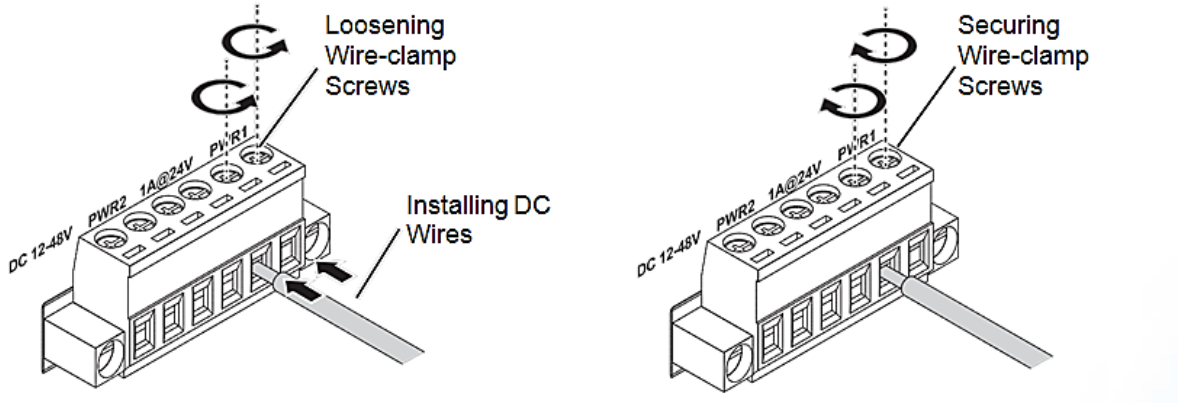

Figure 28: Installing DC Wires in a Terminal Block

6. Align the terminal block over the terminal block receptor on the switch.
7. Insert the terminal block and press it in until it is flush with the terminal block receptor.
8. Tighten the screws on the terminal block to secure it to the terminal block receptor.
   If there is no gap between the terminal block and the terminal receptor, the terminal block is seated correctly.

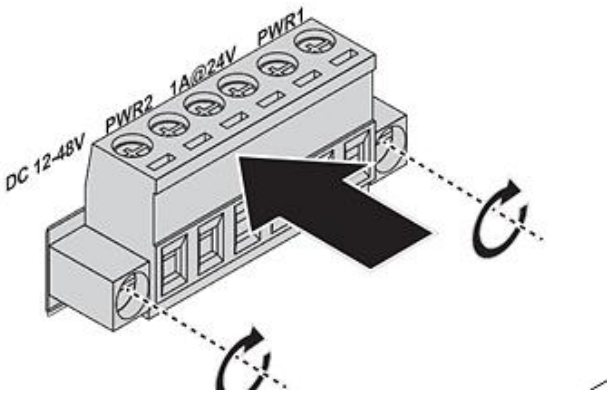

Figure 29: Securing a Terminal Block to a Receptor

2.8 RESET BUTTON

Reset configuration to factory default:

Press and hold Reset button for 5 seconds.

System reboot:

Press and hold Reset button for 2 seconds.

Do NOT power off the Ethernet switch when loading default settings.

3. CONFIGURATION UTILITY

3. FIRST TIME SETUP

3.1.1 OVERVIEW

The Industrial Ethernet Managed Switch is a configurable device that facilitates the interconnection of Ethernet devices on an Ethernet network. This includes computers, operator interfaces, I/O, controllers, RTUs, PLCs, other switches/hubs or any device that supports the standard IEEE 802.3 Ethernet protocol.

This switch has all the capabilities of a store and forward Ethernet switch plus advanced management features such as SNMP, RSTP and port mirroring. This manual details how to configure the various management parameters in this easy to use switch.

3.1.2 INTRODUCTION

To take full advantage of all the features and resources available from the switch, it must be configured for your network.

The switch implements Rapid Spanning Tree Protocol (RSTP) and Simple Network Management Protocol (SNMP) to provide most of the services offered by the switch. Rapid Spanning Tree Protocol allows managed switches to communicate with each other to ensure that there exists only one active route between each pair of network nodes and provides automatic failover to the next available redundant route. A brief explanation of how RSTP works is given in the Spanning Tree section.

The switch is capable of communicating with other SNMP capable devices on the network to exchange management information. This statistical/derived information from the network is saved in the Management Information Base (MIB) of the switch. The MIB is divided into several different information storage groups. These groups will be elaborated in detail in the Management and SNMP information section of this document. The switch implements Internet Group Management Protocol (IGMP) to optimize the flow of multicast traffic on your network.

The switch supports both port-based and tag-based Virtual LANs for flexible integration with VLAN-aware networks with support for VLAN-unaware devices.

3.1.3 ADMINISTRATIVE INTERFACE ACCESS

There are several administrative interfaces to the switch:

This is the recommended method for managing the switch.

- A terminal interface via the RS232/USB port or over the network using telnet or Secure Shell (SSH).
- An SNMP interface can be used to read/write many settings.
- Command Line Interface (CLI) can be used to read/write most settings. Initial setup must be done using an Ethernet connection (recommended) or the serial port.

3.1.4 USING THE GRAPHICAL (WEB) INTERFACE

The graphical interface is provided via a web server in the switch and can be accessed via a web browser such as Opera, Mozilla, Internet Explorer or Google Chrome.

JavaScript must be supported and enabled in your browser for the graphical interface to work correctly.

HTTP and HTTPS (secure HTTP) are supported for access to the web server. By default, both protocols are enabled. Either or both may be disabled to secure the switch. (See the Remote Access Security topic in this section.)

To access the graphical interface, enter a URL like HTTP://192.168.1.1 in your browser's address bar. Replace “http” with “https” to use secure http and replace “192.168.1.1” with your switch's IP address if you've changed it from the factory default.

The web server in the switch uses a signed security certificate. When you access the server via https, you may see a warning dialog indicating that the certificate was signed by an unknown authority. This is expected and to avoid this message in the future you can choose to install the certificate on your computer.

This manual describes and depicts the web user interface in detail. The terminal interface is not specifically shown but is basically the same.

3.1.5 CONFIGURING THE SWITCH FOR NETWORK ACCESS

To control and monitor the switch via the network, it must be configured with basic network settings, including an IP address and subnet mask. Refer to the quick start guide in Section 1 for how to initially access your switch.

To configure the switch for network access, select [Add Menu Address Here] to reach the System Settings menu. The settings in this menu control the switch's general network configuration.

- DHCP Enabled/Disabled: The switch can automatically obtain an IP address from a server using the Dynamic Host Configuration Protocol (DHCP). This can speed up initial set up, as the network administrator does not have to find an open IP address.
- IP Address and subnet mask configuration: The IP address for the switch can be changed to a user-defined address along with a customized subnet mask to separate subnets.

Advanced users can set the IP address to 0.0.0.0 to disable the use of an IP address for additional security. However, any features requiring an IP address (i.e., web interface, etc.) will no longer be available.

- Default Gateway Selection: A Gateway Address is chosen to be the address of a router that connects two different networks. This can be an IP address or a Fully Qualified Domain Name (FQDN) such as “domainname.org”.
- NTP Server: The IP address or domain name of an NTP (Network Time Protocol) server from which the switch may retrieve the current time at startup. Please note that using a domain name requires that at least one domain name server be configured.

3.1.6 CONFIGURING THE ETHERNET PORTS

The switch comes with default port settings that should allow you to connect to the Ethernet Ports without any necessary configuration. Should there be a need to change the name of the ports, negotiation settings or flow control settings, you can do this in the Port Configuration menu. Access this menu by selecting Setup from the Main menu, and then selecting Main Settings.

- Port Name: Each port in the managed switch can be identified with a custom name. Specify a name for each port here.
- Admin: Ports can be enabled or disabled in the managed switch. For ports that are disabled, they are virtually non-existent (not visible in terms of switch operation or spanning tree algorithm). Choose to enable or disable a port by selecting Enabled or Disabled, respectively.
- Negotiation: All copper ports and gigabit fiber ports in the managed switch are capable of auto negotiation such that the fastest bandwidth is selected. Choose to enable auto-negotiation or use fixed settings. 100Mbps Fiber ports are Fixed speed only.
- Speed/Duplex/Flow Control: The managed switch accepts three local area network Ethernet Standards. The first standard, 10BASE-T, runs 10Mbps with twisted pair Ethernet cable between network interfaces. The second local area network standard is 100BASE-T, which runs at 100Mbps over the same twisted pair Ethernet cable. Lastly, there is 100BASE-F, which enables fast Ethernet (100Mbps) over fiber.

These options are available:

- 10h–10 Mbps, Half Duplex
- 10f –10 Mbps, Full Duplex
- 100h–100 Mbps, Half Duplex
- 100f –100 Mbps, Full Duplex
- 1000f–1000 Mbps, Full Duplex

On managed switches with gigabit combination ports, those ports with have two rows, a standard row of check boxes and a row labeled “SFP” with radio buttons. The SFP setting independently sets the speed at which a transceiver will operate if one is plugged in. Otherwise, the switch will use the fixed Ethernet port and the corresponding settings for it.

When 100f is selected for the SFP of a gigabit combination port, the corresponding fixed Ethernet jack will be disabled unless it is changed back to 1000F.

3.2 COMMAND LINE INTERFACE CONFIGURATION

3.2.1 INTRODUCTION TO COMMAND-LINE INTERFACE (CLI)

The command-line interface (CLI) is constructed with an eye toward automation of CLI-based configuration. The interaction is modeled on that used in many Internet protocols such as Telnet, FTP, and SMTP. After each command is entered and processed, the switch will issue a reply that consists of a numeric status code and a human-readable explanation of the status.

The general format of commands is:

section parameter [value]

where:

- section is used to group parameters.
- parameter will specify the parameter within the section. For example, the network section will have parameters for DHCP, IP address, subnet mask, and default gateway.
- value is the new value of the parameter. If value is omitted, the current value is displayed.

Please note that new values will not take effect until explicitly committed.

Sections and parameter names are case sensitive (e.g., “Network” is not the same as “network”).

Any commands in the CLI Commands section of this chapter, with the exception of the global commands, must be prefaced with the name of the section they are in. For example, to change the IP address of the switch, you would type:

network address <newIP>

3.2.2 ACCESSING THE CLI

To access the CLI interface, establish Ethernet or serial connectivity to the switch.

To connect by Ethernet, open a command prompt window and type:

telnet <switchip> (where <switchip> is the IP address of the switch)

At the login prompt, type “cli” for the username and “admin” for the password. The switch will respond with “Managed switch configuration CLI ready”.

3.3 WEB BROWSER CONFIGURATION

The switch has an HTML based user interface embedded in the flash memory. The interface offers an easy to use means to manage basic and advanced switch functions. The interface allows for local or remote switch configuration anywhere on the network.

The interface is designed for use with [Internet Explorer (6.0), Chrome, Firefox].

3.3.1 PREPARING FOR WEB CONFIGURATION

The interface requires the installation and connection of the switch to the existing network. A PC also connected to the network is required to connect to the switch and access the interface through a web browser. The required networking information is provided as follows:

- IP address: 192.168.1.1
- Subnet mask: 255.255.255.0
- Default gateway: 192.168.1.254
- User name: admin
- Password: admin

3.3.2 SYSTEM LOGIN

Once the switch is installed and connected, power on the switch. The following information guides you through the logging in process.

1. Launch your web browser on the PC.
2. In the browser's address bar, type the switch's default IP address (192.168.1.1).

   The login screen displays.
3. Enter the user default name and password (admin / admin).
4. Click **OK** on the login screen to log in.

   The main interface displays.

4.0 MANAGING THE SWITCH

4.1. LOG IN

To access the login window, connect the device to the network, see “Connecting the Switch to Ethernet Ports” on page 19. Once the switch is installed and connected, power on the switch see the following procedures to log into your switch.

When the switch is first installed, the default network configuration is set to DHCP enabled. You will need to make sure your network environment supports the switch setup before connecting it to the network.

1. Launch your web browser on a computer.
2. In the browser’s address bar type in the switch’s default IP address (192.168.1.1). The login screen displays.
3. Enter the default user name and password (admin/admin) to log into the management interface. You can change the default password after you have successfully logged in.
4. Click **Login** to enter the management interface.

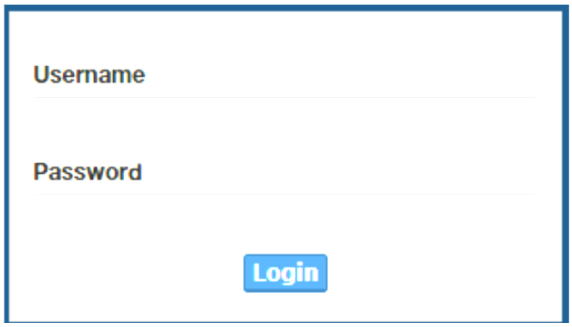

Figure 30: Login Screen

4.2 RECOMMENDED PRACTICES

One of the easiest things to do to help increase the security posture of the network infrastructure is to implement a policy and standard for secure management. This practice is an easy way to maintain a healthy and secure network.

After you have performed the basic configurations on your switches, the following is a recommendation which is considered a best practice policy.

4.2.1 CHANGING DEFAULT PASSWORD

In keeping with good management and security practices, it is recommended that you change the default password as soon as the device is functioning and setup correctly. The following details the necessary steps to change the default password.

To change the password:

1. Navigate to **Tools** > **User Account**.
2. From the User drop-down menu, select the Admin (default) account.
3. In the **User Name** field, enter admin for this account. It is not necessary to change the user name, however, a change in the default settings increases the security settings.
4. In the **Password** field, type in the new password. Re-type the same password in the **Retype Password** field.
5. Click **Apply** to change the current account settings.

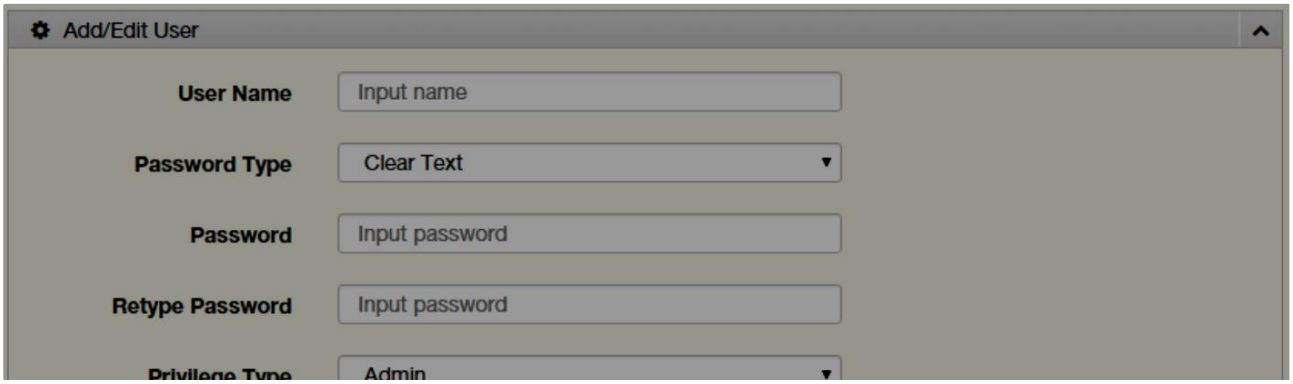

Figure 31: Changing a Default Password

After saving all the desired settings, perform a system save (**Tools** > **Save Configuration**). The changes are saved.

4.3 MONITORING

4.3.1 DEVICE INFORMATION

The Device Information menu lists information, such as: System Name, System Location, MAC Address, Firmware version, and more, pertaining to the system. The information is for review only. To modify the device information, see the respective item within the user interface.

To access this page, click **Monitoring** > **Device Information**.

Device Information

Information Name	Information Value
System Name	Switch
System Location	Default
System Contact	Default
MAC Address	00:D0:C9:F5:31:0B
IP Address	192.168.1.156
Subnet Mask	255.255.255.0
Gateway	192.168.1.1
Loader Version	1.0.0.48895
Loader Date	Sep 02 2015 - 13:26:50
Firmware Version	1.00.21
Firmware Date	Sep 02 2015 - 13:27:32
System Object ID	1.3.6.1.4.1.10297.202.7000
System Up Time	0 days, 4 hours, 31 mins, 13 secs

Figure 32: Monitoring > Device Information

The following table describes the items in the previous figure.

Item	Description
System Name	Click **Switch** to enter the system name: up to 128 alphanumeric characters (default is Switch).
System Location	Click **Default** to enter the location: up to 256 alphanumeric characters (default is Default).
System Contact	Click **Default** to enter the contact person: up to 128 alphanumeric characters (default is Default).
MAC Address	Displays the MAC address of the switch.
IP Address	Displays the assigned IP address of the switch.
Subnet Mask	Displays the assigned subnet mask of the switch.
Gateway	Displays the assigned gateway of the switch.
Loader Version	Displays the current loader version of the switch.
Loader Date	Displays the current loader build date of the switch.
Firmware Version	Displays the current firmware version of the switch.
Firmware Date	Displays the current firmware build date of the switch.
System Object ID	Displays the base object ID of the switch.
System Up Time	Displays the time since the last switch reboot.

Table 11: Monitoring > Device Information

4.3.2 LOGGING MESSAGE

The Logging Message Filter page allows you to enable the display of logging message filter.

To access this page, click **Monitoring** > **Logging Message**.

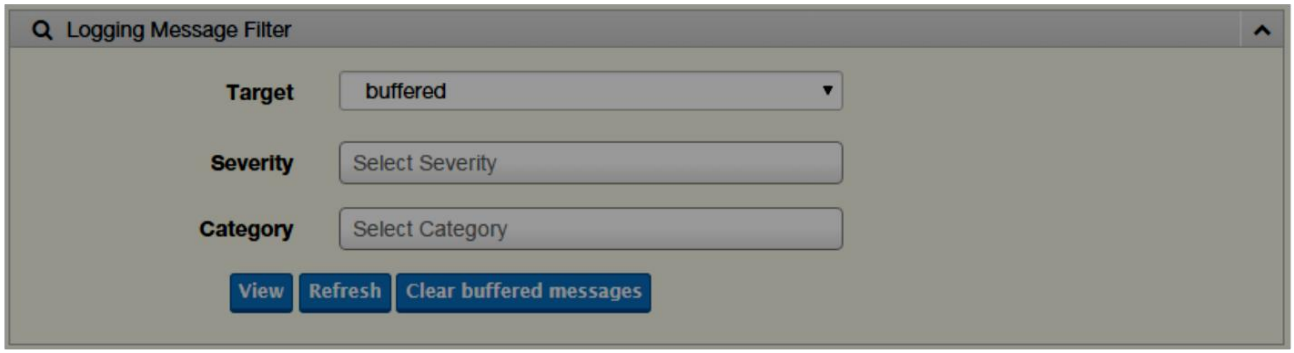

Figure 33: Monitoring > Logging Message

The following table describes the items in the previous figure.

Item	Description
Target	Click the drop-down menu to select a target to store the log messages. Buffered: Store log messages in RAM. All log messages are cleared after system reboot. File: Store log messages in a file.
Severity	The setting allows you to designate a severity level for the Logging Message Filter function. Click the drop-down menu to select the severity level target setting. The level options are: ● emerg: Indicates system is unusable. It is the highest level of severity. ● alert: Indicates action must be taken immediately. ● crit: Indicates critical conditions. ● error: Indicates error conditions. ● warning: Indicates warning conditions. ● notice: Indicates normal but significant conditions. ● info: Indicates informational messages. ● debug: Indicates debug-level messages.
Category	Click the drop-down menu to select the category level target setting.
View	Click **View** to display all Logging Information and Logging Message information.
Refresh	Click **Refresh** to update the screen.
Clear buffered messages	Click **Clear buffered messages** to clear the logging buffer history list.

Table 12: Monitoring > Logging Message

4.3.3 PORT MONITORING

Port Network Monitor is a bandwidth and network monitoring tool for the purpose of capturing network traffic and measuring of network throughput. The monitoring functionality includes listing of port statistics as well as port utilization.

Port Statistics

To access this page, click **Monitoring** > **Port Monitoring** > **Port Statistics**.

Figure 34: Monitoring > Port Monitoring > Port Statistics

The following table describes the items in the previous figure.

Item	Description
Port	Click the drop-down menu to select a port and its captured statistical setting values.
Clear	Click **Clear** to clear the counter selections.

Table 13: Monitoring > Port Monitoring > Port Statistics

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Port Utilization

To access this page, click **Monitoring** > **Port Monitoring** > **Port Utilization**.

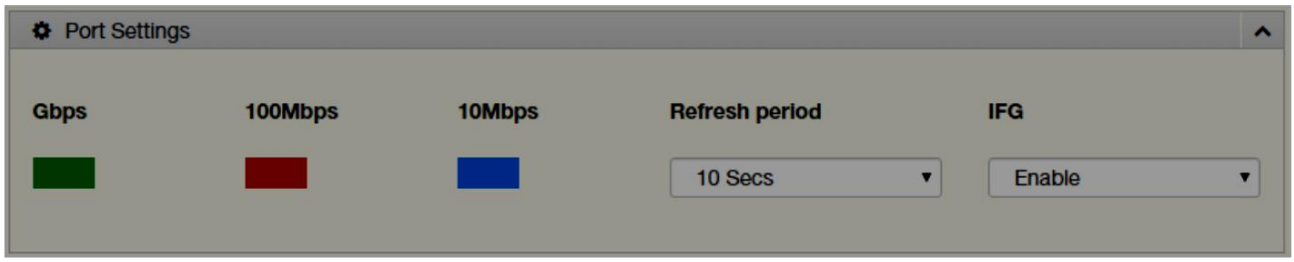


Figure 35: Monitoring > Port Monitoring > Port Utilization

The following table describes the items in the previous figure.

Item	Description
Refresh period	Click the drop-down menu to select and designate a period (second intervals) to refresh the information (TX and RX) listings.
IFG	Click the drop-down menu to enable or disable the Interframe Gap (IFG) statistic.

Table 14: Monitoring > Port Monitoring > Port Utilization

4.3.4 LINK AGGREGATION

The Link Aggregation function provides LAG information for each trunk. It displays membership status, link state and membership type for each port.

To access this page, click **Monitoring** > **Link Aggregation**.

4.3.5 LLDP STATISTICS

The LLDP Statistics page displays the LLDP statistics.

To access this page, click **Monitoring** > **LLDP Statistics**.

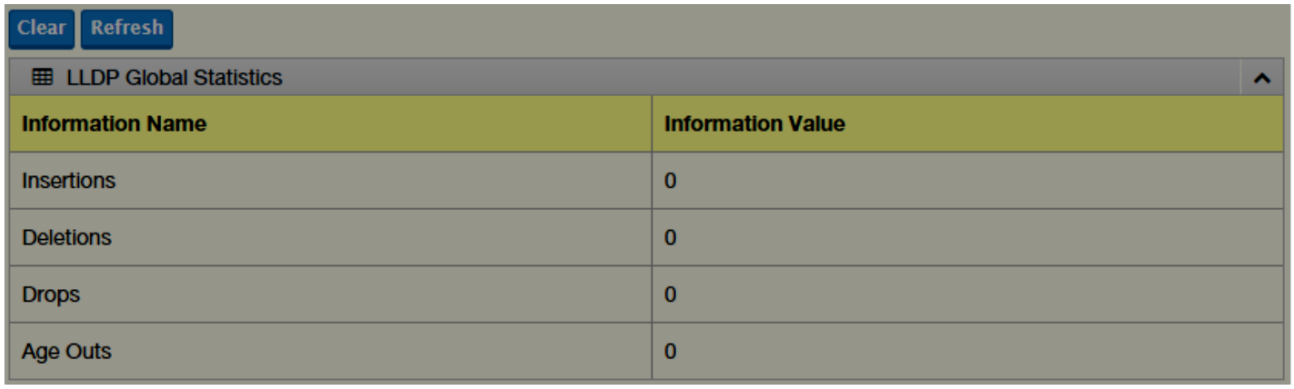


Figure 36: Monitoring > LLDP Statistics

The following table describes the items in the previous figure.

Item	Description
Clear	Click **Clear** to reset LLDP Statistics of all the interfaces.
Refresh	Click **Refresh** to update the data on the screen with the present state of the data in the switch.

Table 15: Monitoring > LLDP Statistics

4.3.6 IGMP STATISTICS

The IGMP Statistics function displays statistical package information for IP multicasting.

To access this page, click **Monitoring** > **IGMP Statistics**.

Clear Refresh

IGMP Statistics

Statistics Packets	Counter
Total RX	0
Valid RX	0
Invalid RX	0
Other RX	0
Leave RX	0
Report RX	0
General Query RX	0
Special Group Query RX	0
Special Group & Source Query RX	0
Leave TX	0
Report TX	0
General Query TX	0
Special Group Query TX	0
Special Group & Source Query TX	0

Table 16: Monitoring > IGMP Statistics

The following table describes the items in the previous figure.

Item	Description
Clear	Click **Clear** to refresh IGMP Statistics of all the interfaces.
Refresh	Click **Refresh** to update the data on the screen with the present state of the data in the switch.

Table 17: Monitoring > IGMP Statistics

4.4 SYSTEM

4.4.1 IP SETTINGS

The IP Settings menu allows you to select a static or DHCP network configuration. The Static displays the configurable settings for the static option.

To access this page, click **System** > **IP Settings**.

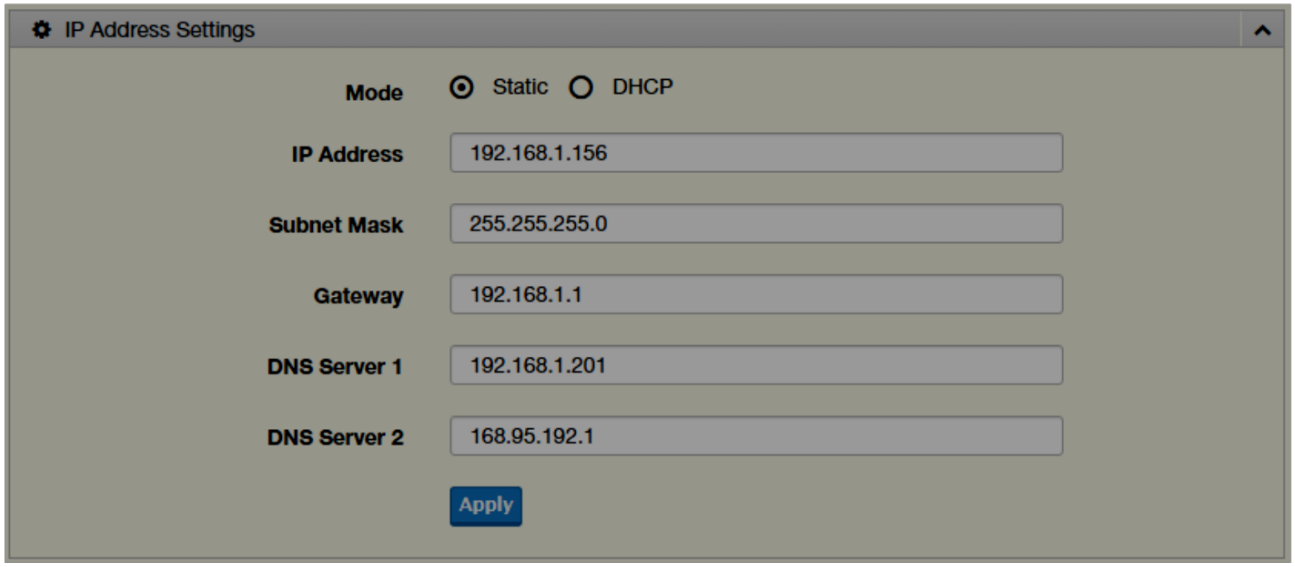


Figure 37: System > IP Settings

The following table describes the items in the previous figure.

Item	Description
Mode	Click the radio button to select the IP Address Setting mode: Static or DHCP.
IP Address	Enter a value to specify the IP address of the interface. The default is 192.168.1.1.
Subnet Mask	Enter a value to specify the IP subnet mask for the interface. The default is 255.255.255.0.
Gateway	Enter a value to specify the default gateway for the interface. The default is 192.168.1.254.
DNS Server 1	Enter a value to specify the DNS server 1 for the interface. The default is 168.95.1.1.
DNS Server 2	Enter a value to specify the DNS server 2 for the interface. The default is 168.95.192.1.
Apply	Click **Apply** to save the values and update the screen.

Table 18: System > IP Setting

4.4.2 DHCP CLIENT OPTION 82

The DHCP Client Option 82 configurable Circuit ID and Remote ID feature enhances validation security by allowing you to select naming choices suboptions. You can select a switch-configured hostname or specify an ASCII test string for the remote ID. You can also configure an ASCII text string to override the circuit ID.

To access this page, click **System** > **DHCP Client Option 82**.

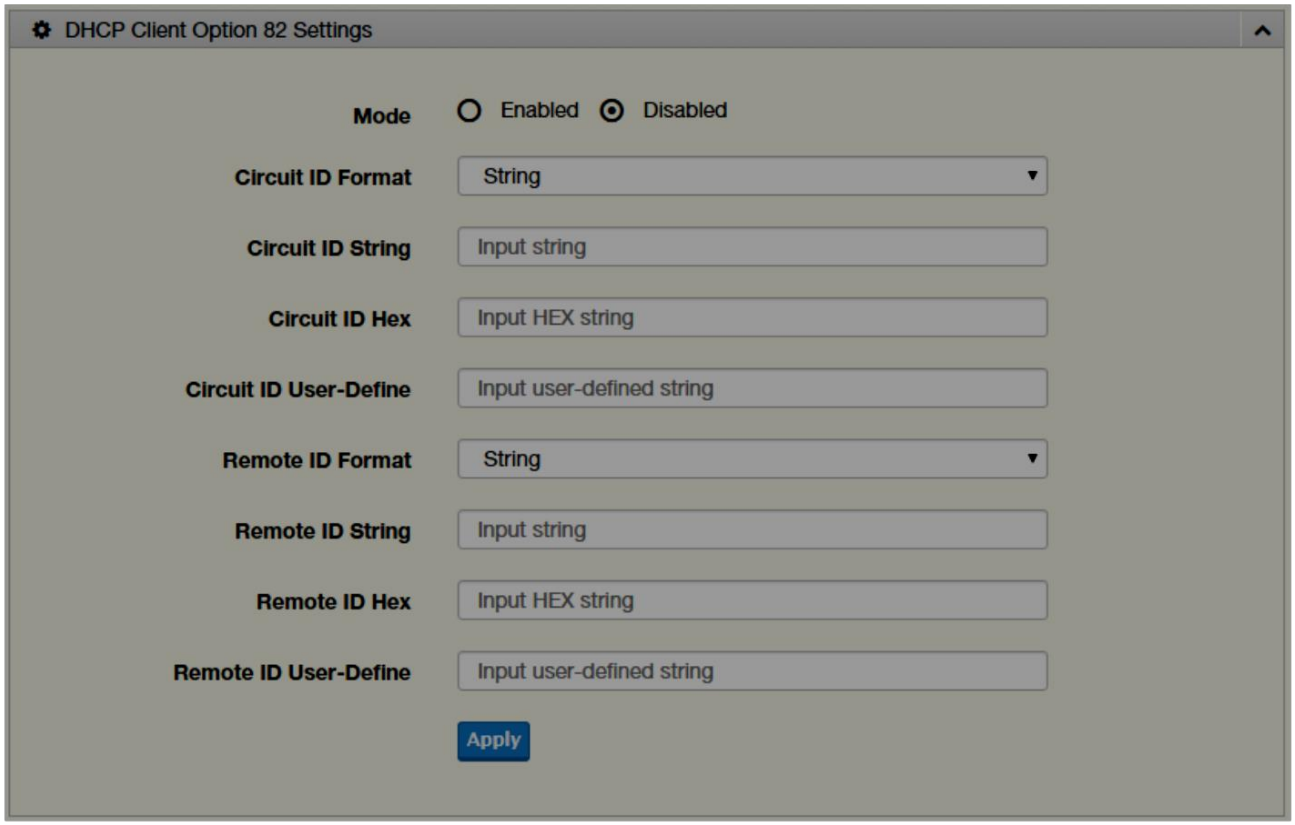


Figure 38: System > DHCP Client Option 82

The following table describes the items in the previous figure.

Item	Description
Mode	Click the radio button to enable or disable the DHCP Client Option 82 mode.
Circuit ID Format	Click the drop-down menu to set the ID format: String, Hex, User Definition.
Circuit ID String	Enter the string ID of the corresponding class.
Circuit ID Hex	Enter the hex string of the corresponding class.
Circuit ID User-Define	Enter the user definition of the corresponding class.
Remote ID Format	Click the drop-down menu to set the Remote ID format: String, Hex, User Definition.
Remote ID String	Enter the remote string ID of the corresponding class.
Remote ID Hex	Enter the remote hex string of the corresponding class.
Remote ID User-Define	Enter the remote user definition of the corresponding class.
Apply	Click **Apply** to save the values and update the screen.

Table 19: System > DHCP Client Option 82

4.4.3 DHCP AUTO PROVISION

The DHCP Auto Provision feature allows you to load configurations using a server with DHCP options. Through the remote connection, the switch obtains information from a configuration file available through the TFTP server.

To access this page, click **System** > **DHCP Auto Provision**.

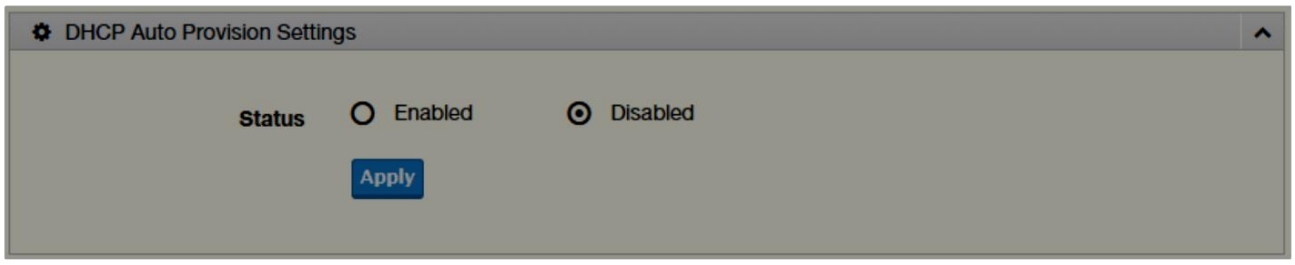


Figure 39: System > DHCP Auto Provision

The following table describes the items in the previous figure.

Item	Description
Status	Select the radio button to enable or disable the DHCP Auto Provisioning Setting.
Apply	Click **Apply** to save the values and update the screen.

Table 20: System > DHCP Auto Provision

4.4.4 IPV6 SETTINGS

To access this page, click **System** > **IPv6 Settings**.

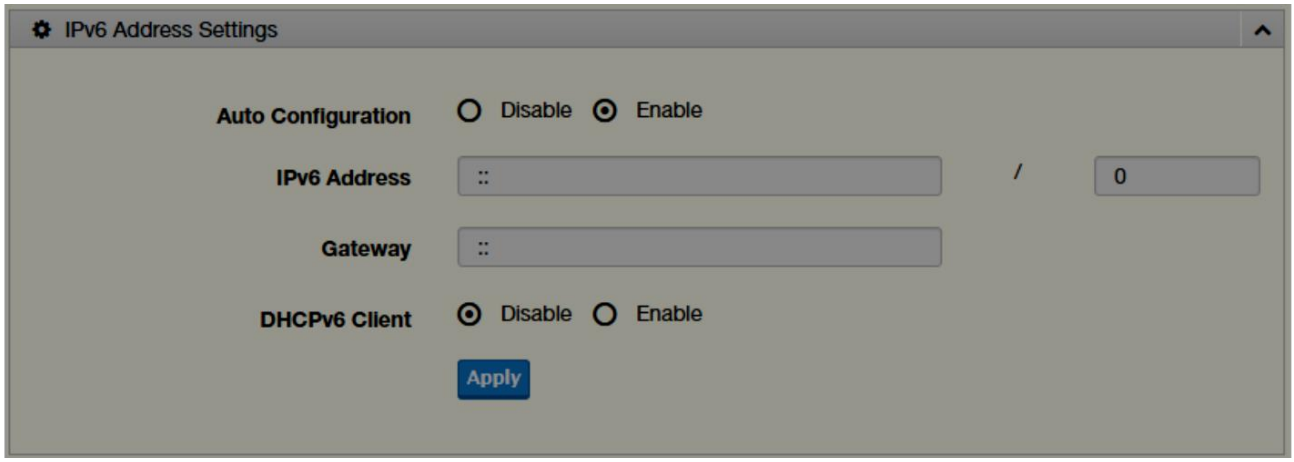


Table 21: System > IPv6 Settings

The following table describes the items in the previous figure.

Item	Description
Auto Configuration	Select the radio button to enable or disable the IPv6.
IPv6 Address	Enter the IPv6 address for the system.
Gateway	Enter the gateway address for the system.
DHCPv6 Client	Enter the DHCPv6 address for the system.
Apply	Click **Apply** to save the values and update the screen.

Table 22: System > IPv6 Settings

4.4.5 MANAGEMENT VLAN

By default the VLAN is the management VLAN providing communication with the switch management interface.

To access this page, click **System** > **Management VLAN**.

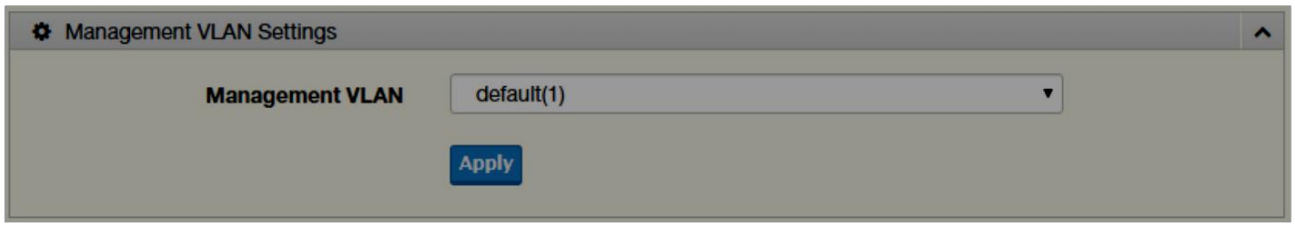


Figure 40: System > Management VLAN

The following table describes the items in the previous figure.

Item	Description
Management VLAN	Click the drop-down menu to select a defined VLAN.
Apply	Click **Apply** to save the values and update the screen.

Table 23: System > Management VLAN

.

4.4.6 SYSTEM TIME

To access this page, click **System** > **System Time**.

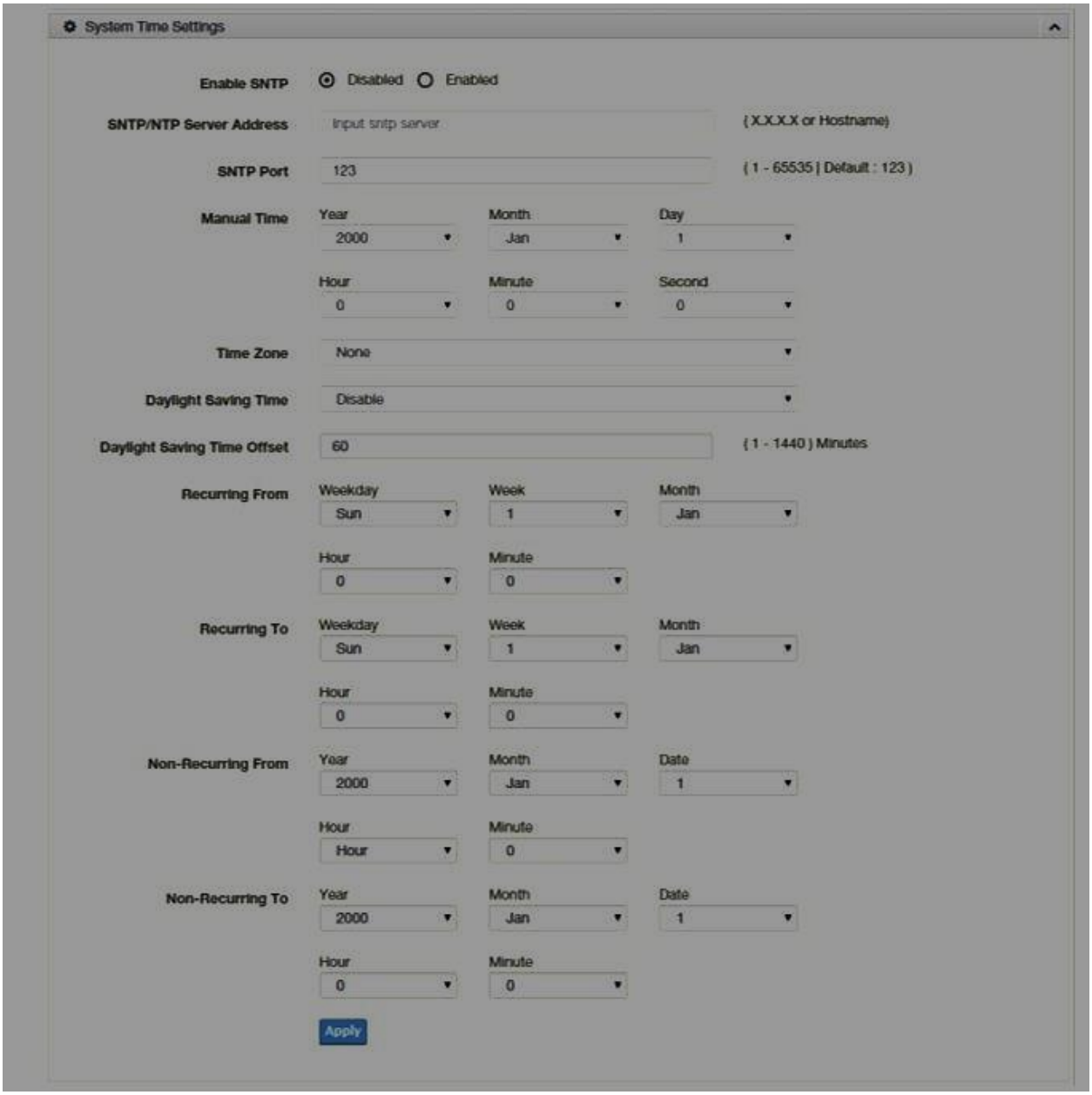


Table 24: System > System Time

The following table describes the items in the previous figure.

Item	Description
Enable SNTP	Click the radio button to enable or disable the SNTP.
SNTP/NTP Server Address	Enter the address of the SNTP server. This is a text string of up to 64 characters containing the encoded unicast IP address or hostname of a SNTP server. Unicast SNTP requests will be sent to this address. If this address is a DNS hostname, then that hostname should be resolved into an IP address each time a SNTP request is sent to it.
SNTP Port	Enter the port on the server to which SNTP requests are to be sent. Allowed range is 1 to 65535 (default: 123).
Manual Time	Click the drop-down menus to set local date and time of the system.
Time Zone	Click the drop-down menu to select a system time zone.
Daylight Saving Time	Click the drop-down menu to enable or disable the daylight saving time settings.
Daylight Saving Time Offset	Enter the offsetting variable in seconds to adjust for daylight saving time.
Recurring From	Click the drop-down menu to designate the start date and time for daylight saving time.
Recurring To	Click the drop-down menu to designate the end date and time for daylight saving time.
Non-Recurring From	Click the drop-down menu to designate a start date and time for a non-recurring daylight saving time event.
Non-Recurring To	Click the drop-down menu to designate the end date and time for a non-recurring daylight saving time event.
Apply	Click **Apply** to save the values and update the screen.

Table 25: System > System Time

4.5 L2 SWITCHING

4.5.1 PORT CONFIGURATION

Port Configuration describes how to use the user interface to configure LAN ports on the switch.

To access this page, click **L2 Switching** > **Port Configuration**.

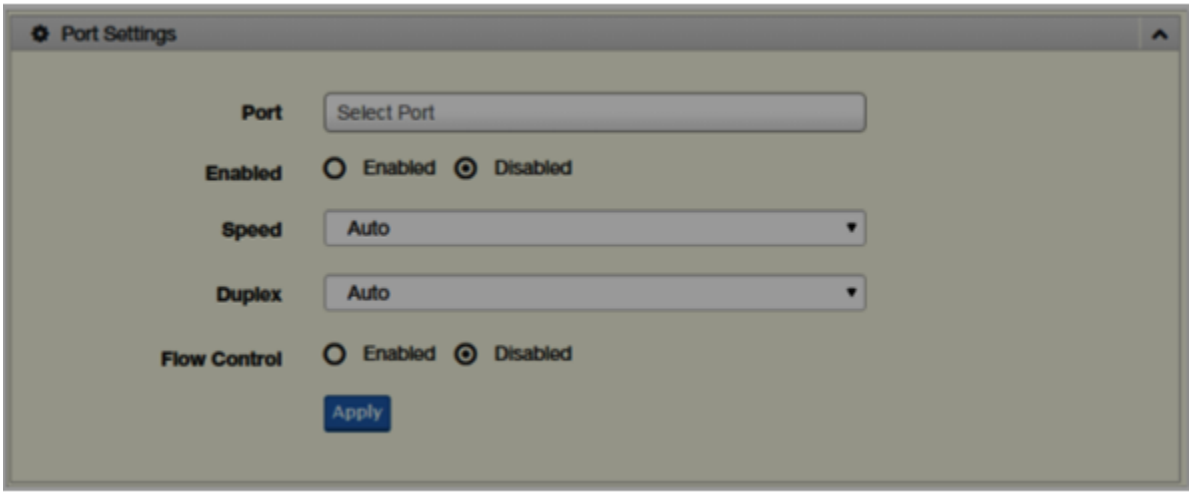


Figure 41: L2 Switching > Port Configuration

The following table describes the items in the previous figure.

Item	Description
Port	Click the drop-down menu to select the port for the L2 Switch setting.
Enabled	Click the radio-button to enable or disable the Port Setting function.
Speed	Click the drop-down menu to select the port speed: Auto, Auto-10M, Auto-100M, Auto-1000M, Auto-10/100M, 10M, 100M, or 1000M.
Duplex	Click the drop-down menu to select the duplex setting: Half or Full.
Flow Control	Click the radio button to enable or disable the flow control function.
Apply	Click **Apply** to save the values and update the screen.

Table 26: L2 Switching > Port Configuration

4.5.2 PORT MIRROR

Port mirroring function allows the sending of a copy of network packets seen on one switch port to a network monitoring connection on another switch port. Port mirroring can be used to analyze and debug data or diagnose errors on a network or to mirror either inbound or outbound traffic (or both).

There are no preset values in the Port Mirror. The displayed values do not represent the actual setting values.

To access this page, click **L2 Switching** > **Port Mirror**.

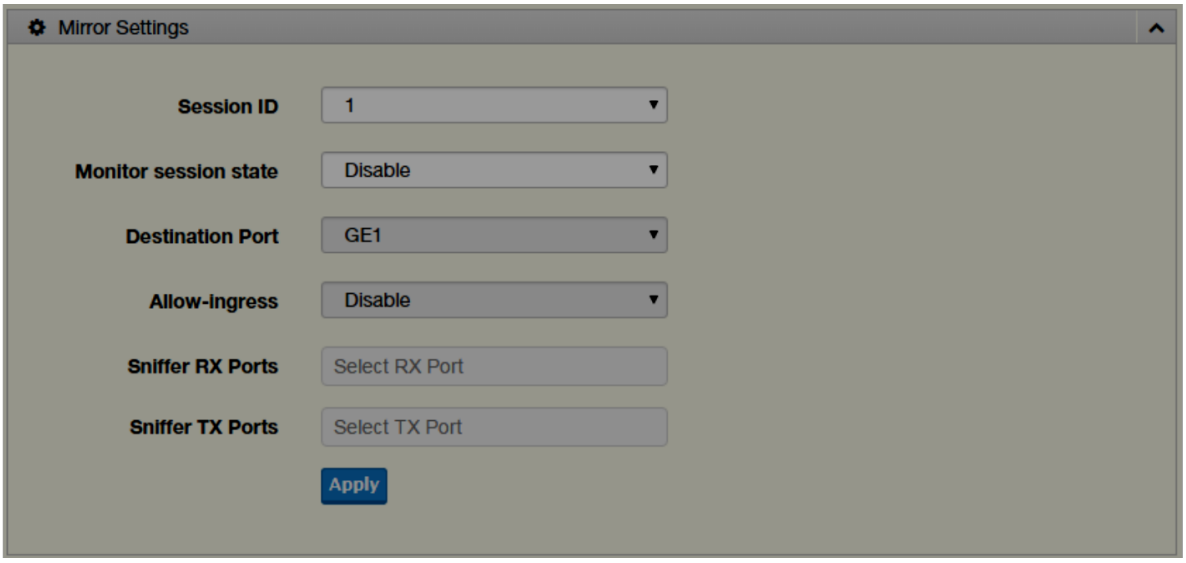


Table 27: L2 Switching > Port Mirror

The following table describes the items in the previous figure.

Item	Description
Session ID	Click the drop-down menu to select a port mirroring session from the list. The number of sessions allowed is platform specific.
Monitor session state	Click the drop-down menu to enable or disable the session mode for a selected session ID.
Destination Port	Click the drop-down menu to select the destination port and receive all the traffic from configured mirrored port(s).
Allow-ingress	Click the drop-down menu to enable or disable the Allow-ingress function.
Sniffer RX Ports	Enter the variable to define the RX port.
Sniffer TX Ports	Enter the variable to define the TX port.
Apply	Click **Apply** to save the values and update the screen.

Table 28: L2 Switching > Port Mirror

.

4.5.3 LINK AGGREGATION

Link Aggregation is a method for combining multiple network connections in parallel in order to increase throughput beyond the capability of a single connection, and to provide redundancy in case one of the links should fail.

Load Balance

The Load Balancing page allows you to select between a MAC Address or IP/MAC Address algorithm for the even distribution of IP traffic across two or more links.

To access this page, click **L2 Switching** > **Link Aggregation** > **Load Balance**.

Figure 42: L2 Switching > Link Aggregation > Load Balance

The following table describes the items in the previous figure.

Item	Description
Load Balance Algorithm	Select the radio button to select the Load Balance Setting: MAC Address or IP/MAC Address.
Apply	Click **Apply** to save the values and update the screen.

Table 29: L2 Switching > Link Aggregation > Load Balance

LAG Management

Link aggregation is also known as trunking. It is a feature available on the Ethernet gateway and is used with Layer 2 Bridging. Link aggregation allows for the logical merging of multiple ports into a single link.

To access this page, click **L2 Switching** > **Link Aggregation** > **LAG Management**.

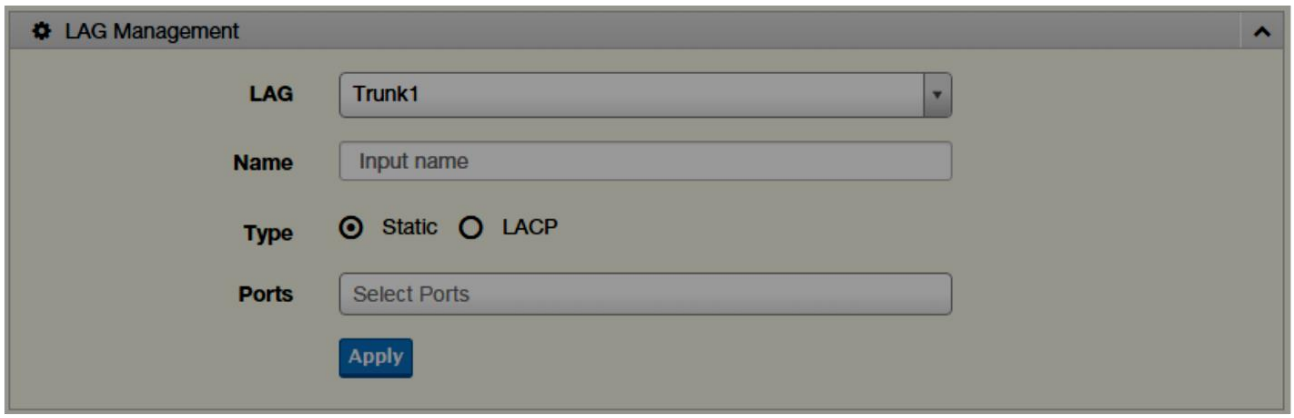


Figure 43: L2 Switching > Link Aggregation > LAG Management

The following table describes the items in the previous figure.

Item	Description
LAG	Click the drop-down menu to select the designated trunk group: Trunk 1 ~8.
Name	Enter an entry to specify the LAG name.
Type	Click the radio button to specify the type mode: Static or LACP.
Ports	Click the drop-down menu to select designated ports: FE1-8 or GE1-2.
Apply	Click **Apply** to save the values and update the screen.

Table 30: L2 Switching > Link Aggregation > LAG Management

LAG Port Settings

The LAG Port Settings page allows you to enable or disable, set LAG status, speed and flow control functions.

In this example we will configure a LAG between the following switches:

To access this page, click **L2 Switching** > **Link Aggregation** > **LAG Port Settings**.

Figure 44: L2 Switching > Link Aggregation > LAG Port Settings

The following table describes the items in the previous figure.

Item	Description
LAG Select	Click the drop-down menu to select a predefined LAG trunk definition: LAG 1-8.
Enabled	Click the radio button to enable or disable the LAG Port.
Speed	Click the drop-down menu to select the port speed: Auto, Auto-10M, Auto-100M, Auto-1000M, Auto-10/100M, 10M, 100M, or 1000M.
Flow Control	Click the radio button to enable or disable the Flow Control for the LAG Port.
Apply	Click **Apply** to save the values and update the screen.

Table 31: L2 Switching > Link Aggregation > LAG Port Settings

LACP Priority Settings

The LACP Priority Settings page allows you to configure the system priority for LACP.

To access this page, click **L2 Switching** > **Link Aggregation** > **LACP Priority Settings**.

Figure 45: L2 Switching > Link Aggregation > LACP Priority Settings

The following table describes the items in the previous figure.

Item	Description
System Priority	Enter the value (1-65535) to designate the LACP system priority.
Apply	Click **Apply** to save the values and update the screen.

Table 32: L2 Switching > Link Aggregation > LACP Priority Settings

LACP Port Settings

Link Aggregation Control Protocol (LACP) provides a method to control the bundling of several physical ports together to form a single logical channel. By configuring the LACP function, the switch can negotiate an automatic bundling of links by sending LACP packets to the peer device (also implementing LACP).

To access this page, click **L2 Switching** > **Link Aggregation** > **LACP Port Settings**.

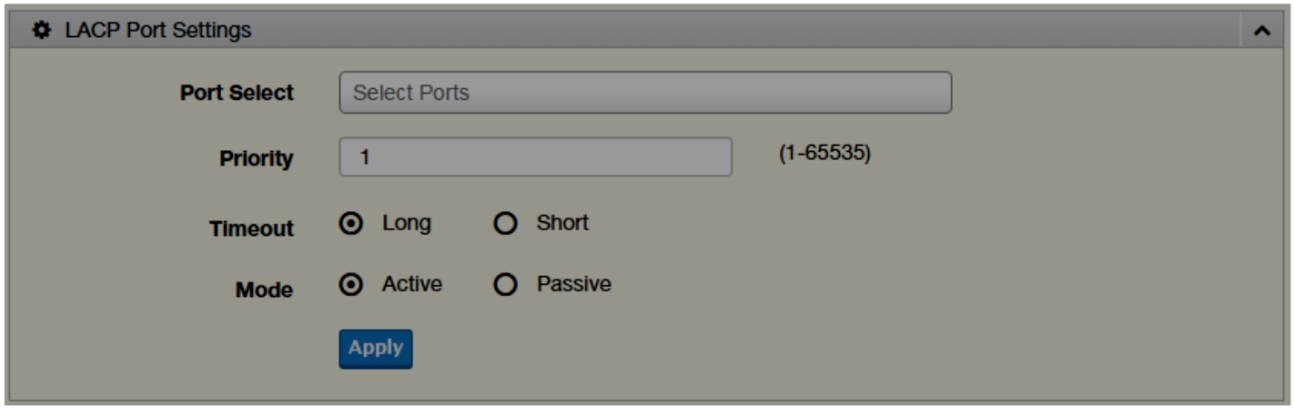


Figure 46: L2 Switching > Link Aggregation > LACP Port Settings

The following table describes the items in the previous figure.

Item	Description
Port Select	Select a port for the LACP Port Settings. The listed available settings are: FE1-FE8, GE1-GE2. However, the available settings are dependent on the connected LACP device and may not be listed as displayed in the current figure.
Priority	Enter a variable (1 to 65535) to assign a priority to the defined port selection.
Timeout	Click the radio button to select a long or short timeout period.
Mode	Click the radio button to select the setting mode: Active or Passive. ● Active: Enables LACP unconditionally. ● Passive: Enables LACP only when an LACP device is detected (default state).
Apply	Click **Apply** to save the values and update the screen.

Table 33: L2 Switching > Link Aggregation > LACP Port Settings

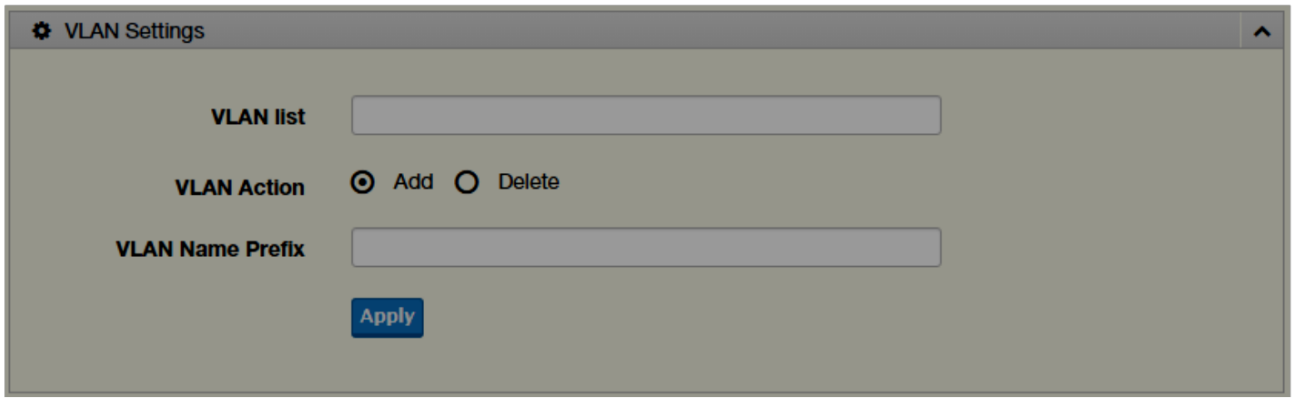
4.5.4 802.1Q VLAN

The 802.1Q VLAN feature allows for a single VLAN to support multiple VLANs. With the 802.1Q feature you can preserve VLAN IDs and segregate different VLAN traffic.

The 802.1Q VLAN tag feature encapsulates the 802.1Q VLAN tagging within another 802.1Q VLAN tag. The outer tag is assigned following the AP group, while the inner VLAN ID is assigned dynamically by the AAA server.

VLAN Management

The management of VLANs is available through the VLAN Settings page. Through this page you can add or delete VLAN listings and add a prefix name to an added entry.



To access this page, click **L2 Switching** > **802.1Q VLAN** > **VLAN Management**.

Figure 47: L2 Switching > 802.1Q VLAN > VLAN Management

The following table describes the items in the previous figure.

Item	Description
VLAN list	Enter the name of the VLAN entry to setup.
VLAN Action	Click the radio button to add or delete the VLAN entry shown in the previous field.
VLAN Name Prefix	Enter the prefix to be used by the VLAN list entry in the previous field.
Apply	Click **Apply** to save the values and update the screen.

Table 34: L2 Switching > 802.1Q VLAN > VLAN Management

PVID Settings

The PVID Settings page allows you to designate a PVID for a selected port, define the accepted type and enable/disable the ingress filtering.

To access this page, click **L2 Switching** > **802.1Q VLAN** > **PVID Settings**.

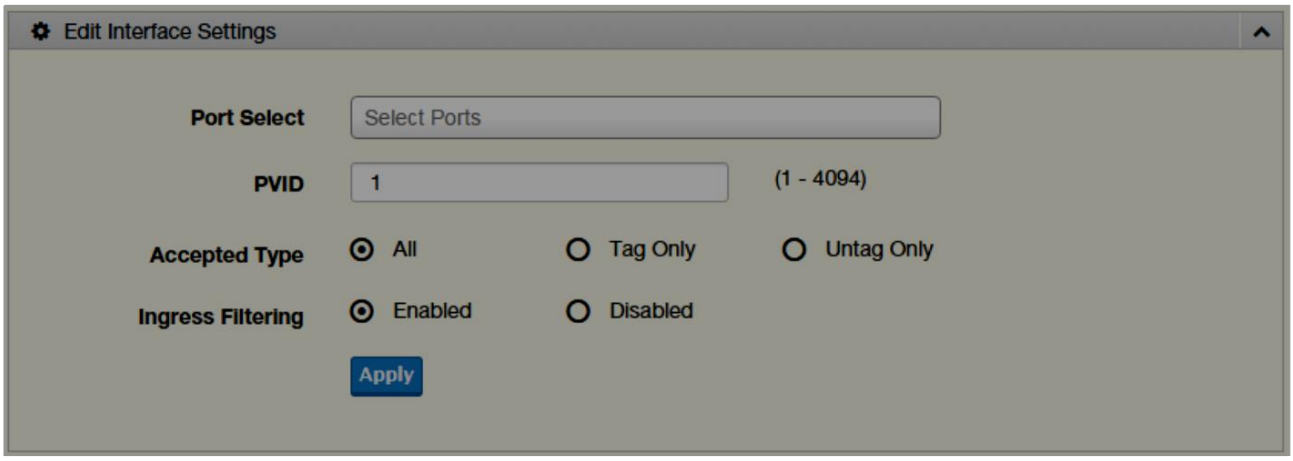


Figure 48: L2 Switching > 802.1Q VLAN > PVID Settings

The following table describes the items in the previous figure.

Item	Description
Port Select	Click the drop-down menu to select a port and edit its settings: FE1-FE8, GE1-GE2, or Trunk1 - Trunk8.
PVID	Enter the VLAN ID you want assigned to untagged or priority tagged frames received on this port. The value ranges 1 to 4094. The default is 1.
Accepted Type	Click the radio button to specify which frames to forward. Tag Only discards any untagged or priority tagged frames. Untag Only discards any tagged frames. All accepts all untagged and tagged frames. Whichever you select, VLAN tagged frames are forwarded in accordance with the IEEE 802.1Q VLAN standard. The default is All.
Ingress Filtering	Click the radio button to specify how you want the port to handle tagged frames. If you enable Ingress Filtering, a tagged frame will be discarded if this port is not a member of the VLAN identified by the VLAN ID in the tag. If you select Disabled, all tagged frames will be accepted. The default is Disabled.
Apply	Click **Apply** to save the values and update the screen.

Table 35: L2 Switching > 802.1Q VLAN > PVID Settings

Port to VLAN

The Port to VLAN page allows you to add a port to a VLAN and select the related parameters.

To access this page, click **L2 Switching** > **802.1Q VLAN** > **Port to VLAN**.

VLAN ID : 1

Port to VLAN Table

Port	Interface VLAN Mode	Membership	PVID
GE1	Hybrid	○ Forbidden ○ Excluded ○ Tagged ◉ Untagged	YES
GE2	Hybrid	○ Forbidden ○ Excluded ○ Tagged ◉ Untagged	YES
GE3	Hybrid	○ Forbidden ○ Excluded ○ Tagged ◉ Untagged	YES
GE4	Hybrid	○ Forbidden ○ Excluded ○ Tagged ◉ Untagged	YES
GE5	Hybrid	○ Forbidden ○ Excluded ○ Tagged ◉ Untagged	YES
GE6	Hybrid	○ Forbidden ○ Excluded ○ Tagged ◉ Untagged	YES
GE7	Hybrid	○ Forbidden ○ Excluded ○ Tagged ◉ Untagged	YES
GE8	Hybrid	○ Forbidden ○ Excluded ○ Tagged ◉ Untagged	YES
GE9	Hybrid	○ Forbidden ○ Excluded ○ Tagged ◉ Untagged	YES
GE10	Hybrid	○ Forbidden ○ Excluded ○ Tagged ◉ Untagged	YES
Trunk1	Hybrid	○ Forbidden ○ Excluded ○ Tagged ◉ Untagged	YES
Trunk2	Hybrid	○ Forbidden ○ Excluded ○ Tagged ◉ Untagged	YES
Trunk3	Hybrid	○ Forbidden ○ Excluded ○ Tagged ◉ Untagged	YES
Trunk4	Hybrid	○ Forbidden ○ Excluded ○ Tagged ◉ Untagged	YES
Trunk5	Hybrid	○ Forbidden ○ Excluded ○ Tagged ◉ Untagged	YES
Trunk6	Hybrid	○ Forbidden ○ Excluded ○ Tagged ◉ Untagged	YES
Trunk7	Hybrid	○ Forbidden ○ Excluded ○ Tagged ◉ Untagged	YES
Trunk8	Hybrid	○ Forbidden ○ Excluded ○ Tagged ◉ Untagged	YES

Apply

Figure 49: L2 Switching > 802.1Q VLAN > Port to VLAN

The following table describes the items in the previous figure.

Item	Description
Port	Displays the assigned port to the entry.
Interface VLAN Mode	Displays the assigned mode to the listed VLAN port. Hybrid: Port hybrid model. Access: Port hybrid model. Trunk: Port hybrid model. Tunnel: Port hybrid model.
Membership	Displays the assigned membership status of the port entry, options include: Forbidden, Excluded Tagged or Untagged.
Apply	Click **Apply** to save the values and update the screen.

Table 36: L2 Switching > 802.1Q VLAN > Port to VLAN

Port-VLAN Mapping

To access this page, click **L2 Switching** > **802.1Q VLAN** > **Port-VLAN Mapping**.

.

4.5.5 Q-IN-Q

Q-in-Q is commonly referred as VLAN stacking in which VLANs are nested by adding two tags to each frame instead of one. Network service provider and users both can use VLANs and makes it possible to have more than the 4094 separate VLANs allowed by 802.1Q.

There are three ways in which a machine can be connected to a network carrying double-tagged 802.1ad traffic:

- via a untagged port, where both inner and outer VLANs are handled by the switch or switches (so the attached machine sees ordinary Ethernet frames);
- via a single-tagged (tunnel) port, where the outer VLAN only is handled by the switch (so the attached machine sees single-tagged 802.1Q VLAN frames); or

- via a double-tagged (trunk) port, where both inner and outer VLANs are handled by the attached machine (which sees double-tagged 802.1ad VLAN frames).

Global Settings

The Global Settings page allows you to set the outer VLAN Ethertype setting.

To access this page, click **L2 Switching** > **Q-in-Q** > **Global Settings**.

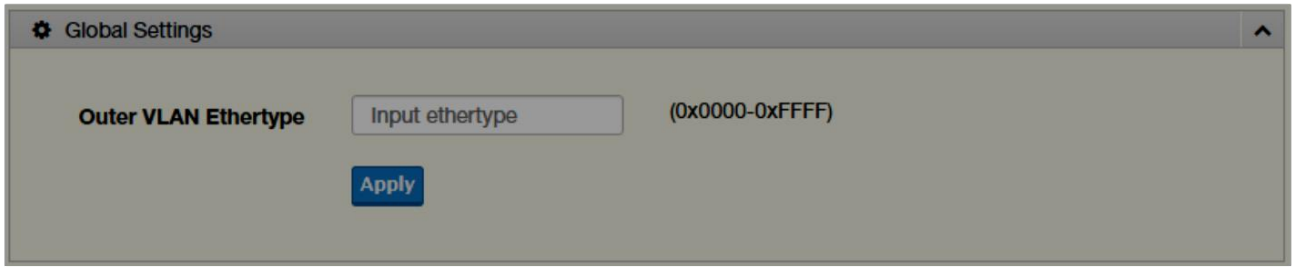


Figure 50: L2 Switching > Q-in-Q > Global Settings

The following table describes the items in the previous figure.

Item	Description
Outer VLAN Ethertype	Enter the outer VLAN handled by the switch giving the attached machine a single-tagged 802.1Q VLAN frame.
Apply	Click **Apply** to save the values and update the screen.

Table 37: L2 Switching > Q-in-Q > Global Settings

Item	Description
Outer VLAN Ethertype	Enter the outer VLAN handled by the switch giving the attached machine a single-tagged 802.1Q VLAN frame.
Apply	Click **Apply** to save the values and update the screen.

Table 38. L2 Switching > Q-in-Q > Global Settings

Port Settings

The Port Settings page allows you to define the outer PVID and outer mode for a selected port.

To access this page, click **L2 Switching** > **Q-in-Q** > **Port Settings**.

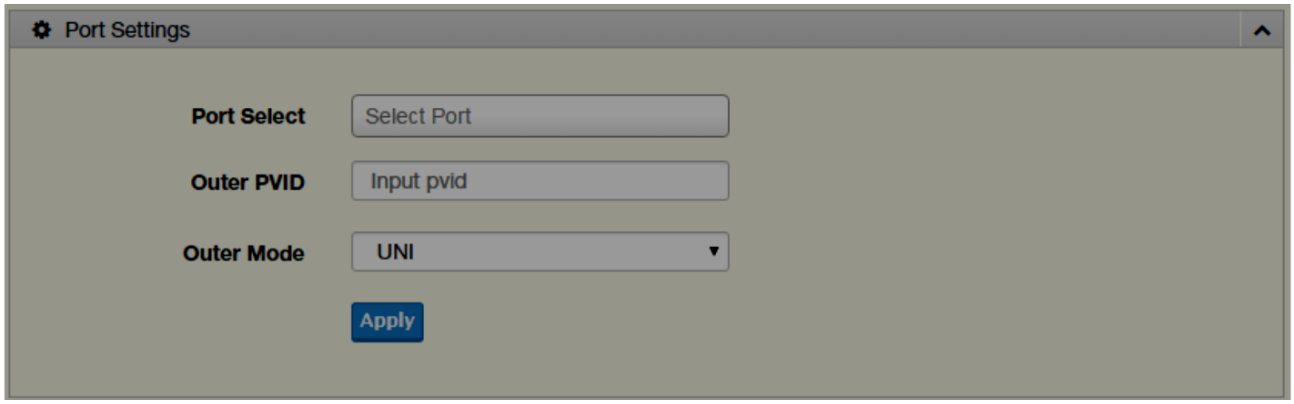


Figure 51: L2 Switching > Q-in-Q > Port Settings

The following table describes the items in the previous figure.

Item	Description
Port Select	Enter the switch port (part of VLAN configuration) to configure the selection as a tunnel port.
Outer PVID	Enter the Port VLAN ID (PVID) to assigned the native VLAN ID. All untagged traffic coming in or out of the 802.1Q port is forwarded based on the PVID value
Outer Mode	Click the drop-down menu to select between UNI or NNI role. ● UNI: Selects a user-network interface which specifies communication between the specified user and a specified network. ● NNI: Selects a network-to-network interface which specifies communication between two specified networks.
Apply	Click **Apply** to save the values and update the screen.

Table 39: L2 Switching > Q-in-Q > Port Settings

Item	Description
Port Select	Enter the switch port (part of VLAN configuration) to configure the selection as a tunnel port.
Outer PVID	Enter the Port VLAN ID (PVID) to assigned the native VLAN ID. All untagged traffic coming in or out of the 802.1Q port is forwarded based on the PVID value
Outer Mode	Click the drop-down menu to select between UNI or NNI role. ● UNI: Selects a user-network interface which specifies communication between the specified user and a specified network. ● NNI: Selects a network-to-network interface which specifies communication between two specified networks.
Apply	Click **Apply** to save the values and update the screen.

Table 40. L2 Switching > Q-in-Q > Port Settings

4.5.6 GARP

The Generic Attribute Registration Protocol (GARP) is a local area network (LAN) protocol. The protocol defines procedures for the registration and de-registration of attributes (network identifiers or addresses) by end stations and switches with each other.

GARP Settings

To access this page, click **L2 Switching** > **GARP** > **GARP Settings**.

Figure 52: L2 Switching > GARP > GARP Settings

The following table describes the items in the previous figure.

Item	Description
Join Time	Enter a value to specify the time between the transmission of GARP PDUs registering (or re-registering) membership for a VLAN or multicast group in centiseconds. Enter a number between 6 and 600. An instance of this timer exists for each GARP participant for each port.
Leave Time	Enter a value to specify the time to wait after receiving an unregister request for a VLAN or multicast group before deleting the associated entry, in centiseconds. This allows time for another station to assert registration for the same attribute in order to maintain uninterrupted service. Enter a number between 12 and 3000. An instance of this timer exists for each GARP participant for each port.
Leave All Time	Enter a value to specify the Leave All Time controls how frequently Leave All PDUs are generated. A LeaveAll PDU indicates that all registrations will shortly be deregistered. Participants will need to rejoin in order to maintain registration. The Leave All Period Timer is set to a random value in the range of LeaveAllTime to 1.5*LeaveAllTime. The timer is specified in centiseconds. Enter a number between 12 and 12000. An instance of this timer exists for each GARP participant for each port.
Apply	Click **Apply** to save the values and update the screen.

Table 41: L2 Switching > GARP > GARP Settings

GVRP Settings

The GVRP Settings page allows you to enable or disable the GVRP (GARP VLAN Registration Protocol or Generic VLAN Registration Protocol) protocol which facilitates control of virtual local area networks (VLANs) within a larger network.

To access this page, click **L2 Switching** > **GARP** > **GVRP Settings**.

Figure 53: L2 Switching > GARP > GVRP Settings

The following table describes the items in the previous figure.

Item	Description
Status	Click to enable or disable the GARP VLAN Registration Protocol administrative mode for the switch. The factory default is Disable.
Apply	Click **Apply** to save the values and update the screen.

Table 42: L2 Switching > GARP > GVRP Settings

4.5.7 802.3AZ EEE

The 802.3az Energy Efficient Ethernet (EEE) innovative green feature reduces energy consumption through intelligent functionality:

- Traffic detection — Energy Efficient Ethernet (EEE) compliance
- Inactive link detection

Inactive link detection function automatically reduces power usage when inactive links or devices are detected.

To access this page, click **L2 Switching** > **802.3az EEE**.

Figure 54: L2 Switching > 802.3az EEE

The following table describes the items in the previous figure.

Item	Description
Port Select	Enter the port to setup the EEE function.
State	Click **Enabled** or **Disabled** to set the state mode of the port select setting.
Apply	Click **Apply** to save the values and update the screen.

Table 43: L2 Switching > 802.3az EEE

4.5.8 MULTICAST

Multicast forwarding allows a single packet to be forwarded to multiple destinations. The service is based on L2 switch receiving a single packet addressed to a specific Multicast address. Multicast forwarding creates copies of the packet, and transmits the packets to the relevant ports.

Multicast Filtering

The Multicast Filtering page allows for the definition of action settings when an unknown multicast request is received. The options include: Drop, Flood, or Router Port.

To access this page, click **L2 Switching** > **Multicast** > **Multicast Filtering**.

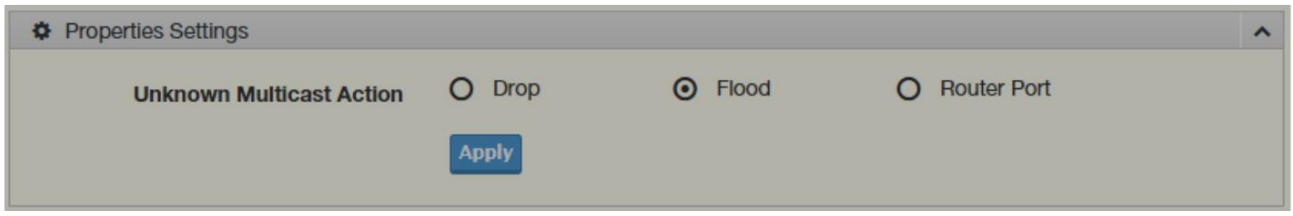


Figure 55: L2 Switching > Multicast > Multicast Filtering

The following table describes the items in the previous figure.

Item	Description
Unknown Multicast Action	Select the configuration protocol: Drop, Flood, or Router Port, to apply for any unknown multicast event.
Apply	Click **Apply** to save the values and update the screen.

Table 44: L2 Switching > Multicast > Multicast Filtering

IGMP Snooping

IGMP Snooping is defined as the process of listening to Internet Group Management Protocol (IGMP) network traffic. IGMP Snooping allows a network switch to listen in on the IGMP conversation between hosts and routers and maintain a map of which links need which IP

multicast streams. Multicasts can be filtered from the links which do not need them in turn controlling which ports receive specific multicast traffic.

IGMP Settings

To access this page, click **L2 Switching** > **Multicast** > **IGMP Snooping** > **IGMP Settings**.

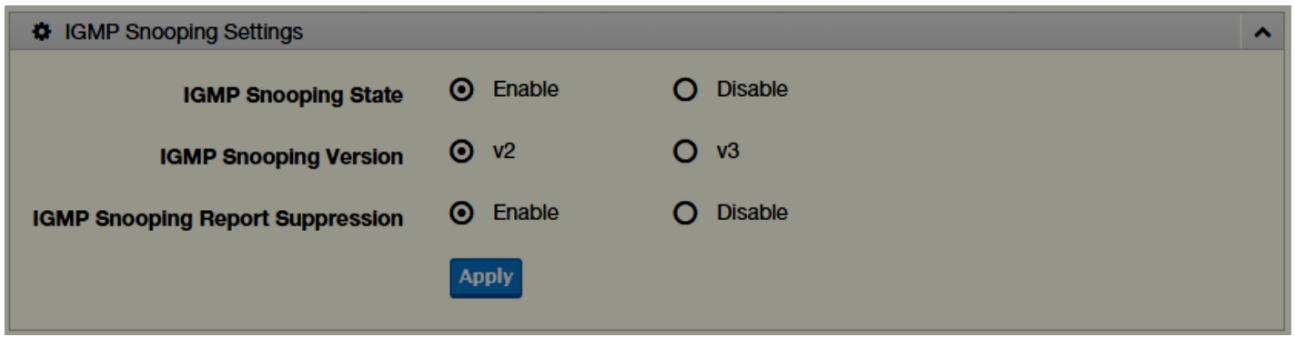


Figure 56: L2 Switching > Multicast > IGMP Snooping > IGMP Settings

The following table describes the items in the previous figure.

Item	Description
IGMP Snooping State	Select **Enable** or **Disable** to designate the IGMP Snooping State.
IGMP Snooping Version	Select designate the IGMP Snooping Version: V2 or V3.
IGMP Snooping Report Suppression	Select **Enable** or **Disable** to setup the report suppression for IGMP Snooping.
Apply	Click **Apply** to save the values and update the screen.

Table 45: L2 Switching > Multicast > IGMP Snooping > IGMP Settings

IGMP Querier

IGMP Querier allows snooping to function by creating the tables for snooping. General queries must be unconditionally forwarded by all switches involved in IGMP snooping.

To access this page, click **L2 Switching** > **Multicast** > **IGMP Snooping** > **IGMP Querier**.

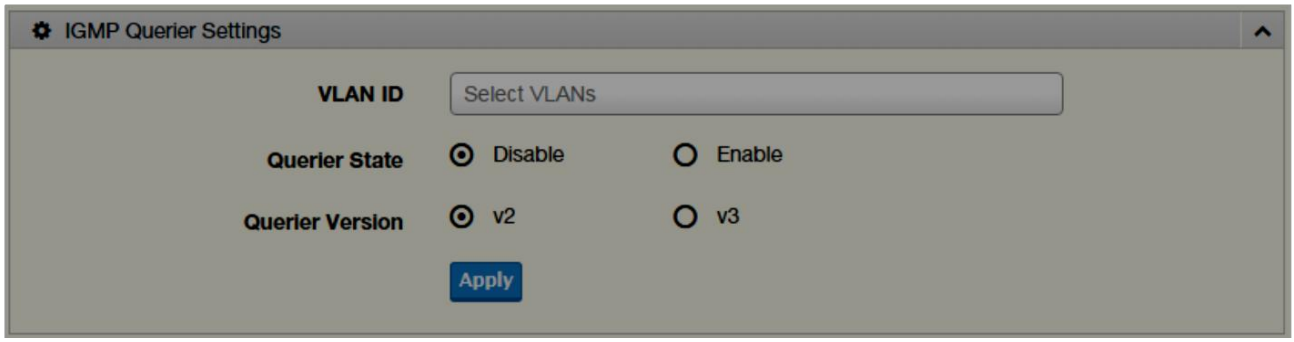


Figure 57: L2 Switching > Multicast > IGMP Snooping > IGMP Querier

The following table describes the items in the previous figure.

Item	Description
VLAN ID	Select the VLAN ID to define the local IGMP querier.
Querier State	Select **Disable** or **Enable** to configure the VLAN ID (IGMP Querier).
Querier Version	Select the querier version (V2 or V3) designated to the selected VLAN ID.
Apply	Click **Apply** to save the values and update the screen.

Table 46: L2 Switching > Multicast > IGMP Snooping > IGMP Querier

IGMP Static Groups

To access this page, click **L2 Switching** > **Multicast** > **IGMP Snooping** > **IGMP Static** Groups.

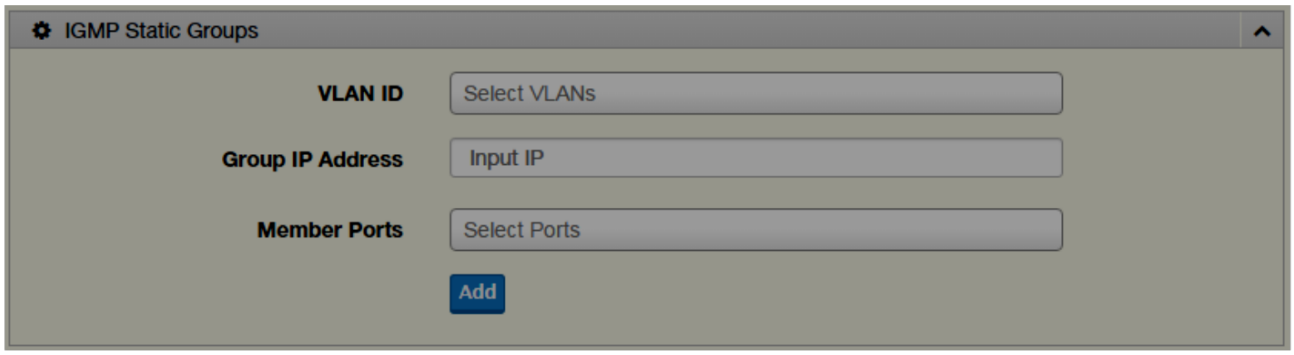


Figure 58: L2 Switching > Multicast > IGMP Snooping > IGMP Static Groups

The following table describes the items in the previous figure.

Item	Description
VLAN ID	Select the VLAN ID to define IGMP static group.
Group IP Address	Enter the IP address assigned to the VLAN ID.
Member Ports	Enter the port numbers to associate with the static group.
Add	Click **Add** to add an IGMP group.

Table 47: L2 Switching > Multicast > IGMP Snooping > IGMP Static Groups

.

Multicast Groups

To access this page, click **L2 Switching** > **Multicast** > **IGMP Snooping** > **Multicast Groups**.

Router Ports

To access this page, click **L2 Switching** > **Multicast** > **IGMP Snooping** > **Router Ports**.

MLD Snooping

The MLD Snooping page allows you to select the snooping status (enable or disable), the version (v1 or v2) and the enabling/disabling of the report suppression for the MLD querier, which sends out periodic general MLD queries and are forwarded through all ports in the VLAN.

MLD Settings

To access this page, click **L2 Switching** > **Multicast** > **MLD Snooping** > **MLD Settings**.

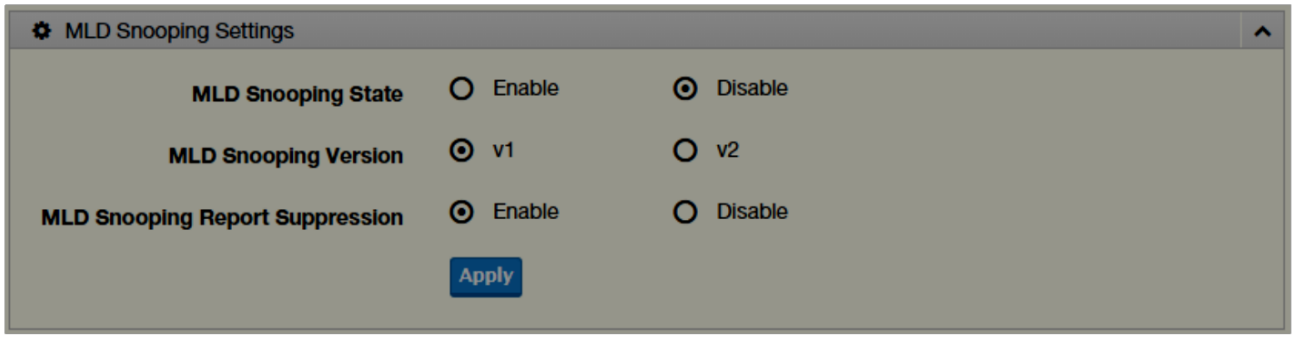


Figure 59: L2 Switching > Multicast > MLD Snooping > MLD Settings

The following table describes the items in the previous figure.

Item	Description
MLD Snooping State	Select **Enable** or **Disable** to setup the MLD Snooping State.
MLD Snooping Version	Select the querier version (V1 or V2) designated to the MLD Snooping Version.
MLD Snooping Report Suppression	Select **Enable** or **Disable** to designate the status of the report suppression.
Apply	Click **Apply** to save the values and update the screen.

Table 48: L2 Switching > Multicast > MLD Snooping > MLD Settings

MLD Querier

The MLD Querier page allows you to select and enable/disable the MLD querier and define the version (IGMPv1 or IGMPv2) when enabled.

To access this page, click **L2 Switching** > **Multicast** > **MLD Snooping** > **MLD Querier**.

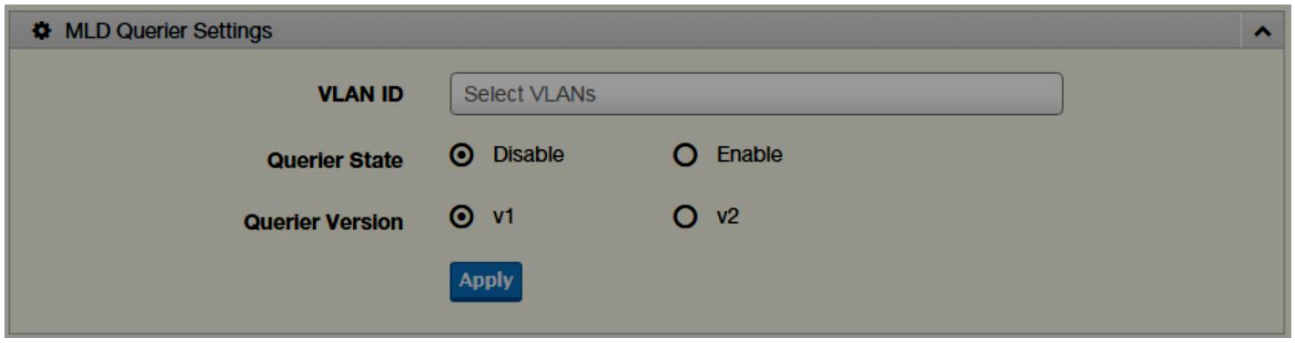


Figure 60: L2 Switching > Multicast > MLD Snooping > MLD Querier

The following table describes the items in the previous figure.

Item	Description
VLAN ID	Enter the VLAN ID to configure.
Querier State	Select **Enable** or **Disable** status on the selected VLAN. Enable: Enable IGMP Querier Election. Disable: Disable IGMP Querier Election.
Querier Version	Select the querier version (IGMPV1 or IGMPV2) designated to the MLD Querier function.
Apply	Click **Apply** to save the values and update the screen.

Table 49: L2 Switching > Multicast > MLD Snooping > MLD Querier

MLD Static Group

The MLD Static Group page allows you to configure specified ports as static member ports.

To access this page, click **L2 Switching** > **Multicast** > **MLD Snooping** > **MLD Static Group**.

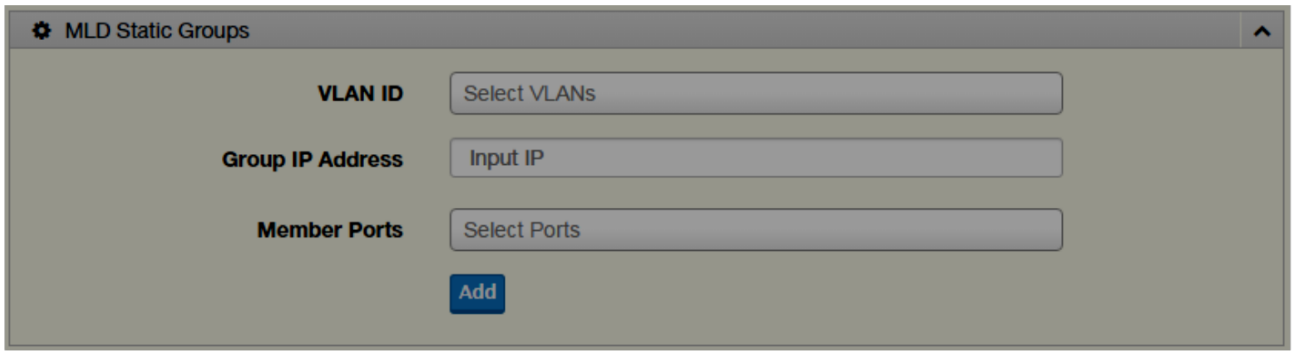


Figure 61: L2 Switching > Multicast > MLD Snooping > MLD Static Group

The following table describes the items in the previous figure.

Item	Description
VLAN ID	Enter the VLAN ID to define the local MLD Static Group.
Group IP Address	Enter the IP address associated with the static group.
Member Ports	Enter the ports designated with the static group.
Add	Click **Add** to add a MLD static group.

Table 50: L2 Switching > Multicast > MLD Snooping > MLD Static Group

Multicast Groups

To access this page, click **L2 Switching** > **Multicast** > **MLD Snooping** > **Multicast Groups**.

Router Ports

To access this page, click **L2 Switching** > **Multicast** > **MLD Snooping** > **Router Ports**.

4.5.9 JUMBO FRAME

Jumbo frames are frames larger than the standard Ethernet frame size of 1518 bytes. The Jumbo Frame function allows the configuration of Ethernet frame size.

To access this page, click **L2 Switching** > **Jumbo Frame**.

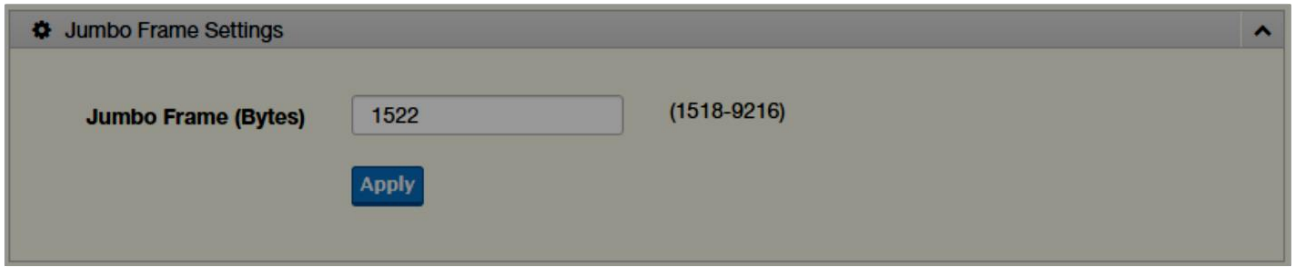


Figure 62: L2 Switching > Jumbo Frame

The following table describes the items in the previous figure.

Item	Description
Jumbo Frame (Bytes)	Enter the variable in bytes (1518 to 9216) to define the jumbo frame size.
Apply	Click **Apply** to save the values and update the screen.

Table 51: L2 Switching > Jumbo Frame

4.5.10 SPANNING TREE

The Spanning Tree Protocol (STP) is a network protocol to ensure loop-free topology for any bridged Ethernet local area network.

STP Global Settings

The STP Global Settings page allows you to set the STP status, select the configuration for a BPDU packet, choose the path overhead, force version and set the configuration revision range.

To access this page, click **L2 Switching** > **Spanning Tree** > **STP Global Settings**.

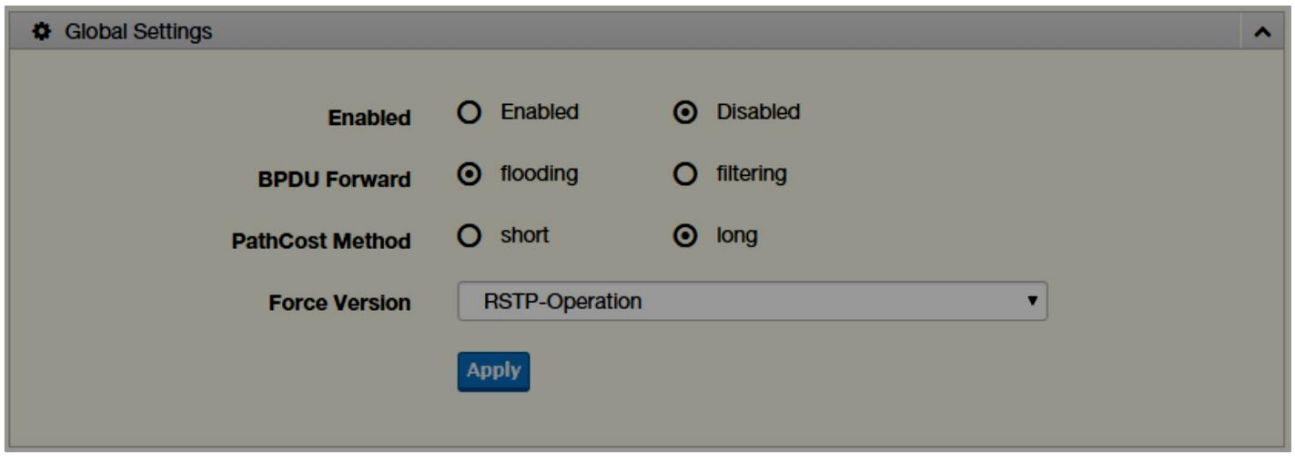


Figure 63: L2 Switching > Spanning Tree > STP Global Settings

The following table describes the items in the previous figure.

Item	Description
Enabled	Click the radio-button to enable or disable the STP status.
BPDU Forward	Select **flooding** or **filtering** to designate the type of BPDU packet.
PathCost Method	Select short or long to define the method of used for path cost calculations.
Force Version	Click the drop-down menu to select the operating mode for STP. STP-Compatible: 802.1D STP operation. RSTP-Operation: 802.1w operation. MSTP-Operation: 802.1s operation.
Apply	Click **Apply** to save the values and update the screen.

Table 52: L2 Switching > Spanning Tree > STP Global Settings

STP Port Settings

The STP Port Settings page allows you to configure the ports for the setting, port's contribution, configure edge port, and set the status of the BPDU filter.

To access this page, click **L2 Switching** > **Spanning Tree** > **STP Port Settings**.

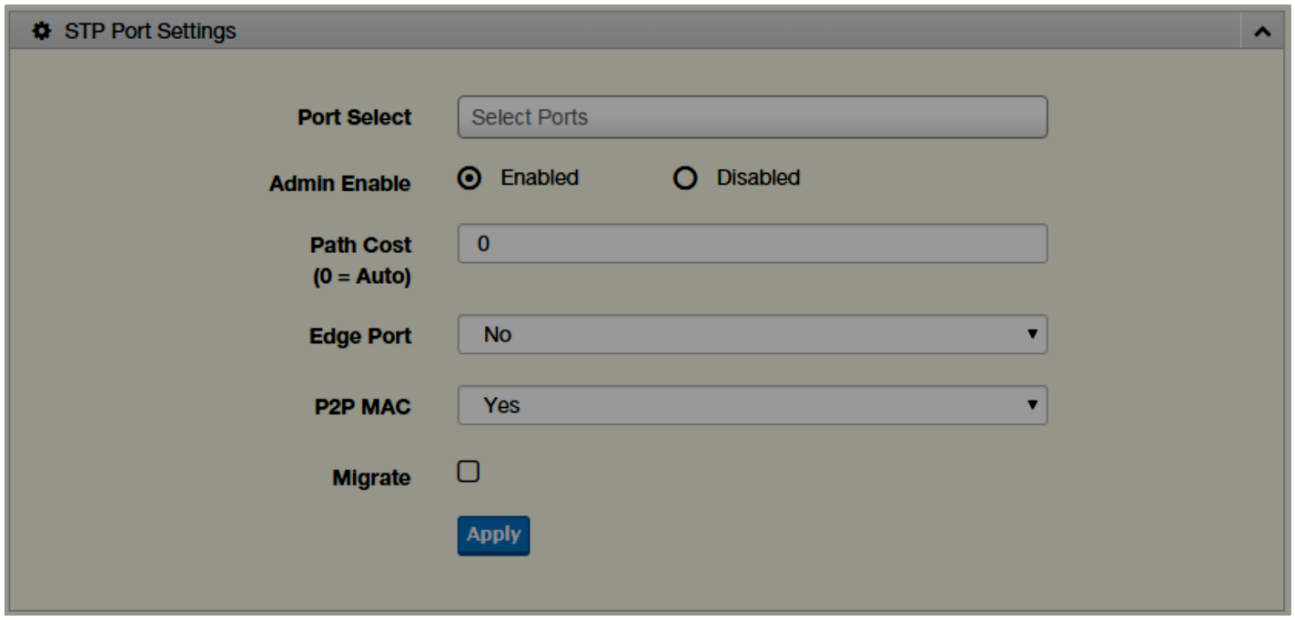


Figure 64: L2 Switching > Spanning Tree > STP Port Settings

The following table describes the items in the previous figure.

Item	Description
Port Select	Select the port list to specify the ports that apply to this setting.
Admin Enable	Select **Enabled** or **Disabled** to setup the admin profile for the STP port.
Path Cost (0 = Auto)	Set the port's cost contribution. For a root port, the root path cost for the bridge. (0 means Auto).
Edge Port	Click the drop-down menu to set the edge port configuration. No: Force to false state (as link to a bridge). Yes: Force to true state (as link to a host).
P2P MAC	Click the drop-down menu to set the Point-to-Point port configuration. No: Force to false state. Yes: Force to true state.
Migrate	Click the check box to enable the migrate function. Forces the port to use the new MST/RST BPDUs, requiring the switch to test on the LAN segment. for the presence of legacy devices, which are not able to understand the new BPDU formats.
Apply	Click **Apply** to save the values and update the screen.

Table 53: L2 Switching > Spanning Tree > STP Port Settings

STP Bridge Settings

The STP Bridge Settings page allows you to configure the priority, forward delay, maximum age, Tx hold count, and the hello time for the bridge.

To access this page, click **L2 Switching** > **Spanning Tree** > **STP Bridge Settings**.

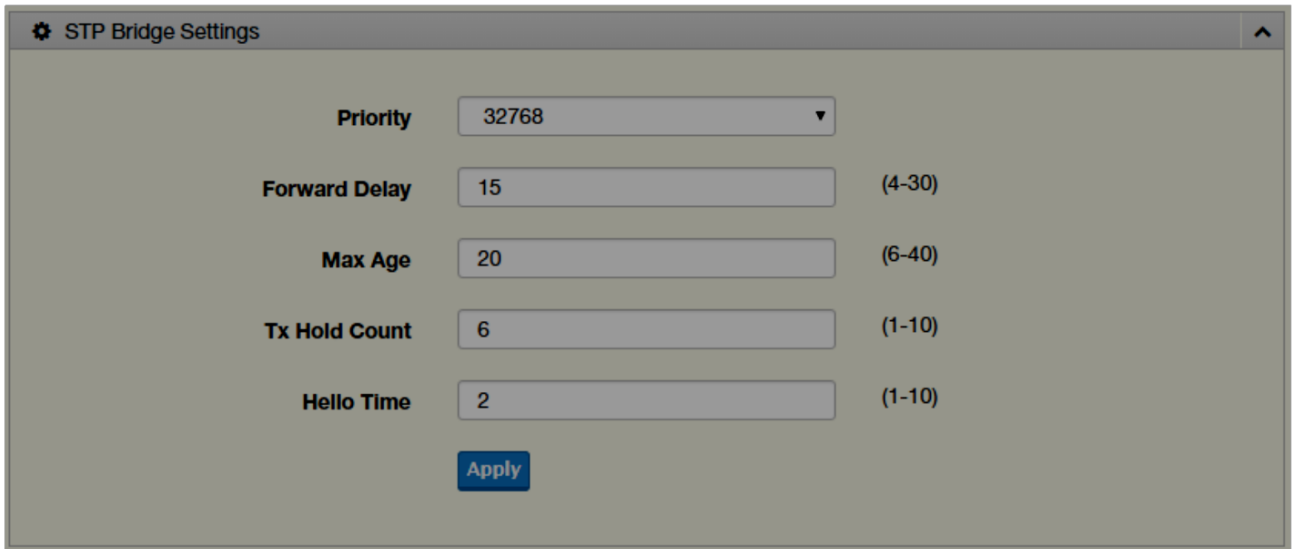


Figure 65: L2 Switching > Spanning Tree > STP Bridge Settings

The following table describes the items in the previous figure.

Item	Description
Priority	Click the drop-down menu to select the STP bridge priority.
Forward Delay	Enter the variable (4 to 30) to set the forward delay for STP bridge settings.
Max Age	Enter the variable (6 to 40) to set the Max age for STP bridge settings.
Tx Hold Count	Enter the variable (1 to 10) to designate the TX hold count for STP bridge settings.
Hello Time	Enter the variable (1 to 10) to designate the Hello Time for STP bridge settings.
Apply	Click **Apply** to save the values and update the screen.

Table 54: L2 Switching > Spanning Tree > STP Bridge Settings

STP Port Advanced Settings

The STP Port Advanced Settings page allows you to select the port list to apply this setting.

To access this page, click **L2 Switching** > **Spanning Tree** > **STP Port Advanced Settings**.

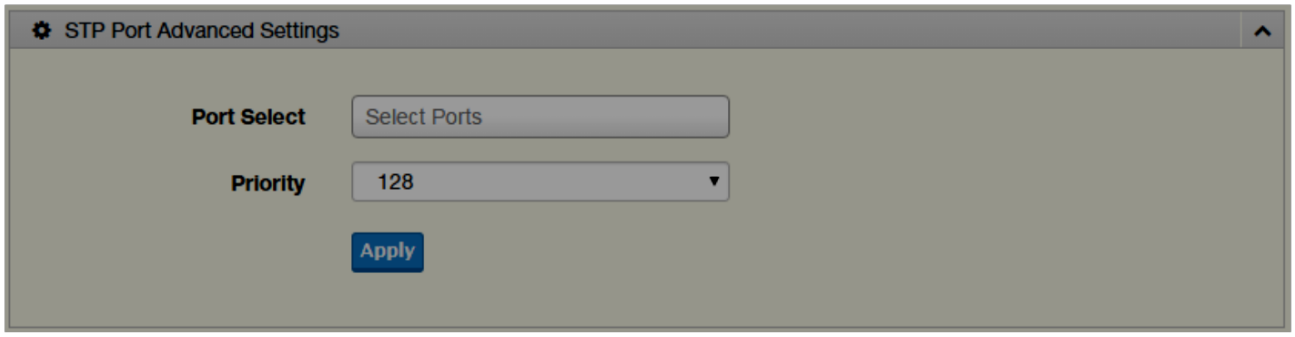


Figure 66: L2 Switching > Spanning Tree > STP Port Advanced Settings

The following table describes the items in the previous figure.

Item	Description
Port Select	Select the port to designate the STP settings.
Priority	Click the drop-down menu to designate a priority.
Apply	Click **Apply** to save the values and update the screen.

Table 55: L2 Switching > Spanning Tree > STP Port Advanced Settings

MST Config Identification

The MST Config Identification page allows you to configure the identification setting name and the identification range.

To access this page, click **L2 Switching** > **Spanning Tree** > **MST Config Identification**.

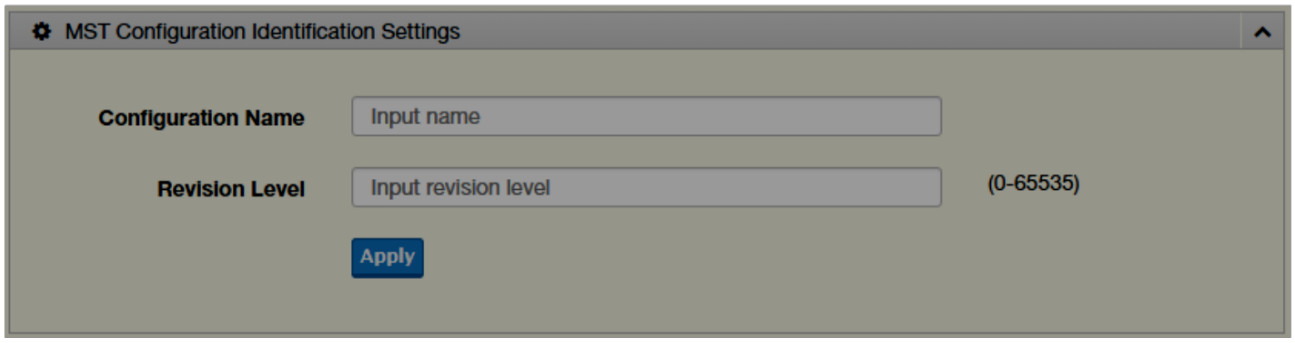


Figure 67: L2 Switching > Spanning Tree > MST Config Identification

The following table describes the items in the previous figure.

Item	Description
Configuration Name	Enter the identifier used to identify the configuration currently being used. It may be up to 32 characters.
Revision Level	Enter the identifier for the Revision Configuration, range: 0 to 65535 (default: 0).
Apply	Click **Apply** to save the values and update the screen.

Table 56: L2 Switching > Spanning Tree > MST Config Identification

MST Instance ID Settings

The MST Instance ID Settings page allows you to edit the MSTI ID and VID List settings.

To access this page, click **L2 Switching** > **Spanning Tree** > **MST Instance ID Settings**.

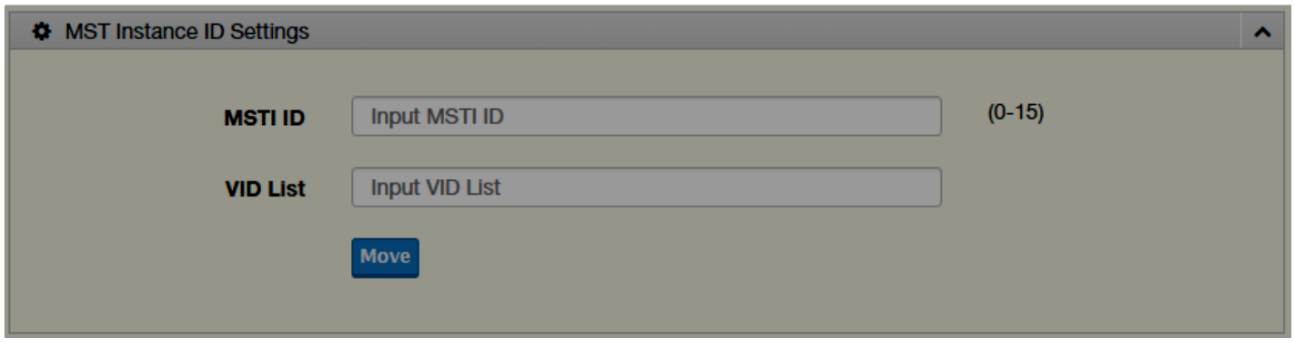


Figure 68: L2 Switching > Spanning Tree > MST Instance ID Settings

The following table describes the items in the previous figure.

Item	Description
MSTI ID	Enter the MST instance ID (0-15).
VID List	Enter the pre-configured VID list.
Move	Click **Move** to save the values and update the screen.

Table 57: L2 Switching > Spanning Tree > MST Instance ID Settings

MST Instance Priority Settings

The MST Instance Priority Settings allows you to specify the MST instance and the bridge priority in that instance.

To access this page, click **L2 Switching** > **Spanning Tree** > **MST Instance Priority Settings**.

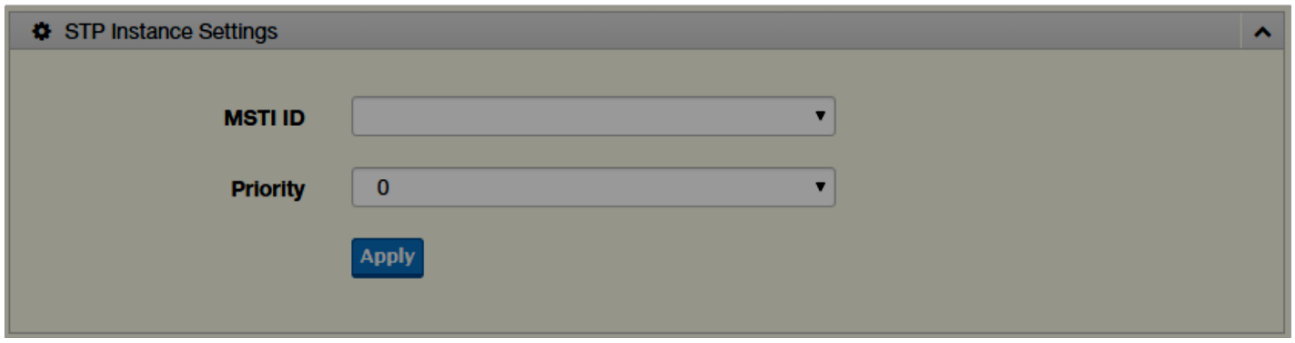


Figure 69: L2 Switching > Spanning Tree > MST Instance Priority Settings

The following table describes the items in the previous figure.

Item	Description
MSTI ID	Click the drop-down menu to specify the MST instance.
Priority	Click the drop-down menu set the bridge priority in the specified MST instance
Apply	Click **Apply** to save the values and update the screen.

Table 58: L2 Switching > Spanning Tree > MST Instance Priority Settings

MST Instance Info

To access this page, click **L2 Switching** > **Spanning Tree** > **MST Instance Info**.

STP Statistics

To access this page, click **L2 Switching** > **Spanning Tree** > **STP Statistics**.

4.5.11 X-RING ELITE

The X-Ring Elite function provides an improvement over Spanning Tree and Rapid Spanning Tree and a rapid auto recovery in the event that the network suffers a corrupt or broken link and prevents network loops.

X-Ring Elite Settings

The X-Ring Elite Settings allows you to enable or disable the state of the X-Ring settings.

To access this page, click **L2 Switching** > **X-Ring Elite** > **X-Ring Elite Settings**.

Figure 70: L2 Switching > X-Ring Elite > X-Ring Elite Settings

The following table describes the items in the previous figure.

Item	Description
State	Select **Enabled** or **Disabled** to setup the X-Ring Elite mode.
Apply	Click **Apply** to save the values and update the screen.

Table 59: L2 Switching > X-Ring Elite > X-Ring Elite Settings

X-Ring Elite Groups

The X-Ring Elite Groups page allows you to select the function and role for each device and the connected ports.

To access this page, click **L2 Switching** > **X-Ring Elite** > **X-Ring Elite Groups**.

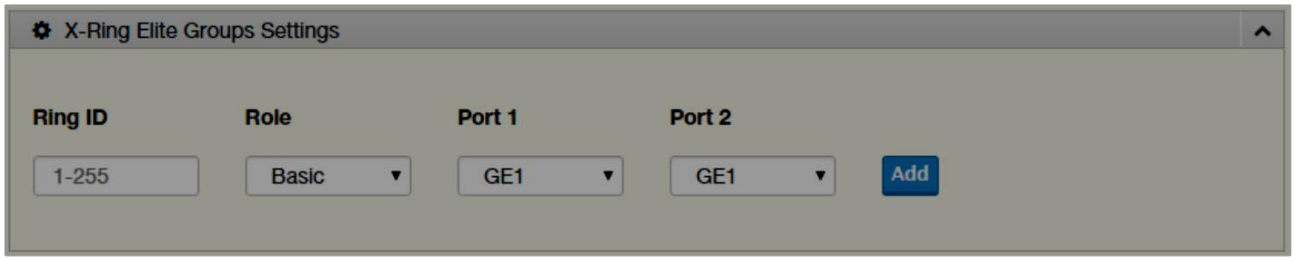


Figure 71: L2 Switching > X-Ring Elite > X-Ring Elite Groups

The following table describes the items in the previous figure.

Item	Description
Ring ID	Enter a number to specifies a ranging from 1 to 255 to identify a given X-Ring Elite group.
Role	Click the drop-down menu to select the ring role.
Port 1	Click the drop-down menu to define the port designation.
Port 2	Click the drop-down menu to define the port designation.
Add	Click **Add** to save the values and update the screen.

Table 60: L2 Switching > X-Ring Elite > X-Ring Elite Groups

4.5.12 X-RING PRO

The X-Ring Pro function provides an improvement over Spanning Tree and Rapid Spanning Tree and a rapid auto recovery in the event that the network suffers a corrupt or broken link and prevents network loops.

X-Ring Pro Settings

The X-Ring Pro Settings page allows you to configure the status (enabled or disabled) of the function.

To access this page, click **L2 Switching** > **X-Ring Pro** > **X-Ring Pro Settings**.

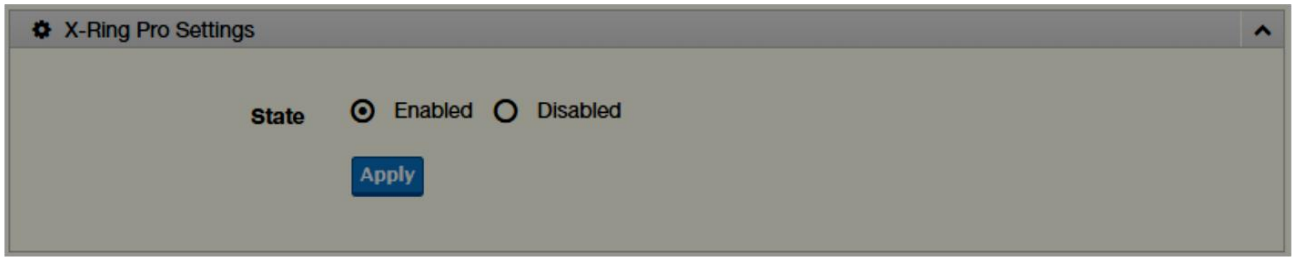


Figure 72: L2 Switching > X-Ring Pro > X-Ring Pro Settings

The following table describes the items in the previous figure.

Item	Description
State	Select **Enabled** or **Disabled** to setup the X-Ring Pro mode.
Apply	Click **Apply** to save the values and update the screen.

Table 61: L2 Switching > X-Ring Pro > X-Ring Pro Settings

X-Ring Pro Groups

The X-Ring Pro Groups page allows you to select the function and role for each ring ID and its connected ports.

To access this page, click **L2 Switching** > **X-Ring Pro** > **X-Ring Pro Groups**.

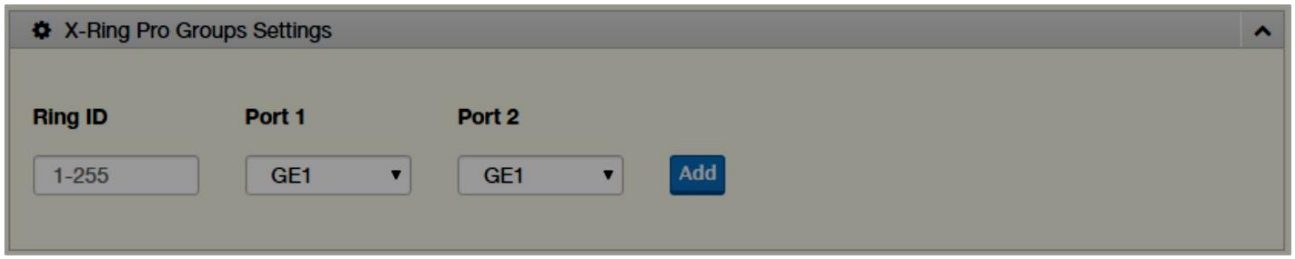


Figure 73: L2 Switching > X-Ring Pro > X-Ring Pro Groups > X-Ring Pro Groups Settings

The following table describes the items in the previous figure.

Item	Description
Ring ID	Enter a number to specifies a ranging from 1 to 255 to identify a given X-Ring Pro group.
Port 1	Click the drop-down menu to define the port designation.
Port 2	Click the drop-down menu to define the port designation.
Add	Click **Add** to save the values and update the screen.

Table 62: L2 Switching > X-Ring Pro > X-Ring Pro Groups > X-Ring Pro Groups Settings

Figure 74: L2 Switching > X-Ring Pro > X-Ring Pro Groups > Couple Setting

The following table describes the items in the previous figure.

Item	Description
Couple Ring ID	Enter a number to specifies a ranging from 1 to 255 to identify a given X-Ring group.
Port	Enter the port to assign to define the couple setting.
Master Ring ID	Click the drop-down menu to designate the master ring.
Add	Click **Add** to save the values and update the screen.

Table 63: L2 Switching > X-Ring Pro > X-Ring Pro Groups > Couple Setting

4.5.13 LOOPBACK DETECTION

The Loopback Detection function is used to detect looped links. By sending detection frames and then checking to see if the frames returned to any port on the device, the function is used to detect loops.

Global Settings

The Global Settings page allows you to configure the state (enabled or disabled) of the function, select the interval at which frames are transmitted and the delay before recovery.

To access this page, click **L2 Switching** > **Loopback Detection** > **Global Settings**.

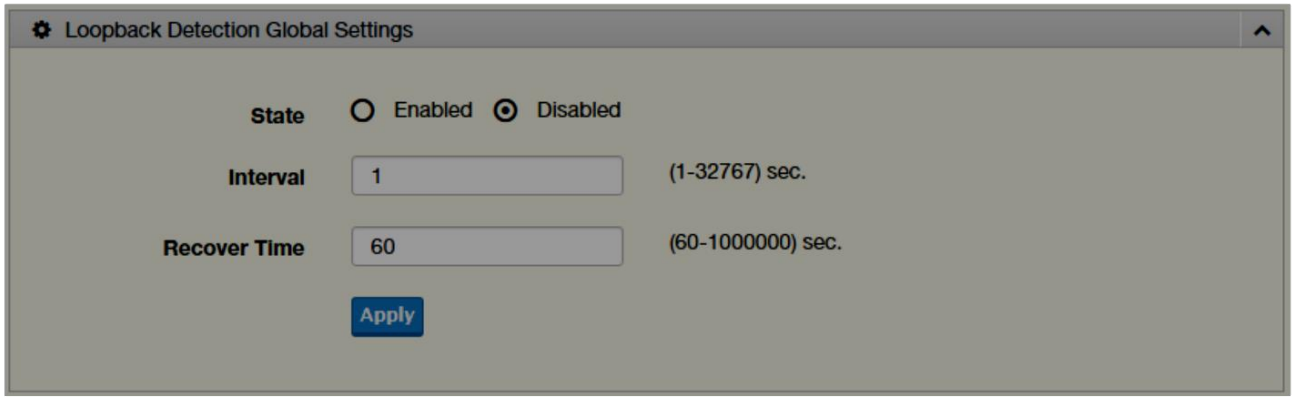


Figure 75: L2 Switching > Loopback Detection > Global Settings

The following table describes the items in the previous figure.

Item	Description
State	Select **Enabled** or **Disabled** to setup the loopback mode.
Interval	Enter the variable in seconds (1 to 32767) to set the interval at which frames are transmitted.
Recover Time	Enter the variable in seconds (60 to 1000000) to define the delay before recovery.
Apply	Click **Apply** to save the values and update the screen.

Table 64: L2 Switching > Loopback Detection > Global Settings

Port Settings

The Port Settings page allows you to select ports that are detected by the loopback detection function and configure their status (enabled or disabled).

To access this page, click **L2 Switching** > **Loopback Detection** > **Port Settings**.

Figure 76: L2 Switching > Loopback Detection > Port Settings

The following table describes the items in the previous figure.

Item	Description
Port Select	Enter the port to define the local loopback detection setting.
Enabled	Select **Enabled** or **Disabled** to setup the Loopback Detection function.
Apply	Click **Apply** to save the values and update the screen.

Table 65: L2 Switching > Loopback Detection > Port Settings

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4.6 MAC ADDRESS TABLE

The MAC Address Table provides access to the Static MAC Settings, MAC Aging Time, and Dynamic Forwarding.

4.6.1 STATIC MAC

The Static MAC page allows you to configure the address for forwarding of packets, the VLAN ID of the listed MAC address and the designated Port.

To access this page, click **MAC Address Table** > **Static MAC**.

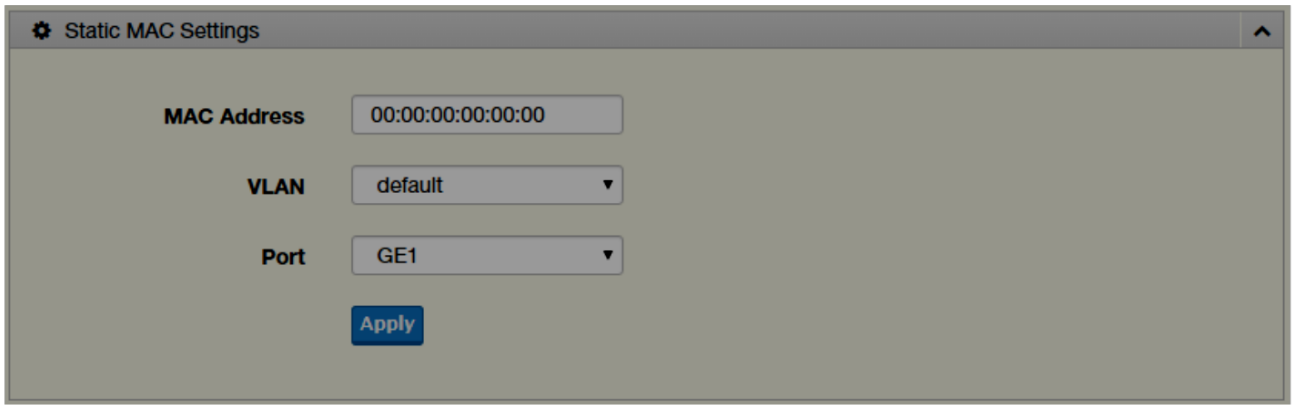

Figure 77: MAC Address Table > Static MAC

The following table describes the items in the previous figure.

Item	Description
MAC Address	Enter the MAC address to which packets are statically forwarded.
VLAN	Click the drop-down menu to select the VLAN ID number of the VLAN for which the MAC address is residing.
Port	Click the drop-down menu to select the port number.
Apply	Click **Apply** to save the values and update the screen.

Table 66: MAC Address Table > Static MAC

4.6.2 MAC AGING TIME

The MAC Aging Time page allows you to set the MAC address of the aging time to study.

To access this page, click **MAC Address Table** > **MAC Aging Time**.

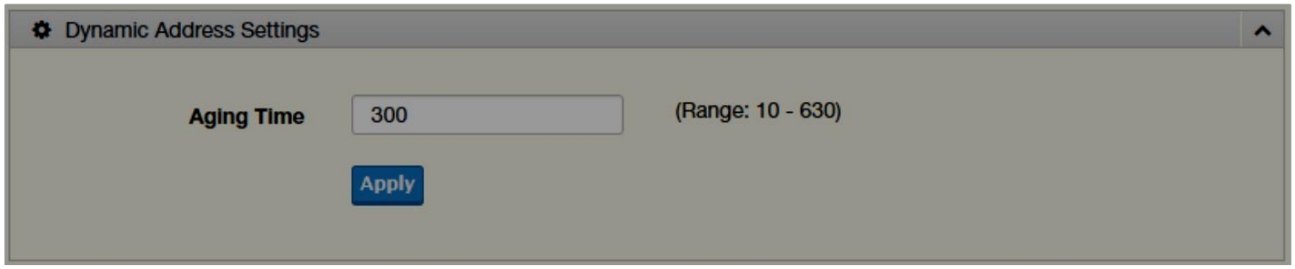

Figure 78: MAC Address Table > MAC Aging Time

The following table describes the items in the previous figure.

Item	Description
Aging Time	Enter the variable (10 to 630) to define the time required for aging.
Apply	Click **Apply** to save the values and update the screen.

Table 67: MAC Address Table > MAC Aging Time

4.6.3 DYNAMIC FORWARDING TABLE

The Dynamic Forwarding function allows you to configure an address table, which contain the following:

- The port each hardware address is associated with
- The VLAN to show or clear dynamic MAC entries
- The MAC address selection

To access this page, click **MAC Address Table** > **Dynamic Forwarding Table**.

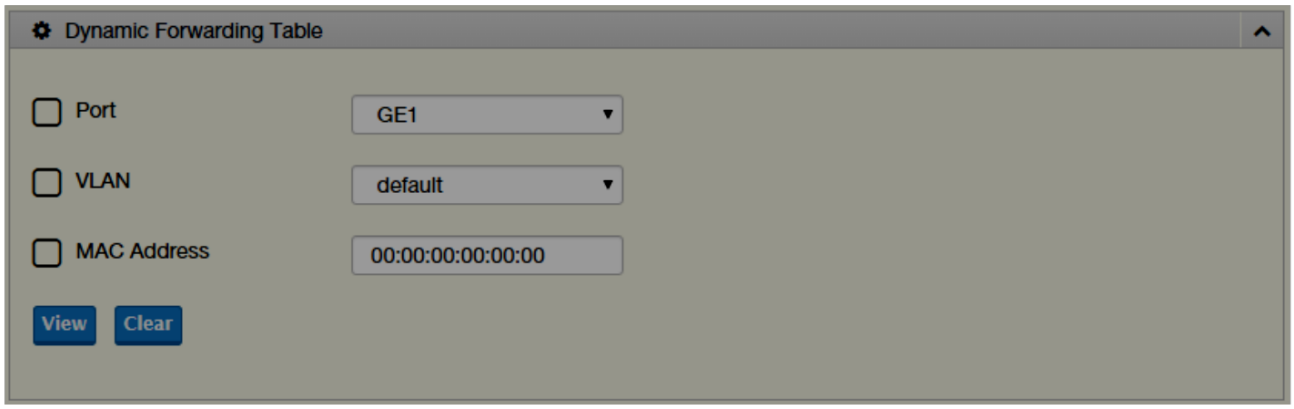

Figure 79: MAC Address Table > Dynamic Forwarding Table

The following table describes the items in the previous figure.

Item	Description
Port	Click the drop-down menu to select the port number to show or clear dynamic MAC entries. If a port, VLAN or MAC address is not selected the whole dynamic MAC table is displayed or cleared.
VLAN	Click the drop-down menu to select the VLAN to show or clear dynamic MAC entries.
MAC Address	Enter the MAC address to show or clear dynamic MAC entries. If a port, VLAN or MAC address is not selected the whole dynamic MAC table is displayed or cleared.
View	Click **View** to display the MAC address information.
Clear	Click **Clear** to clear the MAC Address Information table.

Table 68: MAC Address Table > Dynamic Forwarding Table

4.7 SECURITY

The Security function allows for the configuration of Storm Control, Port Security, Protected Ports, DoS Prevention, Applications, 802.1x, and IP Security.

4.7.1 STORM CONTROL

The Storm Control page allows you to setup the units and Preamble/IFG to manage the occurrence of packet flooding on the LAN and consequent traffic to prevent the degrading of network performance.

Global Settings

To access this page, click **Security** > **Storm Control** > **Global Settings**.

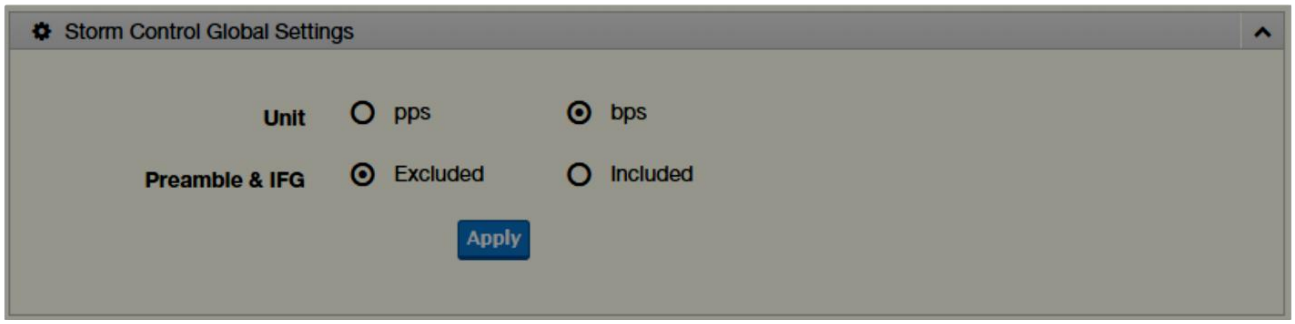

Figure 80: Security > Storm Control > Global Settings

The following table describes the items in the previous figure.

Item	Description
Unit	Select **pps** or **bps** control units for the Storm Control function.
Preamble & IFG	Select **Excluded** or **Included** to setup the Storm Control Global settings. Excluded: exclude preamble & IFG (20 bytes) when count ingress storm control rate. Included: include preamble & IFG (20 bytes) when count ingress storm control rate.
Apply	Click **Apply** to save the values and update the screen.

Table 69: Security > Storm Control > Global Settings

Port Settings

The Port Settings page allows you to configure the port and the type of storm control association along with the value of the storm rate for the selected port.

To access this page, click **Security** > **Storm Control** > **Port Settings**.

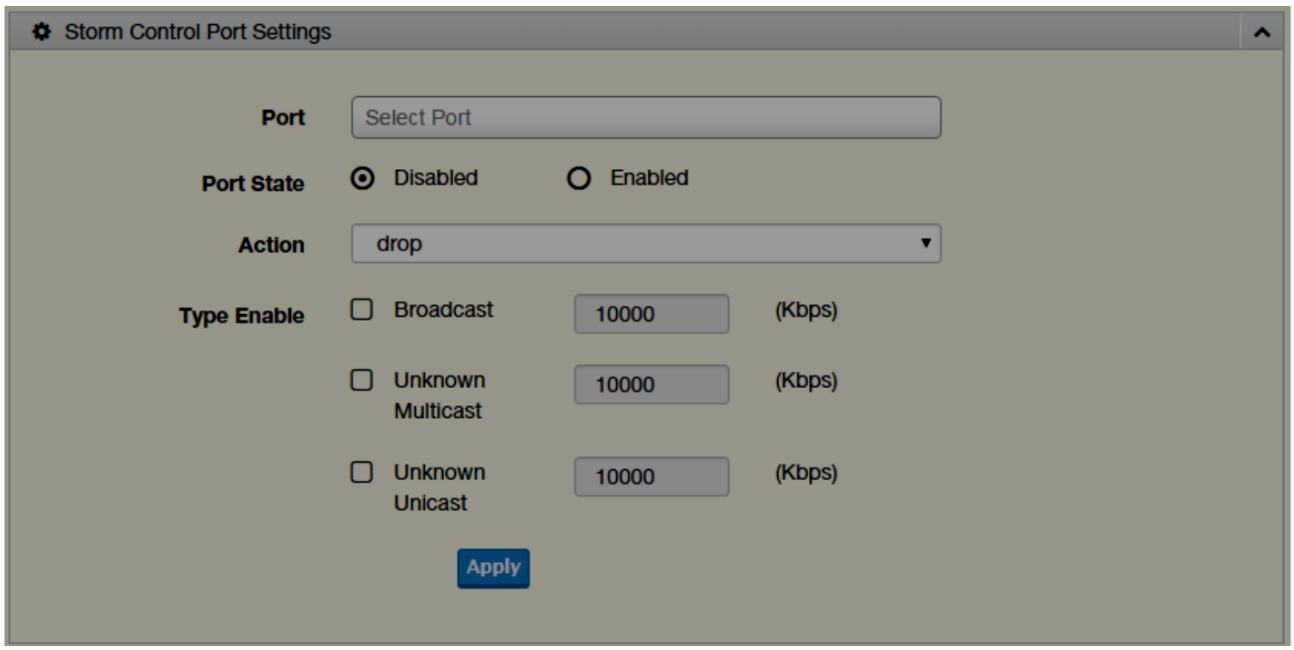

Figure 81: Security > Storm Control > Port Settings

The following table describes the items in the previous figure.

Item	Description
Port	Enter the port number to designate the local port for the Storm Control function.
Port State	Select **Disabled** or **Enabled** to define the port state
Action	Click the drop-down menu to select the type of action to designate for the selected port during a Storm Control incident. The options are Drop and Shutdown.
Type Enable	Click the radio button to enable Broadcast, Unknown Multicast, or Unknown Unicast. ● Broadcast: Select the variable in Kbps to define the broadcast bandwidth. ● Unknown Multicast: Select the variable in Kbps to define the multicast setting. ● Broadcast: Select the variable in Kbps to define the unknown unicast setting.
Apply	Click **Apply** to save the values and update the screen.

Table 70: Security > Storm Control > Port Settings

4.7.2 PORT SECURITY

The Port Security page allows you to configure port isolation behavior.

To access this page, click **Security** > **Port Security**.

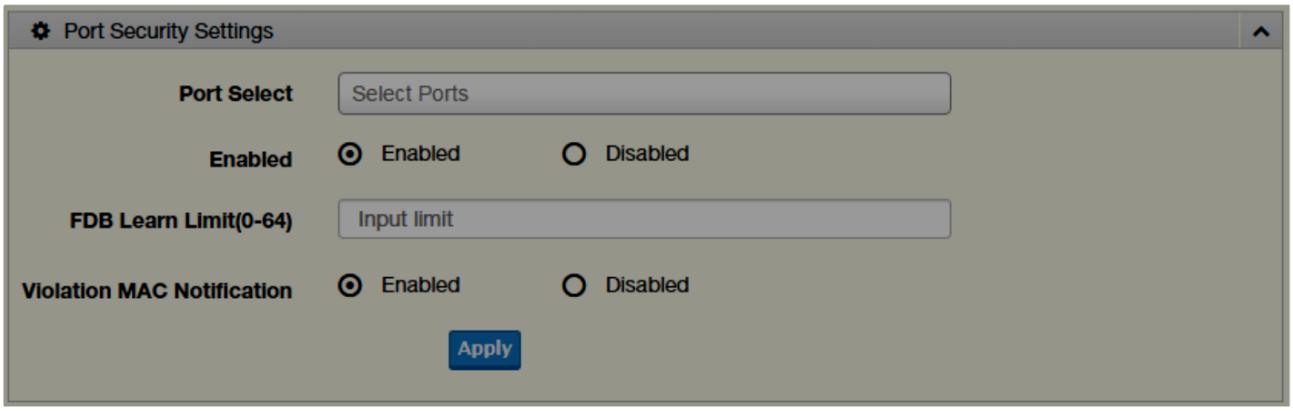

Figure 82: Security > Port Security

The following table describes the items in the previous figure.

Item	Description
Port Select	Enter a single or multiple port numbers to configure.
Enabled	Select **Enabled** or **Disabled** to define the selected Port.
FDB Learn Limit (0-64)	Enter the variable (0 to 64) to set the learn limit for the FDB setting.
Violation MAC Notification	Select **Enabled** or **Disabled** to define the selected Port.
Apply	Click **Apply** to save the values and update the screen.

Table 71: Security > Port Security

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4.7.3 PROTECTED PORTS

The Protected Port page allows you to configure a single or multiple ports as a protected or unprotected type.

To access this page, click **Security** > **Protected Ports**.

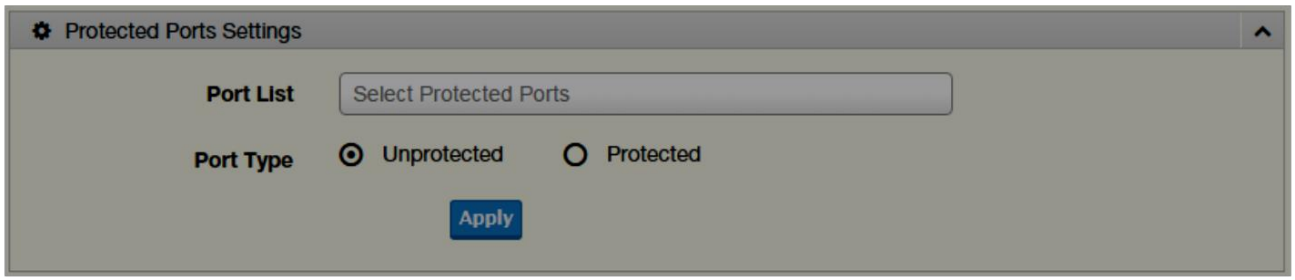

Figure 83: Security > Protected Ports

The following table describes the items in the previous figure.

Item	Description
Port List	Enter the port number to designate for the Protected Port setting.
Port Type	Select **Unprotected** or **Protected** to define the port type.
Apply	Click **Apply** to save the values and update the screen.

Table 72: Security > Protected Ports

.

4.7.4 DOS PREVENTION

The DoS Prevention page allows you to setup (enabled or disabled) the denial of service.

DoS Global Settings

The DoS Global Settings page allows you to configure (enabled or disabled) the setting for each function.

To access this page, click **Security** > **DoS Prevention** > **DoS Global Settings**.

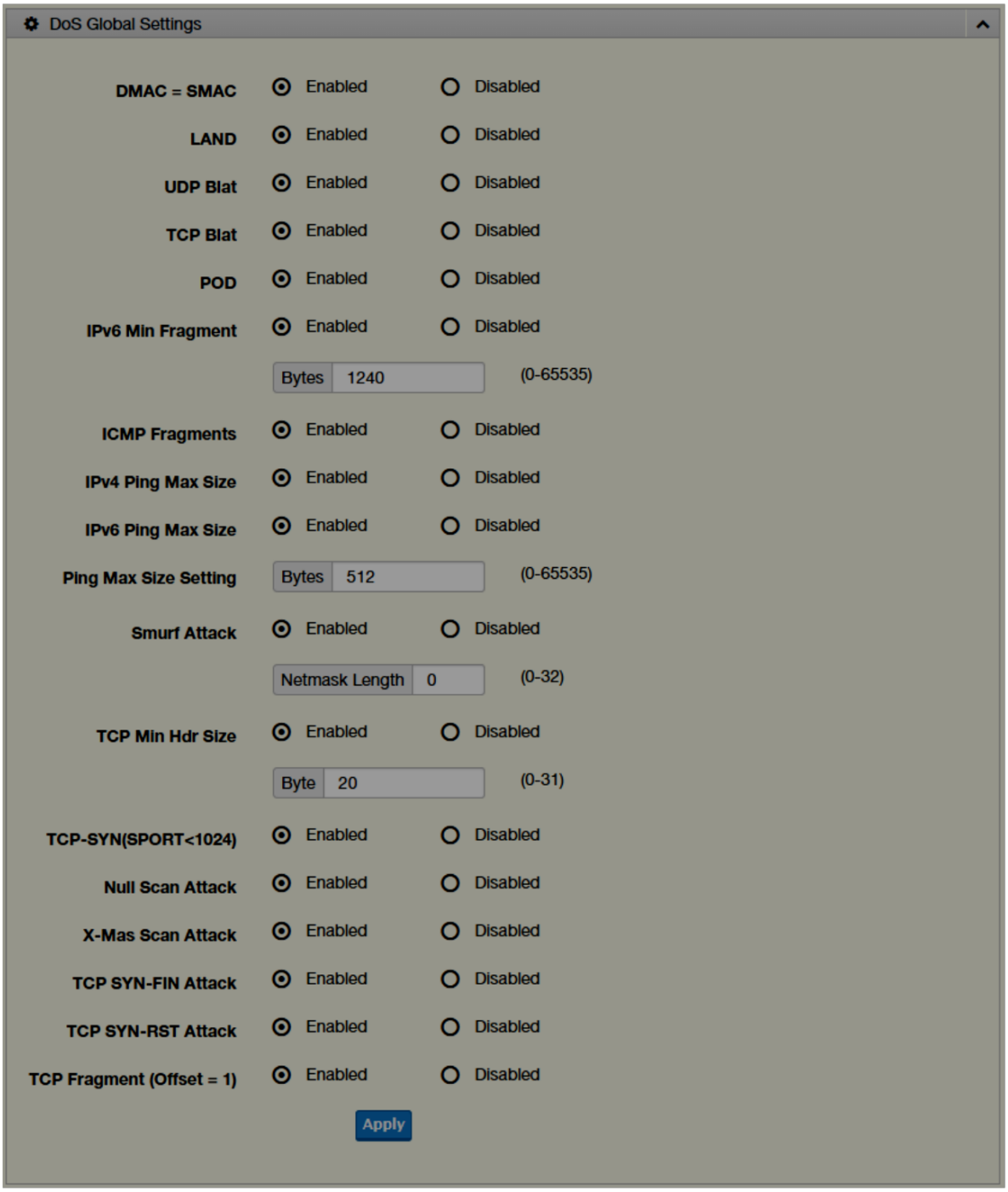

Figure 84: Security > DoS Prevention > DoS Global Settings

Item	Description
DMAC = SMAC	Click **Enabled** or **Disabled** to define DMAC-SMAC for the DoS Global settings.
LAND	Click **Enabled** or **Disabled** to define LAND for the DoS Global settings.
UDP Blat	Click **Enabled** or **Disabled** to define UDP Blat for the DoS Global settings.
TCP Blat	Click **Enabled** or **Disabled** to define TCP Blat for the DoS Global settings.
POD	Click **Enabled** or **Disabled** to define POD for the DoS Global settings.
IPv6 Min Fragment	Click **Enabled** or **Disabled** to define minimum fragment size for the IPv6 protocol. Enter the variable in bytes (0 to 65535) to set the minimum fragment size when the function is enabled.
ICMP Fragments	Click **Enabled** or **Disabled** to define the ICMP Fragments function.
IPv4 Ping Max Size	Click **Enabled** or **Disabled** to set the maximum ping size for the IPv4 protocol.
IPv6 Ping Max Size	Click **Enabled** or **Disabled** to set a maximum ping size for the IPv6 protocol.
Ping Max Size Setting	Enter the variable in bytes (0 to 65535) to set the maximum ping size.
Smurf Attack	Click **Enabled** or **Disabled** to set the Smurf Attack function.
TCP Min Hdr Size	Click **Enabled** or **Disabled** to set the minimum header size. Enter the variable in bytes (0 to 31) to set the minimum header size.
TCP-SYN (SPORT < 1024)	Click **Enabled** or **Disabled** to set the TCP synchronization function (sport < 1021).
Null Scan Attack	Click **Enabled** or **Disabled** to set the Null Scan Attack function.
X-Mas Scan Attack	Click **Enabled** or **Disabled** to set the X-Mas Scan function.
TCP SYN-FIN Attack	Click **Enabled** or **Disabled** to set the TCP synchronization termination attack function.
TCP SYN-RST Attack	Click **Enabled** or **Disabled** to set the TCP synchronization reset attack function.
TCP Fragment (Offset = 1)	Click **Enabled** or **Disabled** to set the TCP fragment function (offset =1).
Apply	Click **Apply** to save the values and update the screen.

Table 73: Security > DoS Prevention > DoS Global Settings

DoS Port Settings

The DoS Port Settings page allow you to configure DoS security (enabled or disabled) for the selected port.

To access this page, click **Security** > **DoS Prevention** > **DoS Port Settings**.

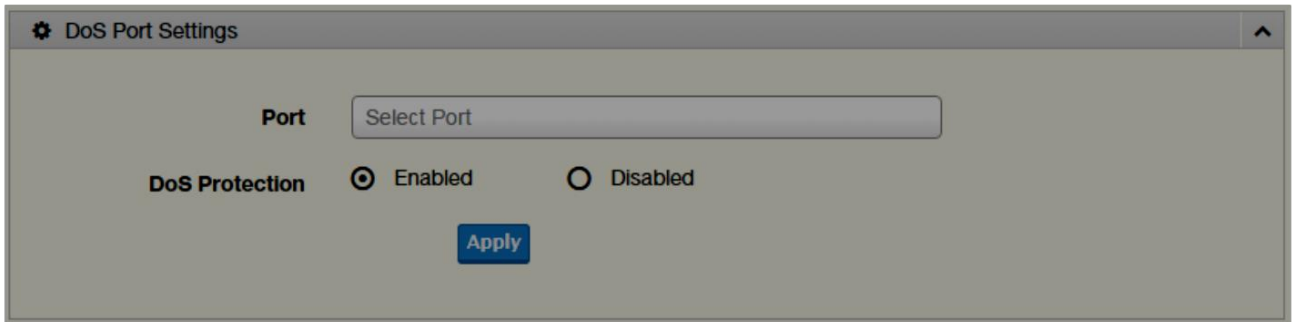

Figure 85: Security > DoS Prevention > DoS Port Settings

The following table describes the items in the previous figure.

Item	Description
Port	Select the port to configure for the DoS prevention function.
DoS Protection	Click **Enabled** or **Disabled** to set the DoS Port security function state.
Apply	Click **Apply** to save the values and update the screen.

Table 74: Security > DoS Prevention > DoS Port Settings

4.7.5 APPLICATIONS

The Applications function allows you to configure various types of AAA lists.

TELNET

The TELNET page allows you to combine all kinds of AAA lists with the Telnet line.

To access this page, click **Security** > **Applications** > **TELNET**.

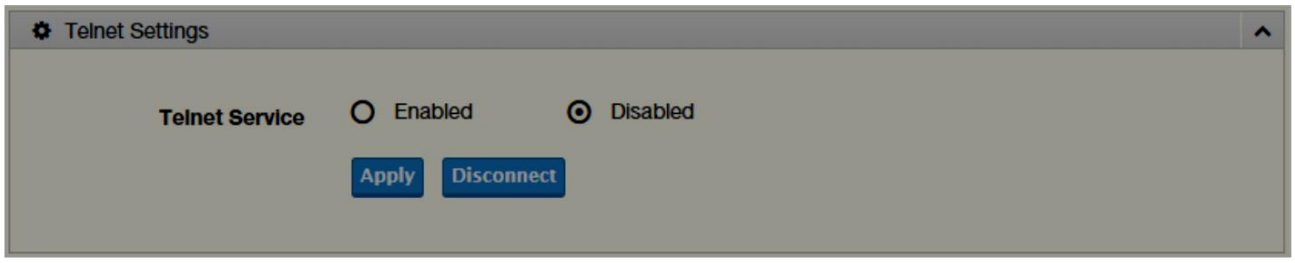

Figure 86: Security > Applications > TELNET

The following table describes the items in the previous figure.

Item	Description
Telnet Service	Click **Enabled** or **Disabled** to set remote access through the Telnet Service function.
Apply	Click **Apply** to save the values and update the screen.
Disconnect	Click **Disconnect** to disable the current Telnet service.

Table 75: Security > Applications > TELNET

SSH

Secure Shell (SSH) is a protocol providing secure (encrypted) management connection to a remote device.

To access this page, click **Security** > **Applications** > **SSH**.

Figure 87: Security > Applications > SSH

The following table describes the items in the previous figure.

Item	Description
SSH Service	Click **Enabled** or **Disabled** to set up Ethernet encapsulation (remote access) through the Secure Shell (SSH) function.
Apply	Click **Apply** to save the values and update the screen.

Table 76: Security > Applications > SSH

HTTP

The HTTP page allows you to combine all kinds of AAA lists to the HTTP line. Attempts to access the switch's Web UI from HTTP are first authenticated.

To access this page, click **Security** > **Applications** > **HTTP**.

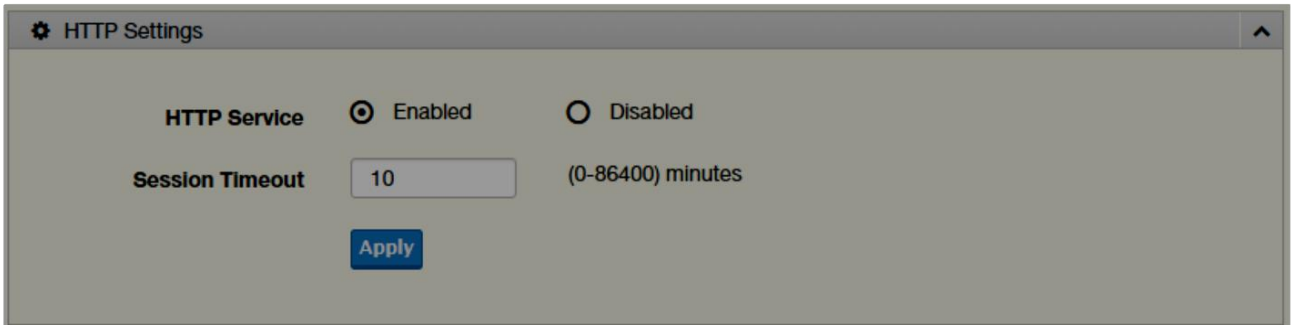

Figure 88: Security > Applications > HTTP

The following table describes the items in the previous figure.

Item	Description
HTTP Service	Click **Enabled** or **Disabled** to set up Ethernet encapsulation (remote access) through HTTP function.
Session Timeout	Enter the variable in minutes (0 to 86400) to define the timeout period for the HTTP session.
Apply	Click **Apply** to save the values and update the screen.

Table 77: Security > Applications > HTTP

HTTPS

The HTTPS page allows you to combine all kinds of AAA lists on the HTTPS line. Attempts to access the switch's Web UI from HTTPS are first authenticated.

To access this page, click **Security** > **Applications** > **HTTPS**.

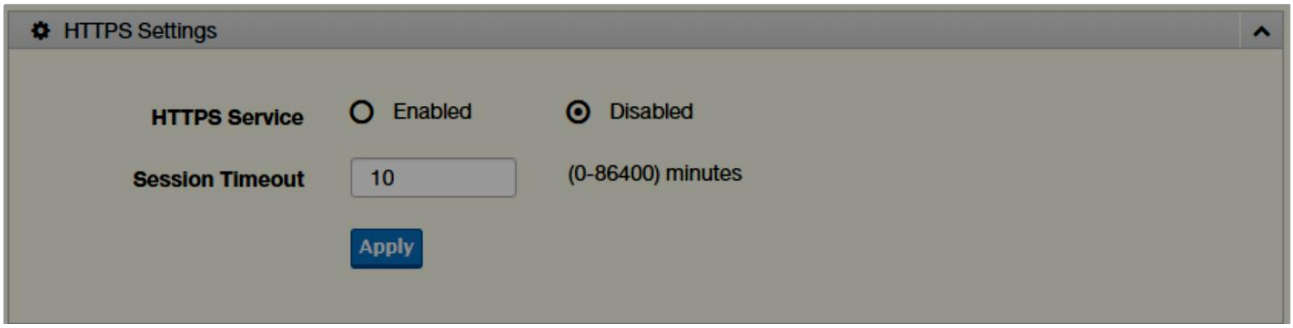

Figure 89: Security > Applications > HTTPS

The following table describes the items in the previous figure.

Item	Description
HTTPS Service	Click **Enabled** or **Disabled** to set up Ethernet encapsulation over HTTPS.
Session Timeout	Enter the variable in minutes (0 to 86400) to define the timeout period for the HTTP session.
Apply	Click **Apply** to save the values and update the screen.

Table 78: Security > Applications > HTTPS

4.7.6 802.1X

The 802.1x function provides port-based authentication to prevent unauthorized devices (clients) from gaining access to the network.

802.1x Settings

The 802.1x Settings page allows you to set the state (enabled or disabled) for the selected IP server address, port, accounting port and associated password, including a reauthentication period.

To access this page, click **Security** > **802.1x** > **802.1x Settings**.

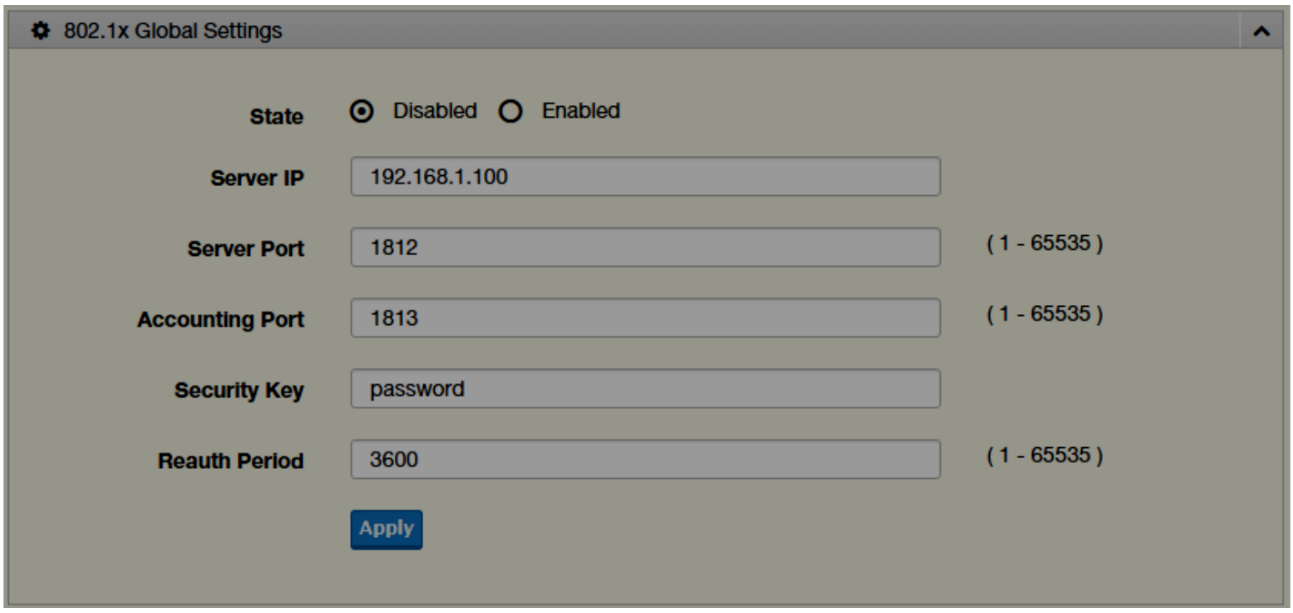

Figure 90: Security > 802.1x > 802.1x Settings

The following table describes the items in the previous figure.

Item	Description
State	Click **Enabled** or **Disabled** to set up 802.1x Setting function.
Server IP	Enter the IP address of the local server providing authentication function.
Server Port	Enter the port number (1 to 65535) assigned to the listed Server IP.
Accounting Port	Enter the port number (1 to 65535) assigned to the listed server IP configured to provide authorization and authentication for network access.
Security Key	Enter the variable to define the network security key used in authentication.
Reauth Period	Enter the variable in seconds to define the period of time between authentication attempts.
Apply	Click **Apply** to save the values and update the screen.

Table 79: Security > 802.1x > 802.1x Settings

802.1x Port Configuration

The 802.1x Port Configuration page allows you to identify the authorization state for a port by using a MAC or Port authentication base.

To access this page, click **Security** > **802.1x** > **802.1x Port Configuration**.

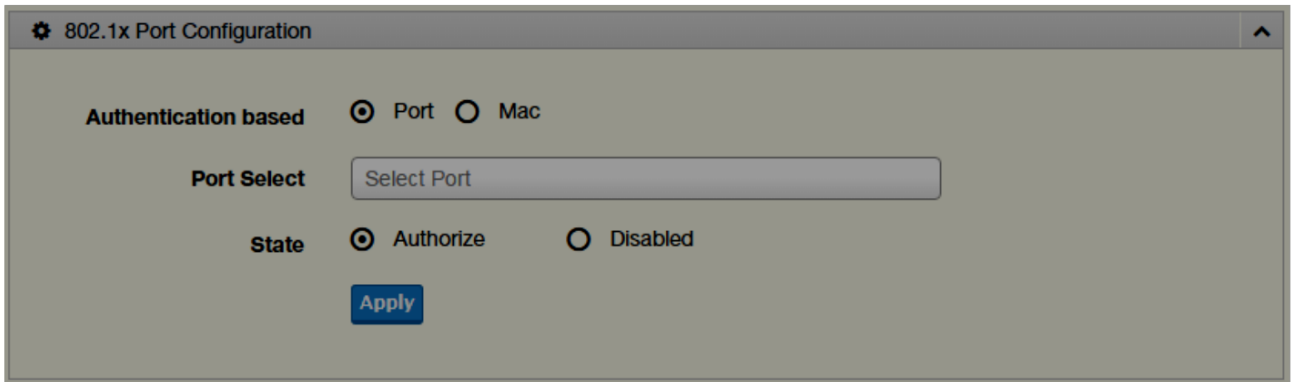

Figure 91: Security > 802.1x > 802.1x Port Configuration

The following table describes the items in the previous figure.

Item	Description
Authentication based	Click **Port** or **Mac** to designate the type of configuration for the 802.1x Port setting.
Port Select	Enter the port number associated with the configuration setting.
State	Click **Authorize** or **Disabled** to define the listed port's state mode.
Apply	Click **Apply** to save the values and update the screen.

Table 80: Security > 802.1x > 802.1x Port Configuration

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4.7.7 IP SECURITY

This section provides you a means to configure the IP Security settings.

Global Settings

The Global Settings page allows you to set the IP Security status (enabled or disabled).

To access this page, click **Security** > **IP Security** > **Global Settings**.

Figure 92: Security > IP Security > Global Settings

The following table describes the items in the previous figure.

Item	Description
Status	Click **Enabled** or **Disabled** to define the global setting for the IP security function.
Apply	Click **Apply** to save the values and update the screen.

Table 81: Security > IP Security > Global Settings

Entry Settings

Once the Global Setting is enabled, use the Entry Settings to define an IP Security entry.

To access this page, click **Security** > **IP Security** > **Entry Settings**.

Figure 93: Security > IP Security > Entry Settings

The following table describes the items in the previous figure.

Item	Description
IP Address	Enter the source IP address to apply the IP Security function.
IP Mask	Enter the IP address for use in masking the previous IP Address.
Services	Enter the type of services to associate with the entry setting.
Apply	Click **Apply** to save the values and update the screen.

Table 82: Security > IP Security > Entry Settings

4.8 QOS

The QoS function allows you to configure settings for the switch QoS interface and how the switch connects to a remote server to get services.

4.8.1 GENERAL

Traditionally, networks operate on a best-effort delivery basis, all traffic has equal priority and an equal chance of being delivered in a timely manner. When there is congestion, all traffic has an equal chance of being dropped.

The QoS feature can be configured for congestion-management and congestion-avoidance to specifically manage the priority of the traffic delivery. Implementing QoS in the network makes performance predictable and bandwidth utilization much more effective.

The QoS implementation is based on the prioritization values in Layer 2 frames.

QoS Properties

The QoS Properties allows you to set the QoS mode.

To access this page, click **QoS** > **General** > **QoS Properties**.

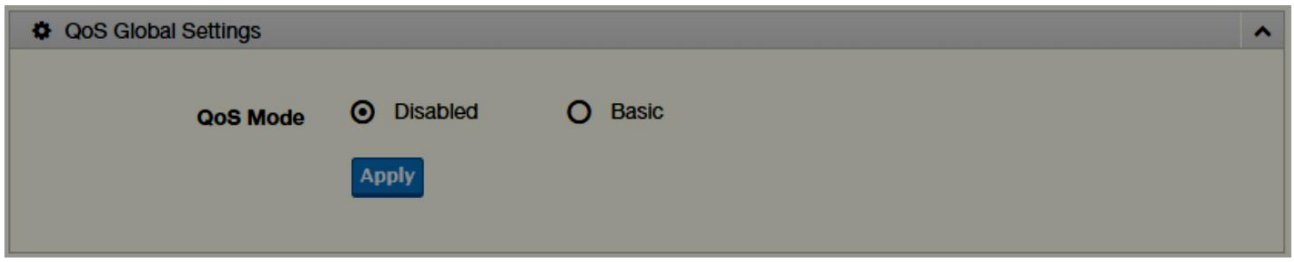


Figure 94: QoS > General > QoS Properties

The following table describes the items in the previous figure.

Item	Description
QoS Mode	Select **Disabled** or **Basic** to setup the QoS function.
Apply	Click **Apply** to save the values and update the screen.

Table 83: QoS > General > QoS Properties

QoS Settings

Once the QoS function is enabled, you can configure the available settings.

To access this page, click **QoS** > **General** > **QoS Settings**.

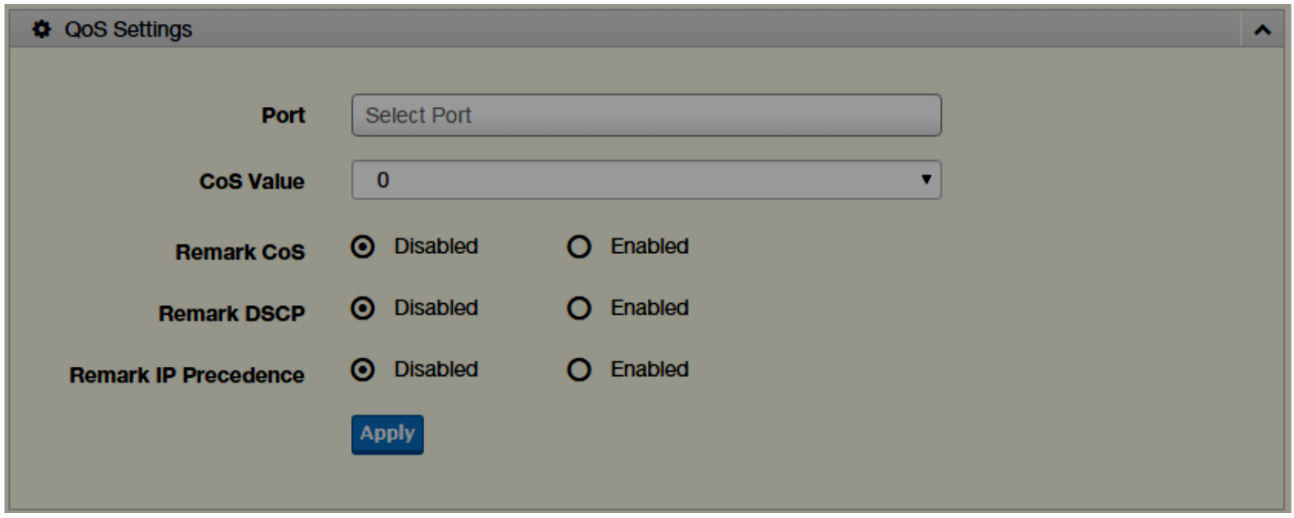


Figure 95: QoS > General > QoS Settings

The following table describes the items in the previous figure.

Item	Description
Port	Enter the port number to associate with the QoS setting.
CoS Value	Click the drop-down menu to designate the Class of Service (CoS) value (0 to 7) for the Port entry.
Remark CoS	Click **Disabled** or **Enabled** to setup the Remark CoS function. When enabled the LAN (preassigned priority values) is marked at Layer 2 boundary to CoS values.
Remark DSCP	Click **Disabled** or **Enabled** to setup the DSCP remark option for the QoS function.
Remark IP Precedence	Click **Disabled** or **Enabled** to setup the Remark IP Precedence for the QoS function.
Apply	Click **Apply** to save the values and update the screen.

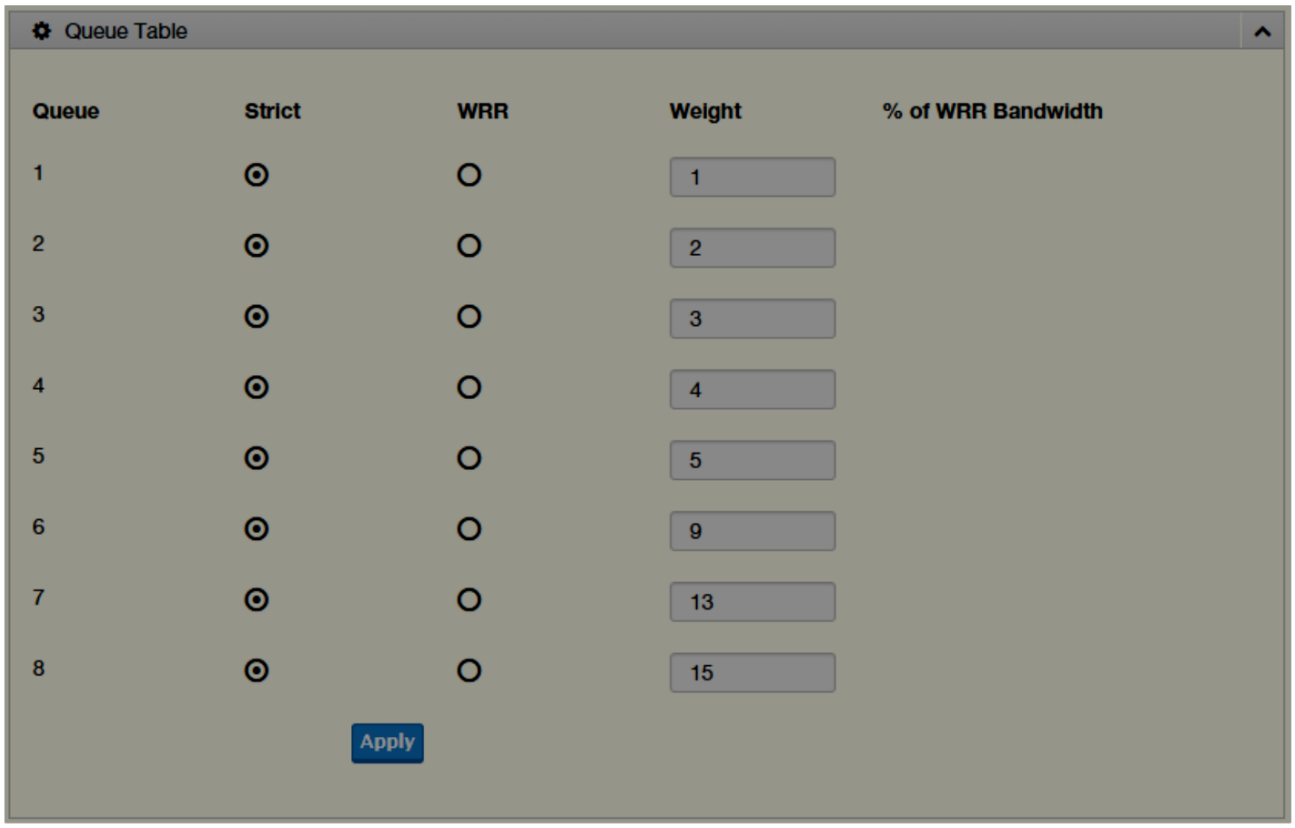
Table 84: QoS > General > QoS Settings

Queue Scheduling

The switch support eight CoS queues for each egress port. For each of the eight queues, two types of scheduling can be configured: Strict Priority and Weighted Round Robin (WRR).

Strict Priority scheduling is based on the priority of queues. Packets in a high-priority queue are always sent first and packets in a low-priority queue are only sent after all the high priority queues are empty.

Weighted RoundRobin (WRR) scheduling is based on the user priority specification to indicate the importance (weight) of the queue relative to the other CoS queues. WRR scheduling prevents low-priority queues from being completely ignored during periods of high priority traffic. The WRR scheduler sends some packets from each queue in turn.



To access this page, click **QoS** > **General** > **QoS Scheduling**.

Figure 96: QoS > General > QoS Scheduling

The following table describes the items in the previous figure.

Item	Description
Queue	Queue entry for egress port.
Strict	Select Strict to assign the scheduling designation to the selected queue.
WRR	Select WRR to assign the scheduling designation to the selected queue.
Weight	Enter a queue priority (weight) relative to the defined entries (WRR only).
% of WRR Bandwidth	Displays the allotted bandwidth for the queue entry in percentage values.
Apply	Click **Apply** to save the values and update the screen.

Table 85: QoS > General > QoS Scheduling

CoS Mapping

The CoS Mapping allows you to apply CoS mapping.

To access this page, click **QoS** > **General** > **CoS Mapping**.

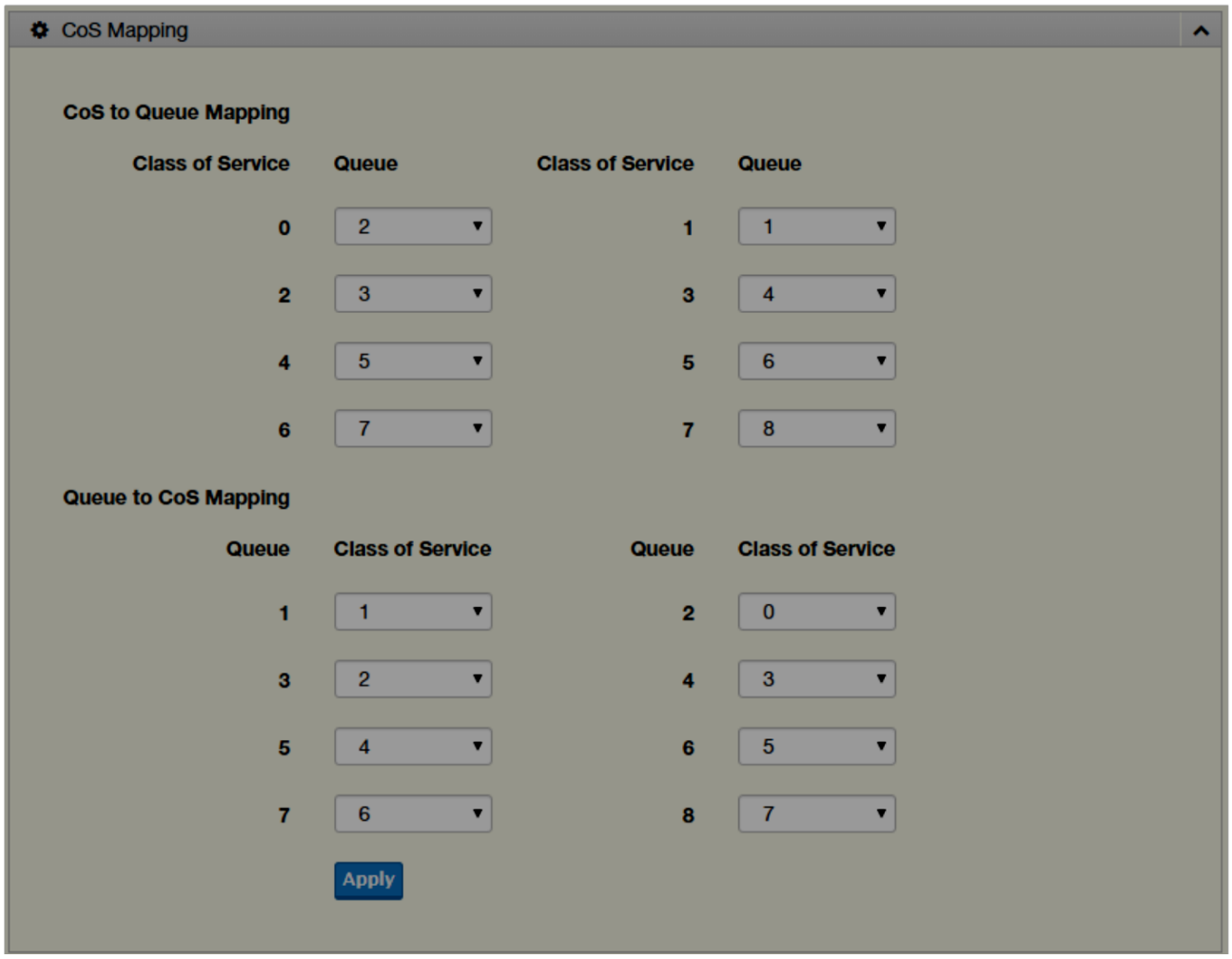


Figure 97: QoS > General > CoS Mapping

The following table describes the items in the previous figure.

Item	Description
CoS to Queue Mapping	
Class of Service	Displays the CoS for the queue entry.
Queue	Click the drop-down menu to select the queue priority for selected CoS
Queue to CoS Mapping	
Queue	Displays the queue entry for CoS mapping.
Class of Service	Click the drop-down menu to select the CoS type
Apply	Click **Apply** to save the values and update the screen.

Table 86: QoS > General > CoS Mapping

DSCP Mapping

The DSCP to Queue mapping function maps queue values in incoming packets to a DSCP value that QoS uses internally to represent the priority of the traffic.

If these values are not appropriate for your network, you need to modify them.

To access this page, click **QoS** > **General** > **DSCP Mapping**.

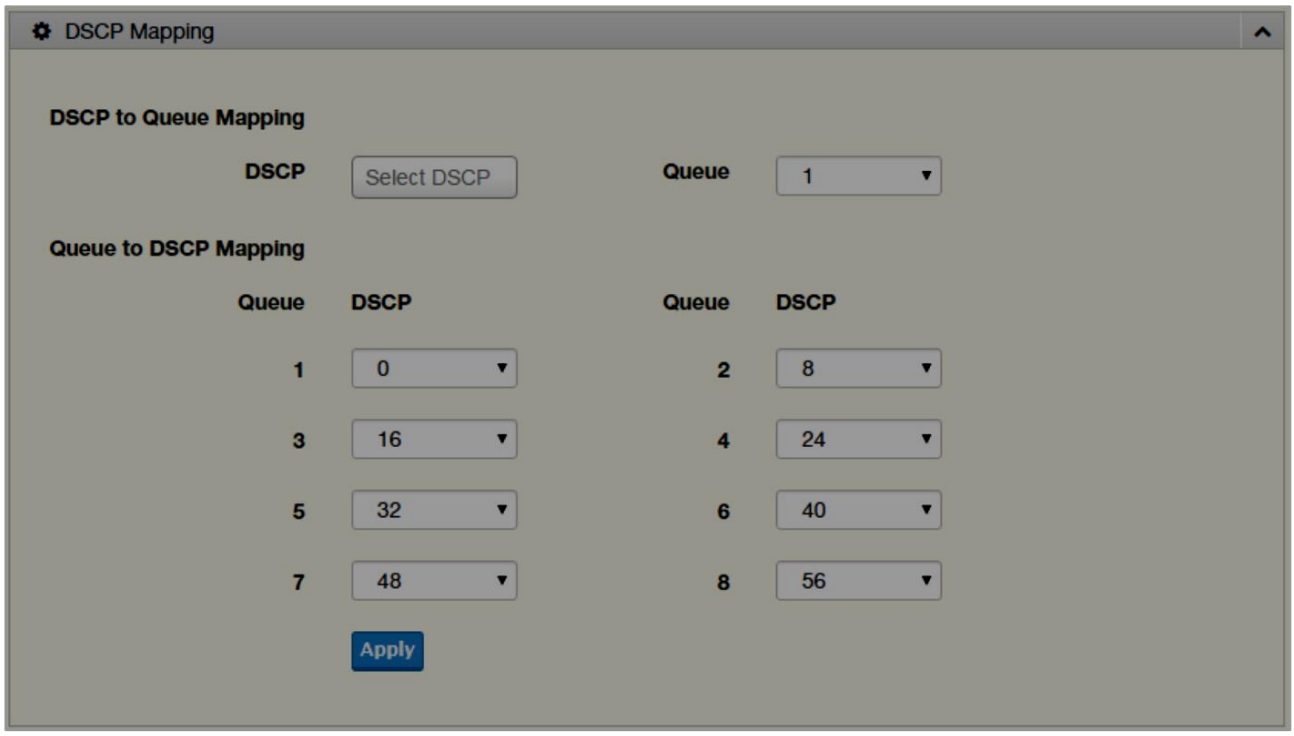


Figure 98: QoS > General > DSCP Mapping

The following table describes the items in the previous figure.

Item	Description
DSCP to Queue Mapping	
DSCP	Enter the DSCP entry to define the precedence values.
Queue	Click the drop-down menu to select the queue designation for the DSCP value.
Queue to DSCP Mapping	
Queue	Displays the queue value for the DSCP map.
DSCP	Enter the DSCP entry to define the precedence values.
Apply	Click **Apply** to save the values and update the screen.

Table 87: QoS > General > DSCP Mapping

IP Precedence Mapping

The IP Precedence Mapping allows you to set IP Precedence mapping.

To access this page, click **QoS** > **General** > **IP Precedence Mapping**.

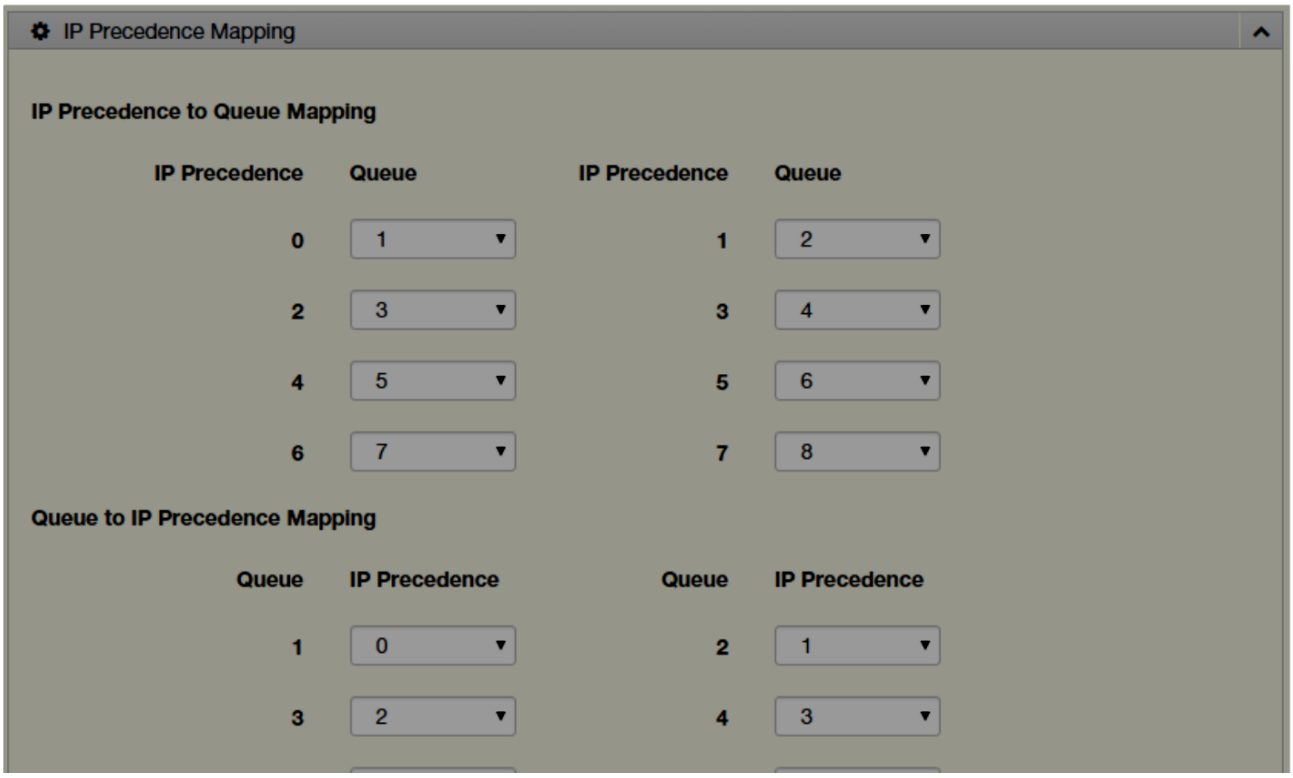


Figure 99: QoS > General > IP Precedence Mapping

The following table describes the items in the previous figure.

Item	Description
IP Precedence to Queue Mapping	
IP Precedence	Displays the IP precedence value for the queue map.
Queue	Click the drop-down menu to map a queue value to the selected IP precedence.
Queue to IP Precedence Mapping	
Queue	Displays the queue entry for mapping IP precedence values.
IP Precedence	Click the drop-down menu to map an IP precedence value to the selected queue.
Apply	Click **Apply** to save the values and update the screen.

Table 88: QoS > General > IP Precedence Mapping

4.8.2 QOS BASIC MODE

Quality of Service (QoS) allows to give preferential treatment to certain types of traffic at the expense of others. Without QoS, the switch offers best-effort service to each packet, regardless of the packet contents or size sending the packets without any assurance of reliability, delay bounds, or throughput.

QoS mode supports two modes: 802.1p and DSCP.

Global Settings

The Global Settings page allows you to configure the trust mode to a port selection.

To access this page, click **QoS** > **QoS Basic Mode** > **Global Settings**.

The function is only available when **QoS Properties** is set to **Basic**.

Figure 100: QoS > QoS Basic Mode > Global Settings

The following table describes the items in the previous figure.

Item	Description
Trust Mode	Click the drop-down menu to select the trust state of the QoS basic mode.
Apply	Click **Apply** to save the values and update the screen.

Figure 101: QoS > QoS Basic Mode > Global Settings

Port Settings

The Port Settings page allows you to define a trust state (enabled or disabled) to a listed port.

To access this page, click **QoS** > **QoS Basic Mode** > **Port Settings**.

Figure 102: QoS > QoS Basic Mode > Port Settings

The following table describes the items in the previous figure.

Item	Description
Port	Enter the port number for the QoS basic mode setting.
Trust State	Select **Enabled** or **Disabled** to set the port's trust state status.
Apply	Click **Apply** to save the values and update the screen.

Table 89: QoS > QoS Basic Mode > Port Settings

4.8.3 RATE LIMIT

Rate Limits features control on a per port basis. Bandwidth control is supported for the following: Ingress Bandwidth Control, Egress Bandwidth Control and Egress Queue.

Ingress Bandwidth Control

The Ingress Bandwidth Control page allows you to configure the bandwidth control for a listed port.

To access this page, click **QoS** > **Rate Limit** > **Ingress Bandwidth Control**.

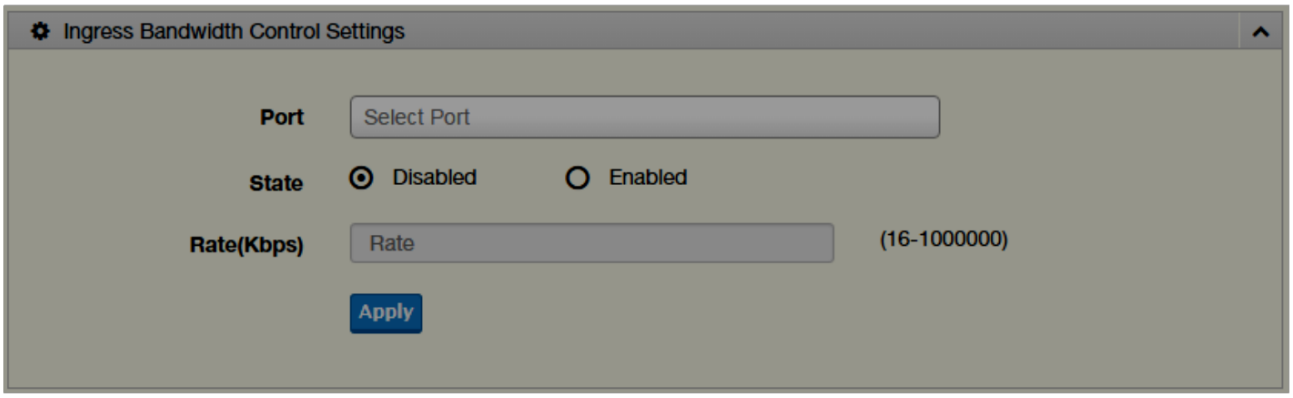


Figure 103: QoS > Rate Limit > Ingress Bandwidth Control

The following table describes the items in the previous figure.

Item	Description
Port	Enter the port number for the rate limit setup.
State	Select **Disabled** or **Enabled** to set the port's state status.
Rate (Kbps)	Enter the value in Kbps (16 to 1000000) to set as the bandwidth rate for the selected port.
Apply	Click **Apply** to save the values and update the screen.

Table 90: QoS > Rate Limit > Ingress Bandwidth Control

Egress Bandwidth Control

The Egress Bandwidth Control page allows you to set the egress bandwidth control for a listed port.

To access this page, click **QoS** > **Rate Limit** > **Egress Bandwidth Control**.

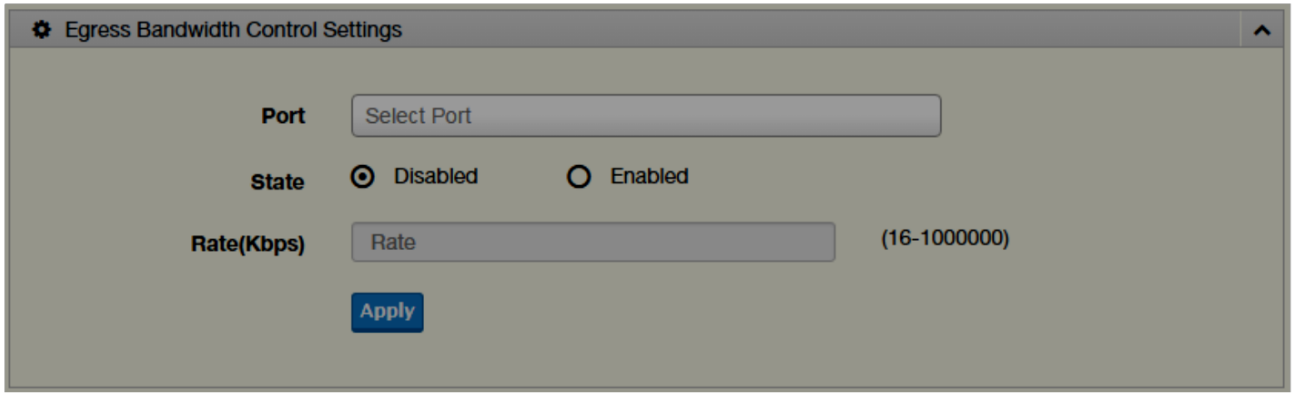


Figure 104: QoS > Rate Limit > Egress Bandwidth Control

The following table describes the items in the previous figure.

Item	Description
Port	Enter the port number to set the Egress Bandwidth Control.
State	Select **Disabled** or **Enabled** to set the Egress Bandwidth Control state.
Rate (Kbps)	Enter the value in Kbps (16 to 1000000) to set the Egress Bandwidth rate.
Apply	Click **Apply** to save the values and update the screen.

Table 91: QoS > Rate Limit > Egress Bandwidth Control

Egress Queue

The Egress Queue page allows you to set the egress bandwidth parameters.

To access this page, click **QoS** > **Rate Limit** > **Egress Queue**.

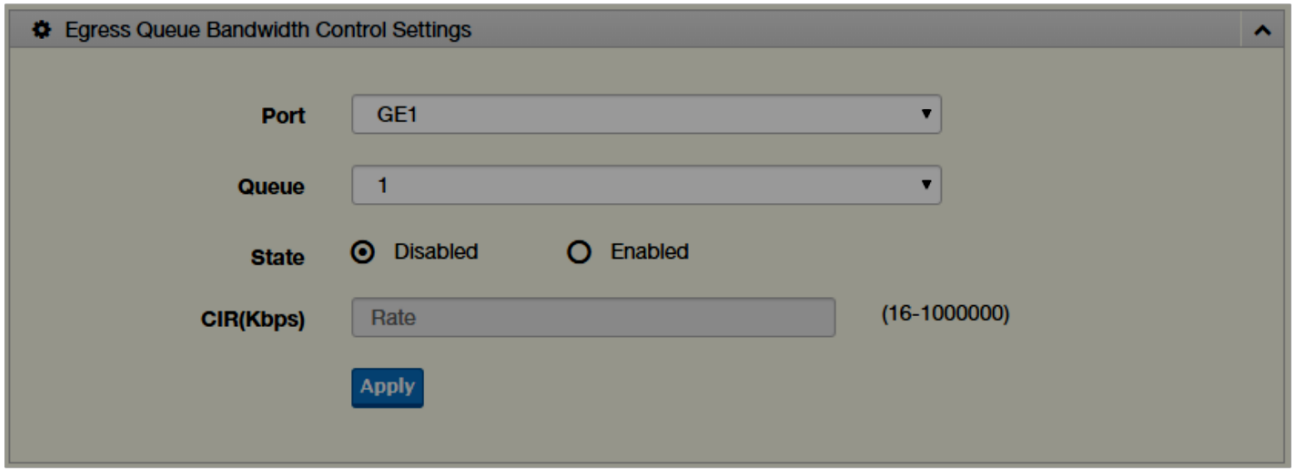


Figure 105: QoS > Rate Limit > Egress Queue

The following table describes the items in the previous figure.

Item	Description
Port	Click the drop-down menu to select the port to define the Egress queue.
Queue	Click the drop-down menu to set the queue order for the Egress setting.
State	Click **Disabled** or **Enabled** to set the Egress queue state.
CIR (Kbps)	Enter the value in Kbps (16 to 1000000) to set the CIR rate for the Egress queue.
Apply	Click **Apply** to save the values and update the screen.

Table 92: QoS > Rate Limit > Egress Queue

4.9 MANAGEMENT

4.9.1 LLDP

LLDP is a one-way protocol without request/response sequences. Information is advertised by stations implementing the transmit function, and is received and processed by stations implementing the receive function.

LLDP System Settings

The LLDP System Settings allows you to configure the status (enabled or disabled) for the protocol, set the interval for frame transmission, set the hold time multiplier and the re-initialization delay.

To access this page, click **Management** > **LLDP** > **LLDP System Settings**.

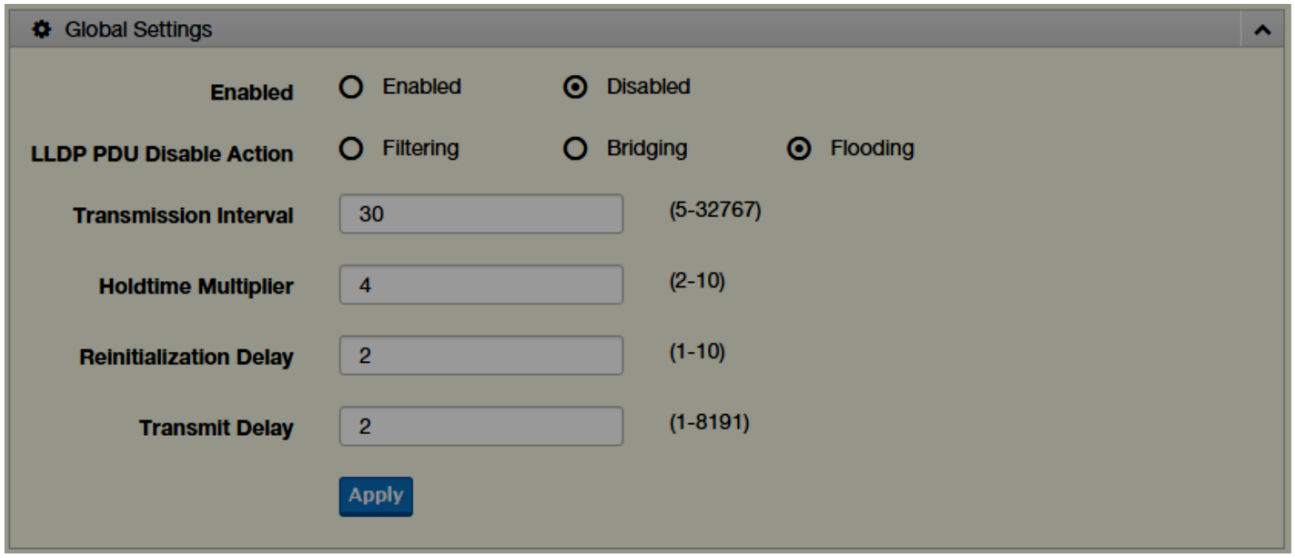


Figure 106: Management > LLDP > LLDP System Settings

The following table describes the items in the previous figure.

Item	Description
Enabled	Click **Enabled** or **Disabled** to set the Global Settings state.
LLDP PDU Disable Action	Click to select the LLDP PDU handling action when LLDP is globally disabled. Options include: Filtered, Bridged, or Flooded.
Transmission Interval	Select the interval at which frames are transmitted. The default is 30 seconds, and the valid range is 5 to 32768 seconds.
Holdtime Multiplier	Select the multiplier on the transmit interval to assign to TTL.
Reinitialization Delay	Select the delay length before re-initialization.
Transmit Delay	Select the delay after an LLDP frame is sent.
Apply	Click **Apply** to save the values and update the screen.

Table 93: Management > LLDP > LLDP System Settings

LLDP Port Settings

The LLDP Port Settings page allows you to configure the state (enabled or disabled) of the selected port.

To access this page, click **Management** > **LLDP** > **LLDP Port Settings**.

Figure 107: Management > LLDP > LLDP Port Settings > LLDP Port Configuration

The following table describes the items in the previous figure.

Item	Description
Port Select	Enter the port number associated with the LLDP setting.
State	Click the drop-down menu to select the LLDP port state.
Apply	Click **Apply** to save the values and update the screen.

Table 94: Management > LLDP > LLDP Port Settings > LLDP Port Configuration

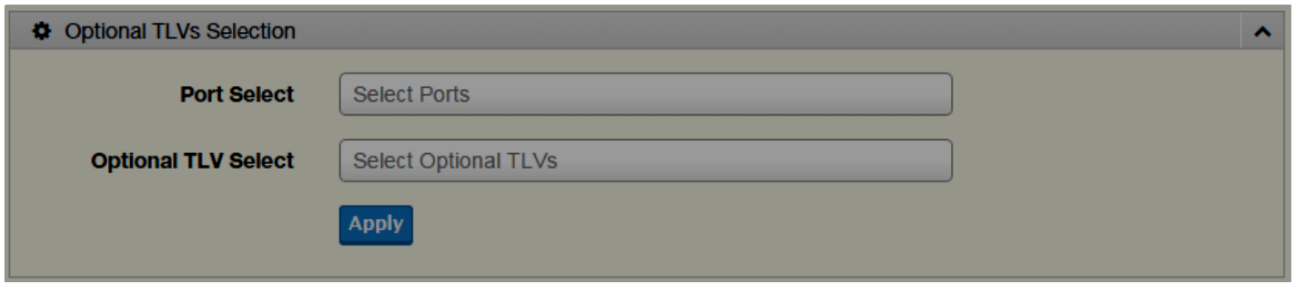


Figure 108: Management > LLDP > LLDP Port Settings > Optional TLVs Selection

The following table describes the items in the previous figure.

Item	Description
Port Select	Enter the port number associated with the TLV (optional) selection.
Optional TLV Select	Click the drop-down menu to select the LLDP optional TLVs to be carried (multiple selections are allowed). ● System Name: To include system name TLV in LLDP frames. ● Port Description: To include port description TLV in LLDP frames. ● System Description: To include system description TLV in LLDP frames. ● System Capability: To include system capability TLV in LLDP frames. ● 802.3 MAC-PHY: ● 802.3 Link Aggregation: ● 802.3 Maximum Frame Size: ● Management Address: ● 802.1 PVID:
Apply	Click **Apply** to save the values and update the screen.

Table 95: Management > LLDP > LLDP Port Settings > Optional TLVs Selection

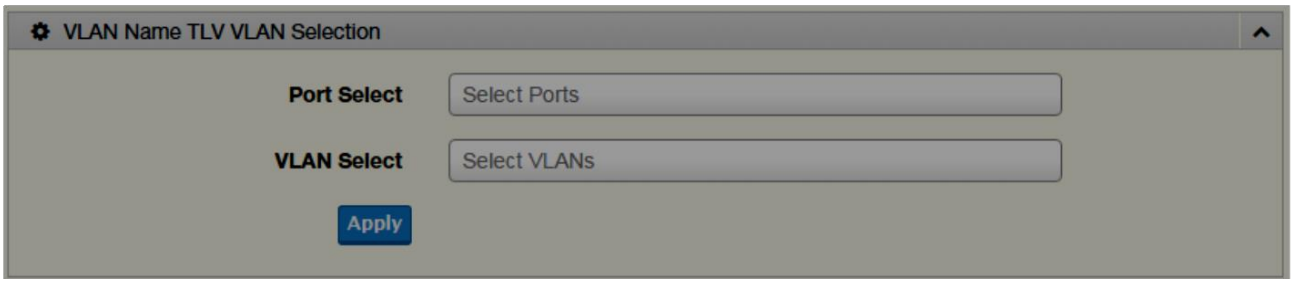


Figure 109: Management > LLDP > LLDP Port Settings > VLAN Name TLV VLAN Selection

The following table describes the items in the previous figure.

Item	Description
Port Select	Enter the port number to associated with the TLV selection.
VLAN Select	Select the VLAN Name ID to be carried out (multiple selection is allowed).
Apply	Click **Apply** to save the values and update the screen.

Table 96: Management > LLDP > LLDP Port Settings > VLAN Name TLV VLAN Selection

LLDP Local Device Info

The LLDP Local Device Info page allows you to view information regarding network devices, providing that the switch has already obtained LLDP information on the devices.

To access this page, click **Management** > **LLDP** > **LLDP Local Device Info**.

LLDP Remote Device Info

The LLDP Remote Device Info page allows you to view information about remote devices, LLDP information must be available on the switch.

To access this page, click **Management** > **LLDP** > **LLDP Remote Device Info**.

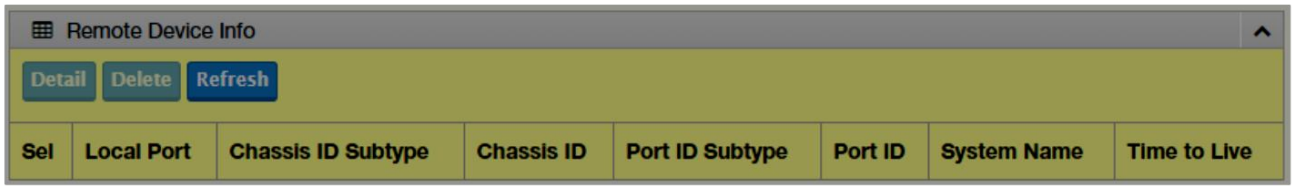


Figure 110: Management > LLDP > LLDP Remote Device Info

The following table describes the items in the previous figure.

Item	Description
Detail	Click to display the device details.
Delete	Click to delete the selected devices.
Refresh	Click to refresh the remote device information list.

Table 97: Management > LLDP > LLDP Remote Device Info

LLDP Overloading

To access this page, click **Management** > **LLDP** > **LLDP Overloading**.

4.9.2 SNMP

Simple Network Management Protocol (SNMP) is a protocol to facilitate the monitoring and exchange of management information between network devices. Through SNMP, the health of the network or status of a particular device can be determined.

SNMP Settings

The SNMP Settings page allows you to set the SNMP daemon state (enabled or disabled).

To access this page, click **Management** > **SNMP** > **SNMP Settings**.

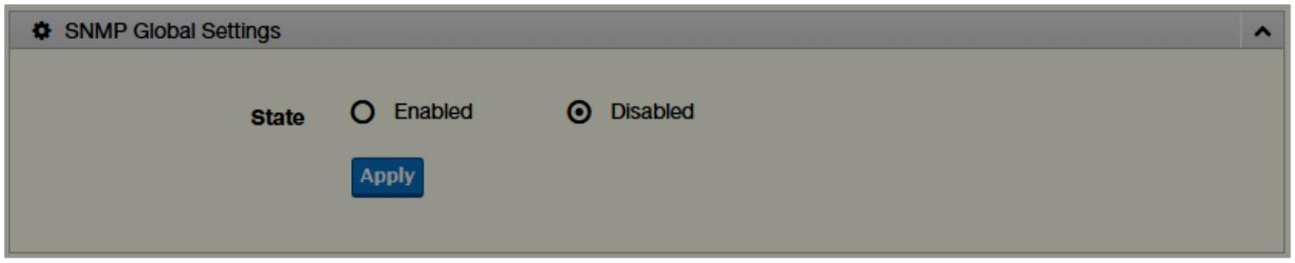


Figure 111: Management > SNMP > SNMP Settings

The following table describes the items in the previous figure.

Item	Description
State	Click **Enabled** or **Disabled** to define the SNMP daemon.
Apply	Click **Apply** to save the values and update the screen.

Table 98: Management > SNMP > SNMP Settings

SNMP Community

The SNMP Community page provides configuration options for the community.

SNMP v1 and SNMP v2c use the group name (Community Name) certification. Its role is similar to the password function. If SNMP v1 and SNMP v2c are used, you can go directly from the configuration settings to this page to configure the SNMP community.

To access this page, click **Management** > **SNMP** > **SNMP Community**.

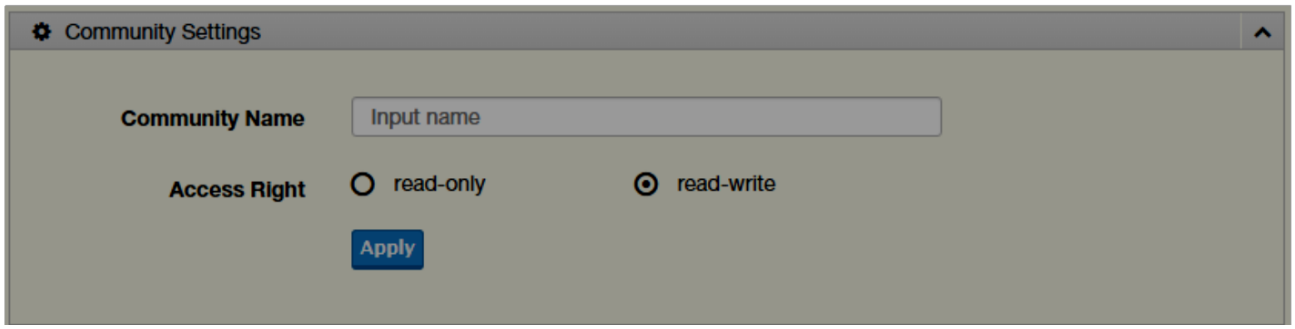


Figure 112: Management > SNMP > SNMP Community

The following table describes the items in the previous figure.

Item	Description
Community Name	Enter a community name (up to 20 characters).
Access Right	Click the radio box to specify the access level (read only or read write)
Apply	Click **Apply** to save the values and update the screen.

Table 99: Management > SNMP > SNMP Community

SNMP User Settings

The SNMP User Settings page allows you to create SNMP groups. The users have the same level of security and access control permissions as defined by the group settings.

To access this page, click **Management** > **SNMP** > **SNMP User Settings**.

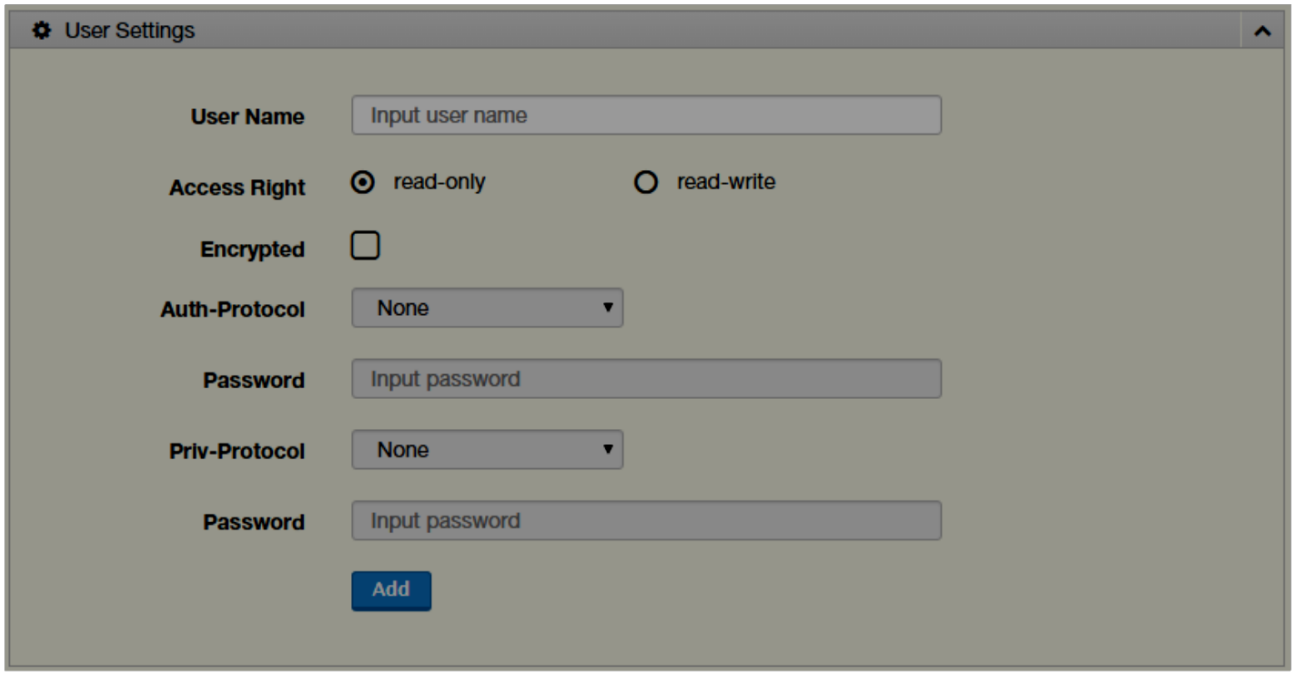


Figure 113: Management > SNMP > SNMP User Settings

The following table describes the items in the previous figure.

Item	Description
User Name	Enter a user name (up to 32 characters) to create an SNMP profile.
Access Right	Click read-only or read-write to define the access right for the profile.
Encrypted	Click the option to set the encrypted option for the user setting.
Auth-Protocol	Click the drop-down menu to select the authentication level: MD5 or SHA. The field requires a user password. MD5: specify HMAC-MD5-96 authentication level SHA: specify HMAC-SHA authentication protocol
Password	Enter the characters to define the password associated with the authentication protocol.
Priv-Protocol	Click the drop-down menu to select an authorization protocol: none or DES.The field requires a user password. None: no authorization protocol in use DES: specify 56-bit encryption in use
Password	Enter the characters to define the password associated with the authorization protocol.
Add	Click Add to save the values and update the screen.

Table 100: Management > SNMP > SNMP User Settings

SNMP Trap

The SNMP Trap page allows you to set the IP address of the node and the SNMP credentials corresponding to the version that is included in the trap message.

To access this page, click **Management** > **SNMP** > **SNMP Trap**.

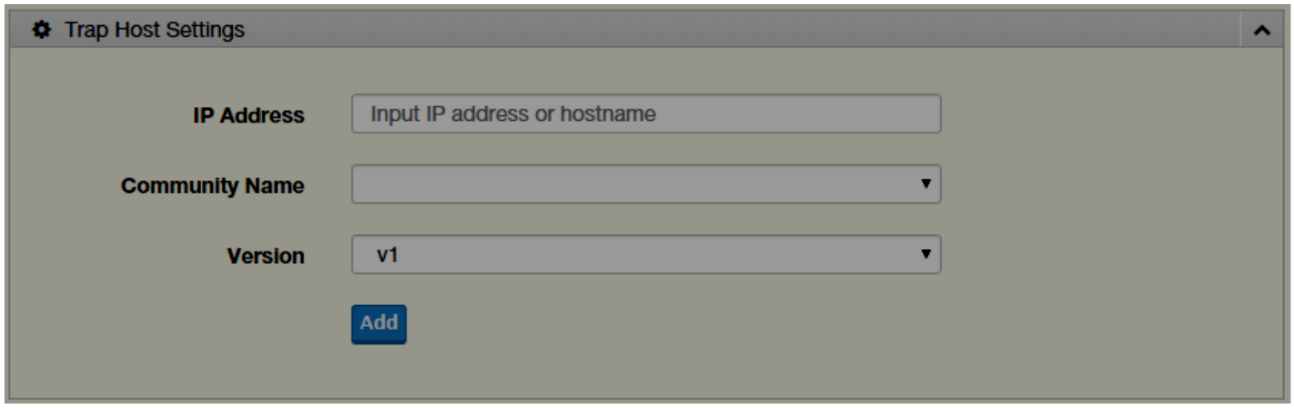


Figure 114: Management > SNMP > SNMP Trap

The following table describes the items in the previous figure.

Item	Description
IP Address	Enter the IP address to designate the SNMP trap host.
Community Name	Click the drop-down menu to select a defined community name.
Version	Click the drop-down menu to designate the SNMP version credentials (v1 or v2c).
Add	Click **Add** to save the values and update the screen.

Table 101: Management > SNMP > SNMP Trap

4.9.3 POWER OVER ETHERNET

Power Over Ethernet is the function supplying power to Powered Devices (PD) through the switch in the event that AC power is not readily available.

Power over Ethernet can be used for the following areas:

- Surveillance devices
- I/O sensors for security requirements
- Wireless access points

Series	Supported Models
SE500	SECP510-2SFP-T, SEGP510-2SFP-T

Table 102: Available POE Switches

PoE System Settings

The PoE System Settings page allows you to configure the overload disconnect and the maximum available wattage.

To access this page, click **Management** > **Power Over Ethernet** > **PoE System Settings**.

Figure 115: Management > Power Over Ethernet > PoE System Settings

The following table describes the items in the previous figure.

Item	Description
Maximum Power Available	Select the value in Watts to set the maximum available power.
OverLoad Disconnect Mode	Click the drop-down menu to designate the overload mode: ● Overload Port First: ● Port-Based Priority:
Apply	Click **Apply** to save the values and update the screen.

Table 103: Management > Power Over Ethernet > PoE System Settings

PoE Port Settings

The PoE Port Settings page allows you to configure the port status, its power limitations, legacy mode status, and power limit settings.

To access this page, click **Management** > **Power Over Ethernet** > **PoE Port Settings**.

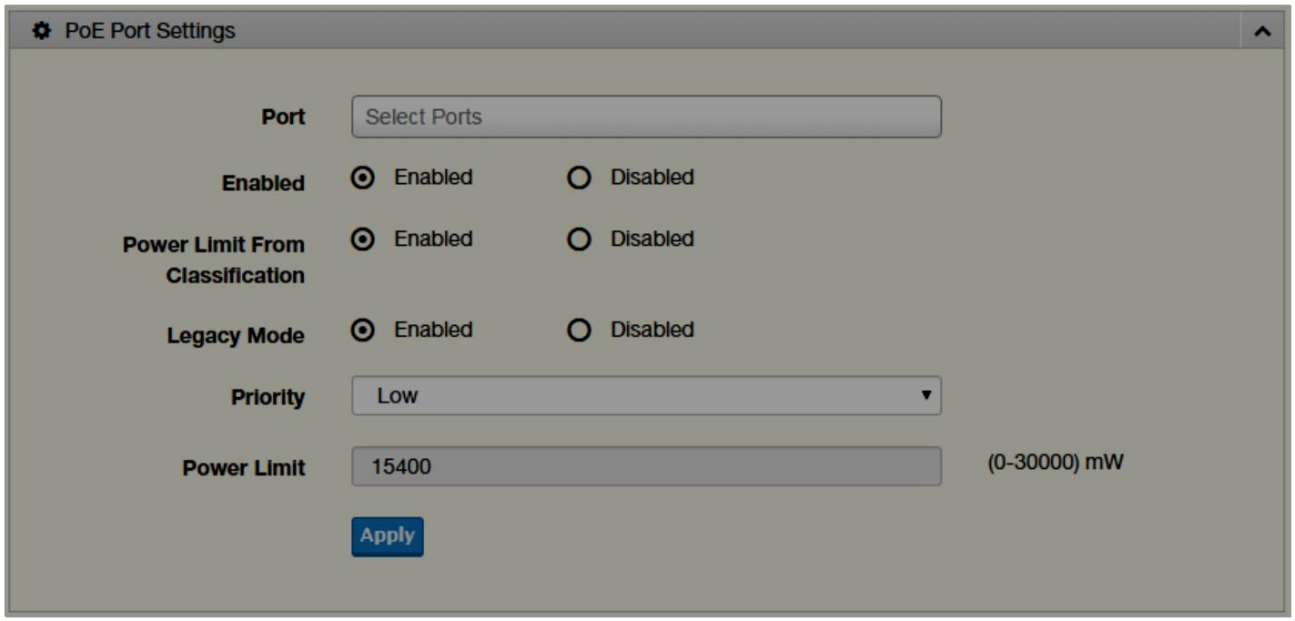


Figure 116: Management > Power Over Ethernet > PoE Port Settings

The following table describes the items in the previous figure

Item	Description
Port	Click the drop-down menu to select a PoE port.
Enabled	Select **Enabled** or **Disabled** to designate the PoE port function by ports.
Power Limit From Classification	Select **Enabled** or **Disabled** to designate the power limit classification.
Legacy Mode	Select **Enabled** or **Disable**d to designate the legacy mode option for the port.
Priority	Click the drop-down menu to configure the power supply priority: **Critical**, **Low**, **Medium** or **High**. Default is **Low**.
Power Limit	Enter a number to set the port power current limitation to be given to the Powered Device (PD)
Apply	Click **Apply** to save the values and update the screen.

Table 104: Management > Power Over Ethernet > PoE Port Settings

PoE Port Status

To access this page, click **Management** > **Power Over Ethernet** > **PoE Port Status**.

4.9.4 TCP MODBUS

The TCP Modbus function allows for client-server communication between a switch module (server) and a device in the networking running MODBUS client software (client).

TCP Modbus Settings

The TCP Modbus Settings page allows you to configure the Modbus function.

To access this page, click **Management** > **TCP Modbus** > **TCP Modbus Settings**.

Figure 117: Management > TCP Modbus > TCP Modbus Settings

The following table describes the items in the previous figure.

Item	Description
State	Click **Disabled** or **Enabled** to set the TCP Modbus state.
Time out	Enter the value (1 to 86400) to define the timeout period between transport time.
Apply	Click **Apply** to save the values and update the screen.

Table 105: Management > TCP Modbus > TCP Modbus Settings

4.9.5 DHCP SERVER

The Dynamic Host Configuration Protocol (DHCP) is a network protocol enabling a server to automatically assign an IP address to a computer from a defined range of numbers configured for a given network.

Status Settings

The Status Settings page allows you to configure the DHCP server mode (enabled or disabled).

To access this page, click **Management** > **DHCP Server** > **Status Settings**.

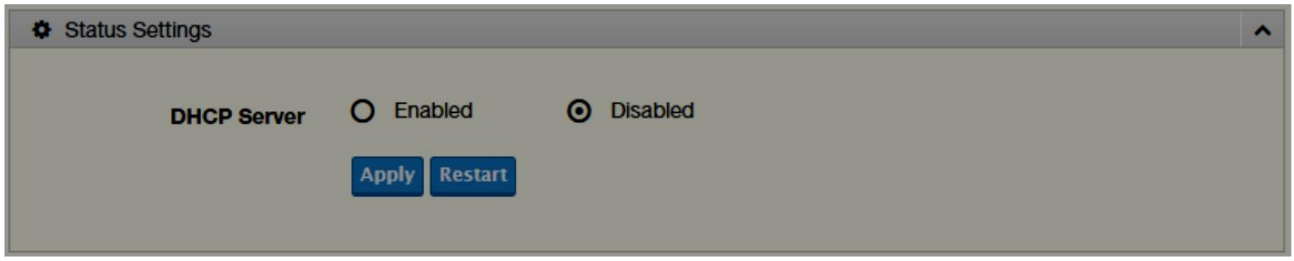


Figure 118: Management > DHCP Server > Status Settings

The following table describes the items in the previous figure.

Item	Description
DHCP Server	Select **Enable** or **Disable** to designate the DHCP server function type. When a new DHCP server mode is selected, the switch requires a system restart for the new mode to take effect.
Apply	Click **Apply** to save the values and update the screen.
Restart	Click **Restart** to have the switch perform a system restart function. In the event that the IP settings are changed, the DHCP server must be restarted for the IP settings to take effect.

Table 106: Management > DHCP Server > Status Settings

Global Settings

The Global Settings page allows you to configure the global settings for the DHCP function.

To access this page, click **Management** > **DHCP Server** > **Global Settings**.

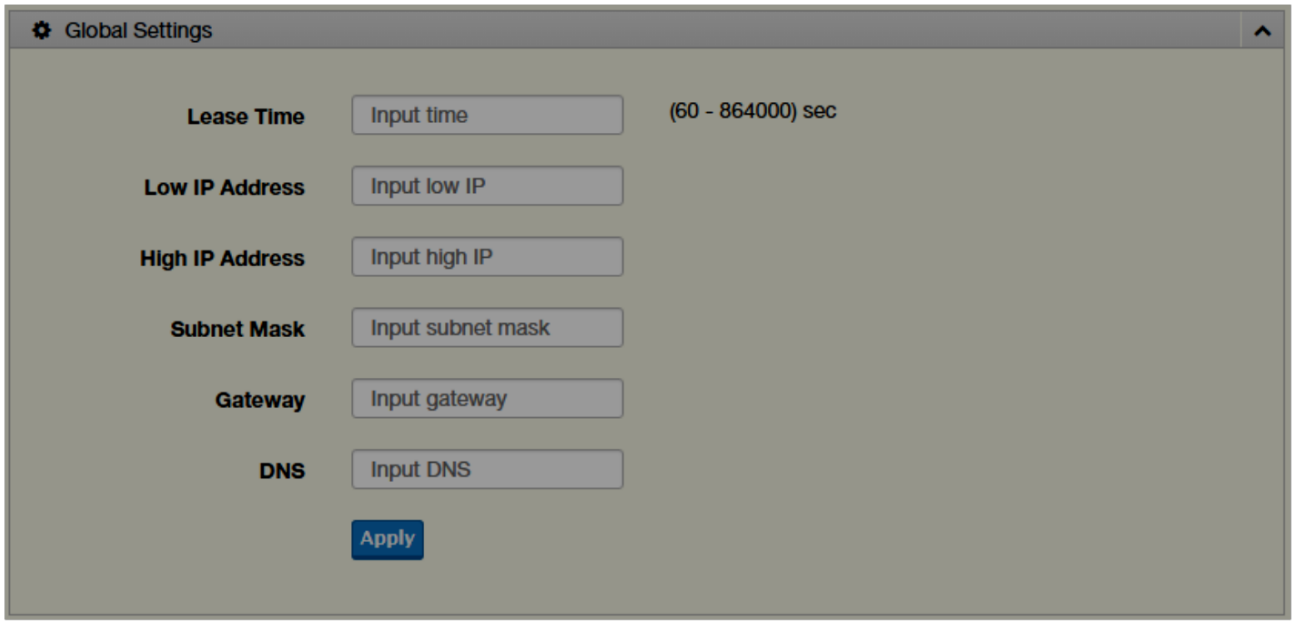


Figure 119: Management > DHCP Server > Global Settings

The following table describes the items in the previous figure.

Item	Description
Lease Time	Type in the value designating the lease time (60 - 864000) in seconds for each setting lease.
Low IP Address	Type in the value designating the lowest range in the IP address pool.
High IP Address	Type in the value designating the highest range in the IP address pool.
Subnet Mask	Type in the value designating the subnet mask for the IP address pool.
Gateway	Type in the value designating the gateway for the IP address pool.
DNS	Type in the value designating the DNS for the IP address pool.
Apply	Click **Apply** to save the values and update the screen.

Table 107: Management > DHCP Server > Global Settings

Port Settings

The Port Settings page allows you to configure selected ports for the DHCP function.

To access this page, click **Management** > **DHCP Server** > **Port Settings**.

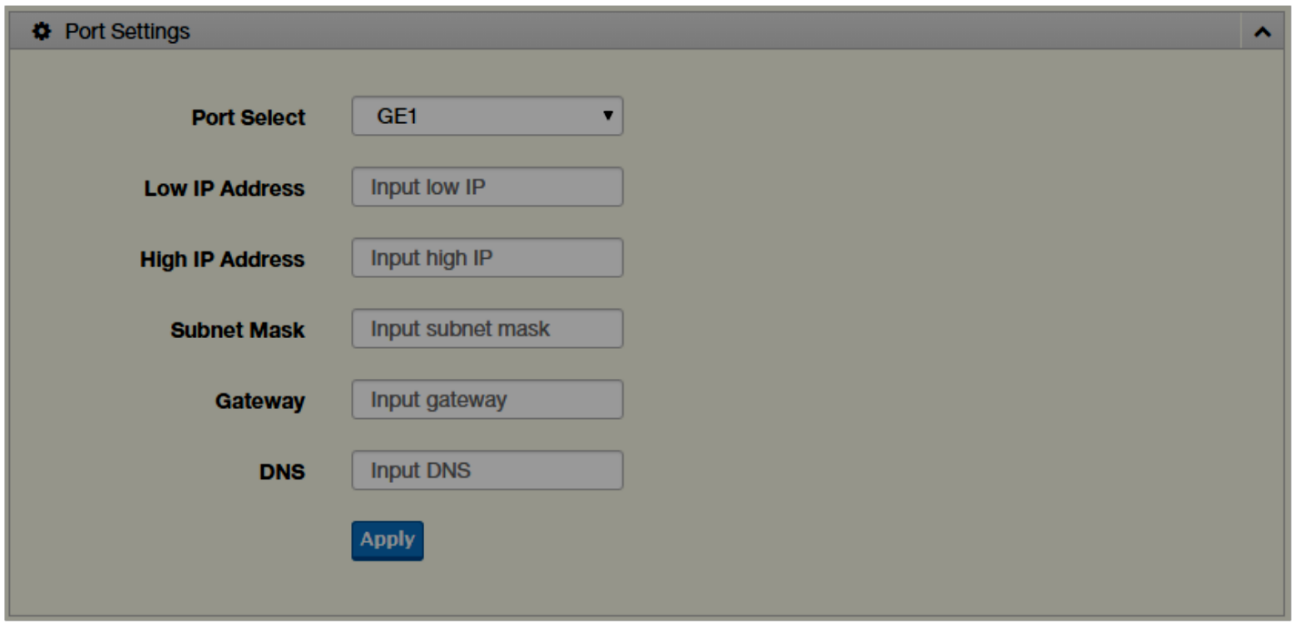


Figure 120: Management > DHCP Server > Port Settings

The following table describes the items in the previous figure.

Item	Description
Port Select	Click the drop-down menu to select a pre-defined port to configure. The suboptions are designated for the selected port.
Low IP Address	Type in the value designating the lowest range in the IP address pool.
High IP Address	Type in the value designating the highest range in the IP address pool.
Subnet Mask	Type in the value designating the subnet mask for the IP address pool.
Gateway	Type in the value designating the gateway for the IP address pool.
DNS	Type in the value designating the DNS for the IP address pool.
Apply	Click **Apply** to save the values and update the screen.

Table 108: Management > DHCP Server > Port Settings

Option 82 Settings

The Option 82 Settings, also known as the DHCP relay agent information option, provide information about the network location of a DHCP client. In turn, the DHCP server uses the information to implement IP addresses or other parameters for the client.

To access this page, click **Management** > **DHCP Server** > **Option 82 Settings**.

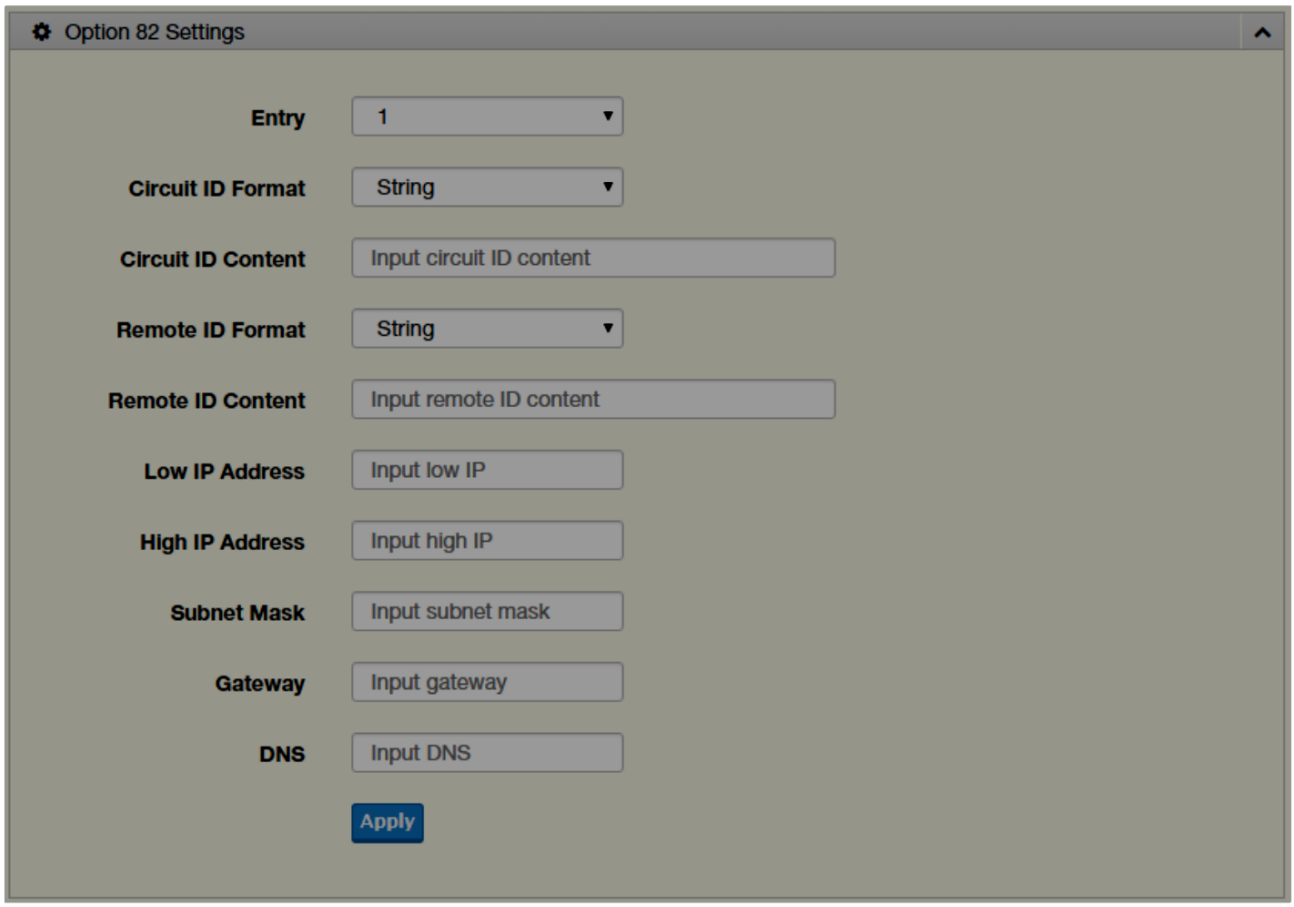


Figure 121: Management > DHCP Server > Option 82 Settings

The following table describes the items in the previous figure.

Item	Description
Entry	Click the drop-down menu to select an entry for the Option 82 setting.
Circuit ID Format	Click the drop-down menu to select the format of the circuit ID: string or hex.
Circuit ID Content	Enter the circuit ID string on the switch on which the request was received.
Remote ID Format	Click the drop-down menu to select the format of the remote ID: string or hex.
Remote ID Content	Enter the remote ID string of the host.
Low IP Address	Type in the value designating the lowest range in the IP address pool.
High IP Address	Type in the value designating the highest range in the IP address pool.
Subnet Mask	Type in the value designating the subnet mask for the IP address pool.
Gateway	Type in the value designating the gateway for the IP address pool.
DNS	Type in the value designating the DNS for the IP address pool.
Apply	Click **Apply** to save the values and update the screen.

Table 109: Management > DHCP Server > Option 82 Settings

Lease Entry

To access this page, click **Management** > **DHCP Server** > **Lease Entry**.

4.9.6 SMTP CLIENT

Simple Mail Transfer Protocol (SMTP) is a protocol to send e-mail messages between servers. SMTP is used to send messages from a mail client to a mail server. SMTP by default uses TCP port 25.

Global Settings

The Global Settings page allows you to set the active profile for the SMTP client.

To access this page, click **Management** > **SMTP Client** > Global Settings.

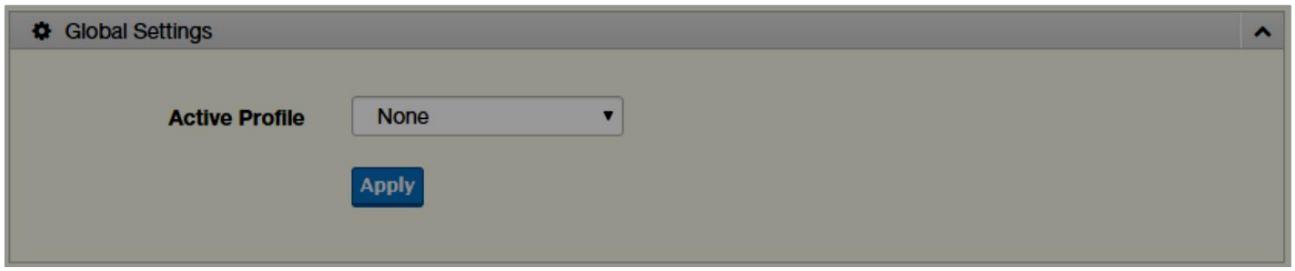


Figure 122: Management > SMTP Client > Global Settings

The following table describes the items in the previous figure.

Item	Description
Active Profile	Click the drop-down menu to select the profile status (None, 1 or 2).
Apply	Click **Apply** to save the values and update the screen.

Table 110: Management > SMTP Client > Global Settings

Profile Settings

The Profile Settings page allows you to select the server IP, the server port, and sender mail for the listed profile.

To access this page, click **Management** > **SMTP Client** > **Profile Settings**.

Figure 123: Management > SMTP Client > Profile Settings > Profile Settings

The following table describes the items in the previous figure.

Item	Description
Profile ID	Click the drop-down menu to select the identification type for the profile (1 or 2).
Server IP	Enter the IP address to designate the server host.
Server Port	Enter the port number to designate the port associated with the server IP address.
Sender Mail	Enter the email address of the sender client.
Apply	Click **Apply** to save the values and update the screen.

Table 111: Management > SMTP Client > Profile Settings > Profile Settings

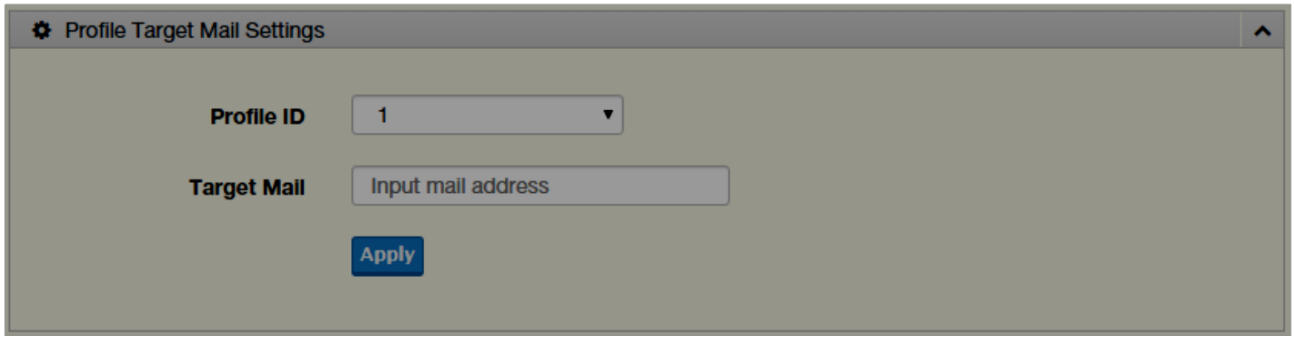


Figure 124: Management > SMTP Client > Profile Settings > Profile Target Mail Settings

The following table describes the items in the previous figure.

Item	Description
Profile ID	Click the drop-down menu to select the identification type for the profile (1 or 2).
Target Mail	Enter the email address of the target client.
Apply	Click **Apply** to save the values and update the screen.

Table 112: Management > SMTP Client > Profile Settings > Profile Target Mail Settings

Sending Message

The Sending Message page allows you to setup the log message for use with the SMTP client.

To access this page, click **Management** > **SMTP Client** > **Sending Message**.

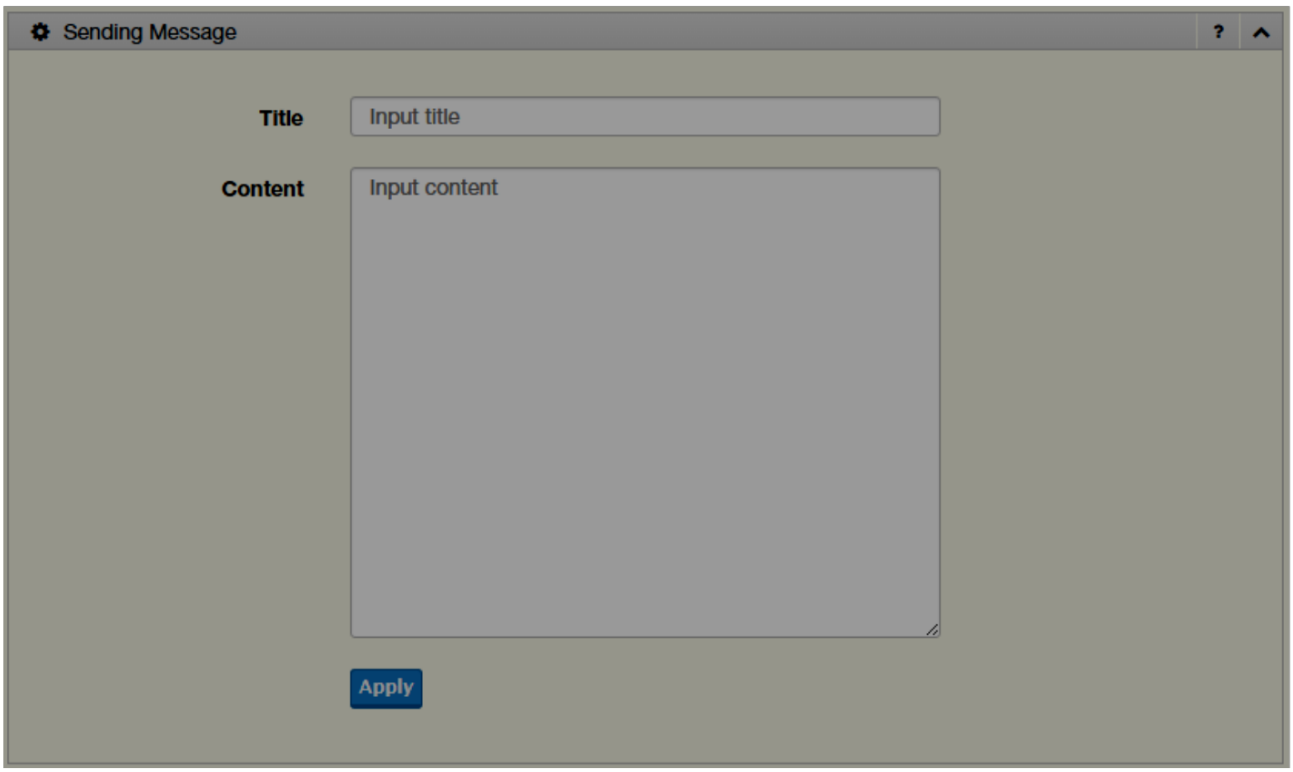


Figure 125: Management > SMTP Client > Sending Message

The following table describes the items in the previous figure.

Item	Description
Title	Assign the title of the email. The maximum length is 20 characters (alphanumeric, symbols (. (dot), _ (underline), - (dash line) and space).
Content	Assign the content of the email. The maximum length is 64 characters (alphanumeric, symbols (. (dot), _ (underline), - (dash line) and space).
Apply	Click **Apply** to save the values and update the screen.

Table 113: Management > SMTP Client > Sending Message

4.9.7 RMON

Remote monitoring (RMON) uses a client-server model to monitor/manage remote devices on a network.

RMON Statistics

The RMON Statistics page allows you to view information regarding packet sizes and information for physical layer errors. The information displayed is according to the RMON standard.

To access this page, click **Management** > **RMON** > **RMON Statistics**.

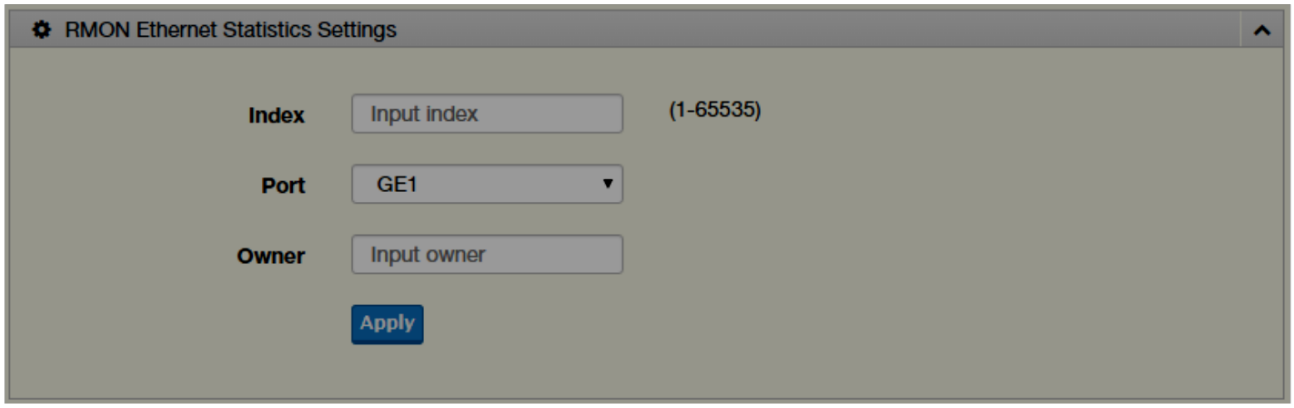


Figure 126: Management > RMON > Rmon Statistics

The following table describes the items in the previous figure.

Item	Description
Index	Enter an entry selection (1 to 65535) to display its statistical information.
Port	Enter the respective port number for the selected entry.
Owner	Enter the name of the owner of the RMON group.
Apply	Click **Apply** to save the values and update the screen.

Table 114: Management > RMON > Rmon Statistics

RMON History

The RMON History page allows you to configure the display of history entries.

To access this page, click **Management** > **RMON** > **RMON History**.

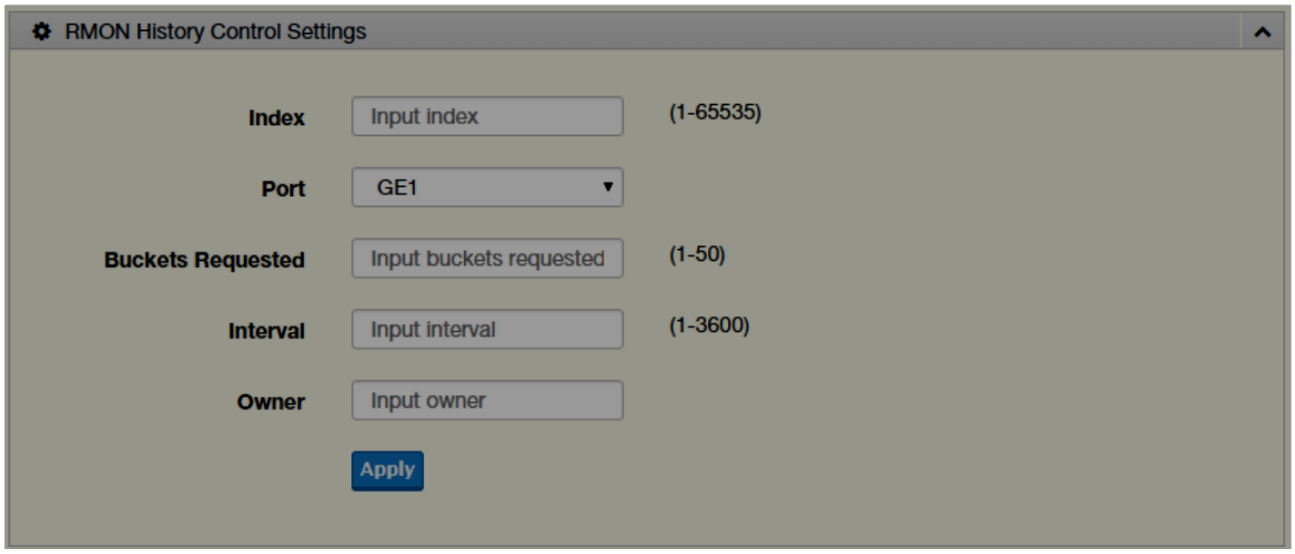


Figure 127: Management > RMON > RMON History

The following table describes the items in the previous figure.

Item	Description
Index	Enter the index entry (1 to 65535) to select the number of new history table entries.
Port	Select the specific port switch.
Buckets Requested	Enter the specific (1-50) number of samples to store.
Interval	Enter value in seconds (1 to 3600) to designate a specific interval time for the collection of samples.
Owner	Enter the name of the owner of the RMON history group.
Apply	Click **Apply** to save the values and update the screen.

Table 115: Management > RMON > RMON History

RMON Alarm

The RMON Alarm page allows you to configure RMON statistics group and alarm groups.

To access this page, click **Management** > **RMON** > **RMON Alarm**.

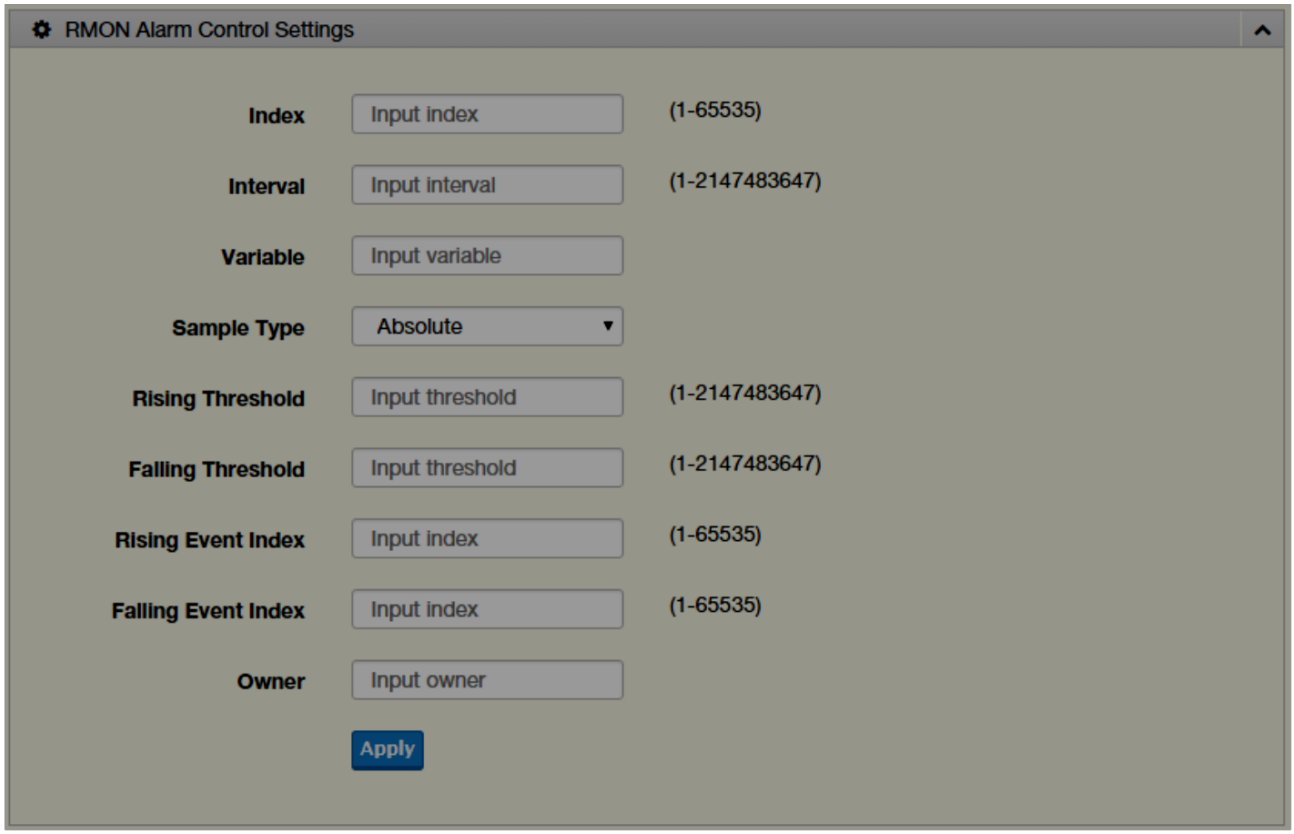


Figure 128: Management > RMON > Rmon Alarm

The following table describes the items in the previous figure.

Item	Description
Index	Enter the index entry (1 to 65535) to define a specific Alarm Collection history entry.
Interval	Enter a value (1 to 2147483647) to define the interval value for the Alarm Collection history.
Variable	Enter the alarm variables to define the monitoring triggers.
Sample Type	Enter the variable sample type.
Rising Threshold	Enter the rising alarm threshold trigger.
Falling Threshold	Enter the falling alarm threshold trigger.
Rising Event Index	Enter the rising event index (1-65535) to define the alarm group.
Falling Event Index	Enter the falling event index (1-65535) to define the alarm group.
Owner	Enter the name of the owner of the RMON alarm group.
Apply	Click **Apply** to save the values and update the screen.

Table 116: Management > RMON > RMON Alarm

RMON Event

The RMON Event page is used to configure RMON event groups.

To access this page, click **Management** > **RMON** > **RMON Event**.

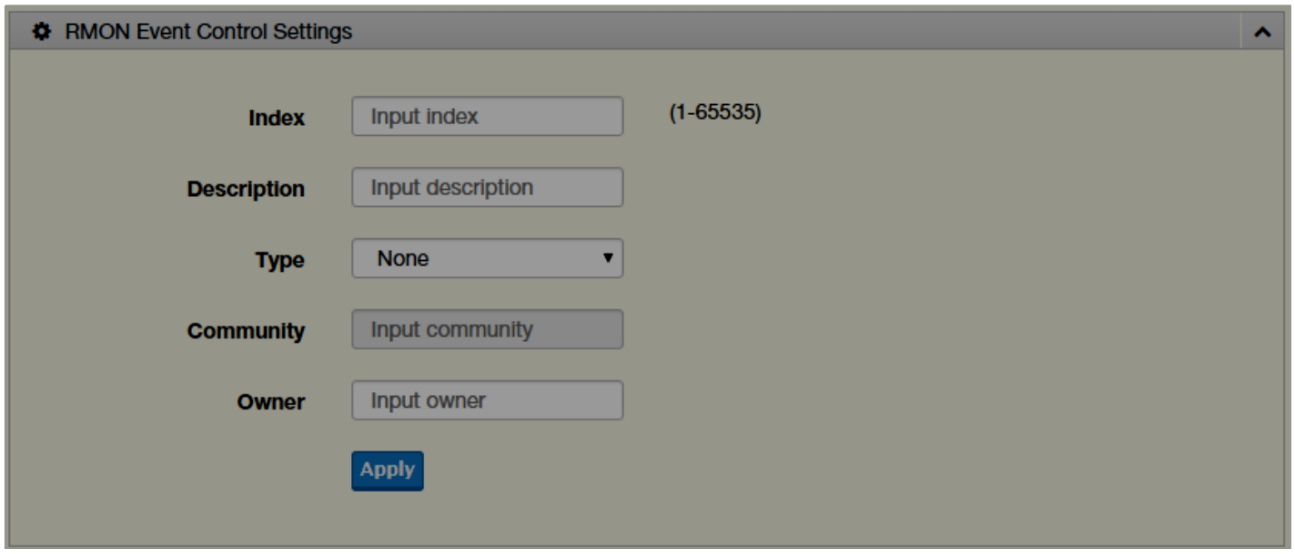


Figure 129: Management > RMON > RMON Event

The following table describes the items in the previous figure.

Item	Description
Index	Enter the index entry (1 to 65535) to define a specific RMON event.
Description	Enter a value (1 to 2147483647) to define the interval value for the Alarm Collection history.
Type	Click the drop-down menu to define the event type: None, Log, SNMP Trap, Log and Trap.
Community	Enter the community string to be passed for the specified event.
Owner	Enter the name of the owner of the RMON event.
Apply	Click **Apply** to save the values and update the screen.

Table 117: Management > RMON > RMON Event

4.10 DIAGNOSTICS

Through the Diagnostics function configuration of settings for the switch diagnostics is available.

4.10.1 CABLE DIAGNOSTICS

The Cable Diagnostics page allows you to select the port for applying a copper test.

To access this page, click **Diagnostics** > **Cable Diagnostics**.

Figure 130: Diagnostics > Cable Diagnostics

The following table describes the items in the previous figure.

Item	Description
Port	Click the drop-down menu to select a pre-defined port for diagnostic testing. Giga ports are displayed with a channel A to D designation.
Copper Test	Click **Copper Test** to display the test result for the selected port.

Table 118: Diagnostics > Cable Diagnostics

4.10.2 PING TEST

The Ping Test page allows you to configure the test log page.

To access this page, click **Diagnostics** > **Ping Test**.

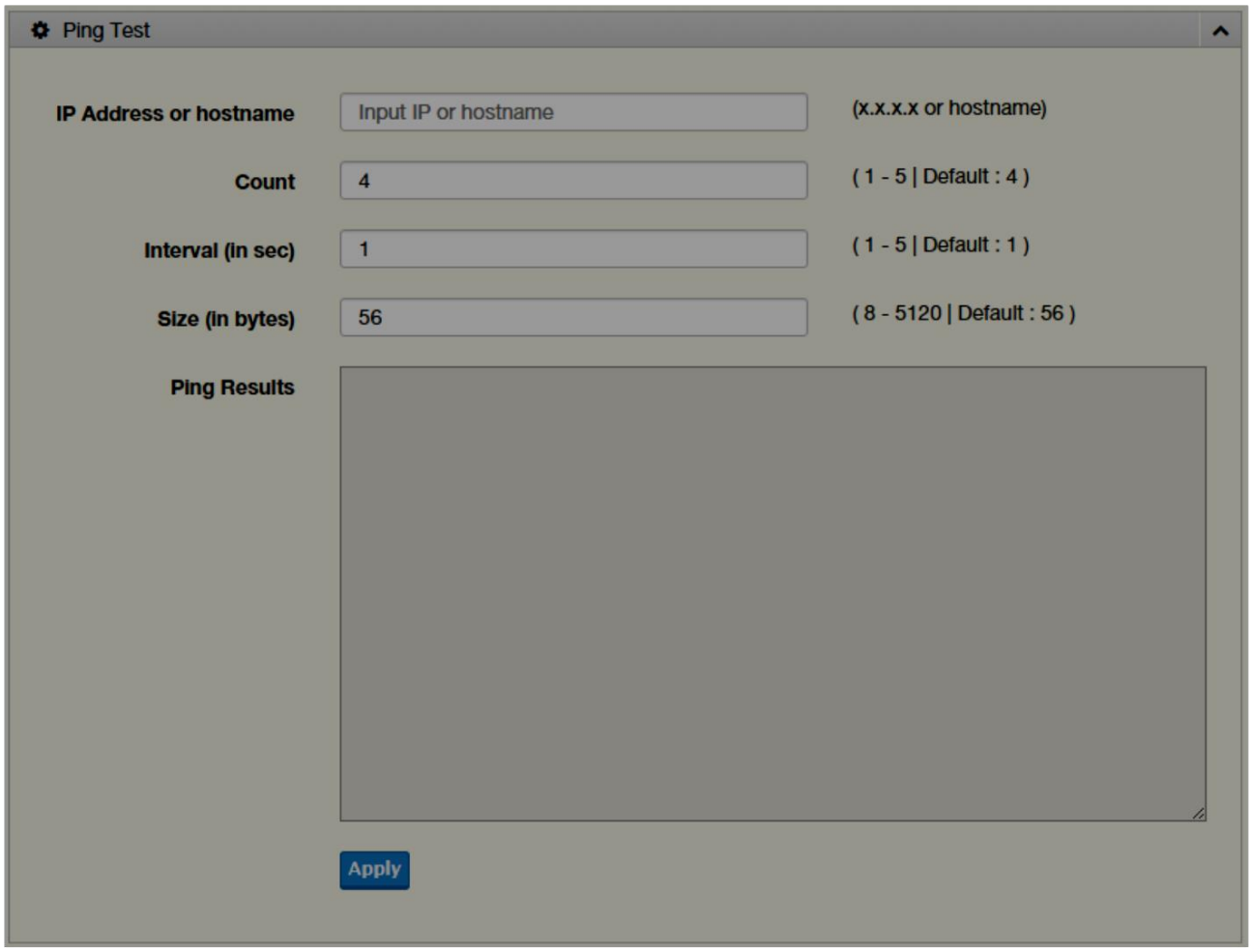


Figure 131: Diagnostics > Ping Test

The following table describes the items in the previous figure.

Item	Description
IP Address	Enter the IP address or host name of the station to ping. The initial value is blank. The IP Address or host name you enter is not retained across a power cycle. Host names are composed of series of labels concatenated with periods. Each label must be between 1 and 63 characters long, maximum of 64 characters.
Count	Enter the number of echo requests to send. The default value is 4. The value ranges from 1 to 5. The count entered is not retained across a power cycle.
Interval (in sec)	Enter the interval between ping packets in seconds. The default value is 1. The value ranges from 1 to 5. The interval entered is not retained across a power cycle.
Size (in bytes)	Enter the size of ping packet. The default value is 56. The value ranges from 8 to 5120. The size entered is not retained across a power cycle.
Ping Results	Display the reply format of ping. PING 172.17.8.254 (172.17.8.254): 56 data bytes --- 172.17.8.254 ping statistics --- 4 packets transmitted, 0 packets received, 100% packet loss Or PING 172.17.8.93 (172.17.8.93): 56 data bytes 64 bytes from 172.17.8.93: icmp_seq=0 ttl=128 time=0.0 ms 64 bytes from 172.17.8.93: icmp_seq=1 ttl=128 time=0.0 ms 64 bytes from 172.17.8.93: icmp_seq=2 ttl=128 time=0.0 ms 64 bytes from 172.17.8.93: icmp_seq=3 ttl=128 time=0.0 ms --- 172.17.8.93 ping statistics --- 4 packets transmitted, 4 packets received, 0% packet loss round-trip min/avg/max = 0.0/0.0/0.0 ms
Apply	Click **Apply** to display ping result for the IP address.

Table 119: Diagnostics > Ping Test

4.10.3 IPV6 PING TEST

The IPv6 Ping Test page allows you to configure the Ping Test for IPv6.

To access this page, click **Diagnostics** > **IPv6 Ping Test**.

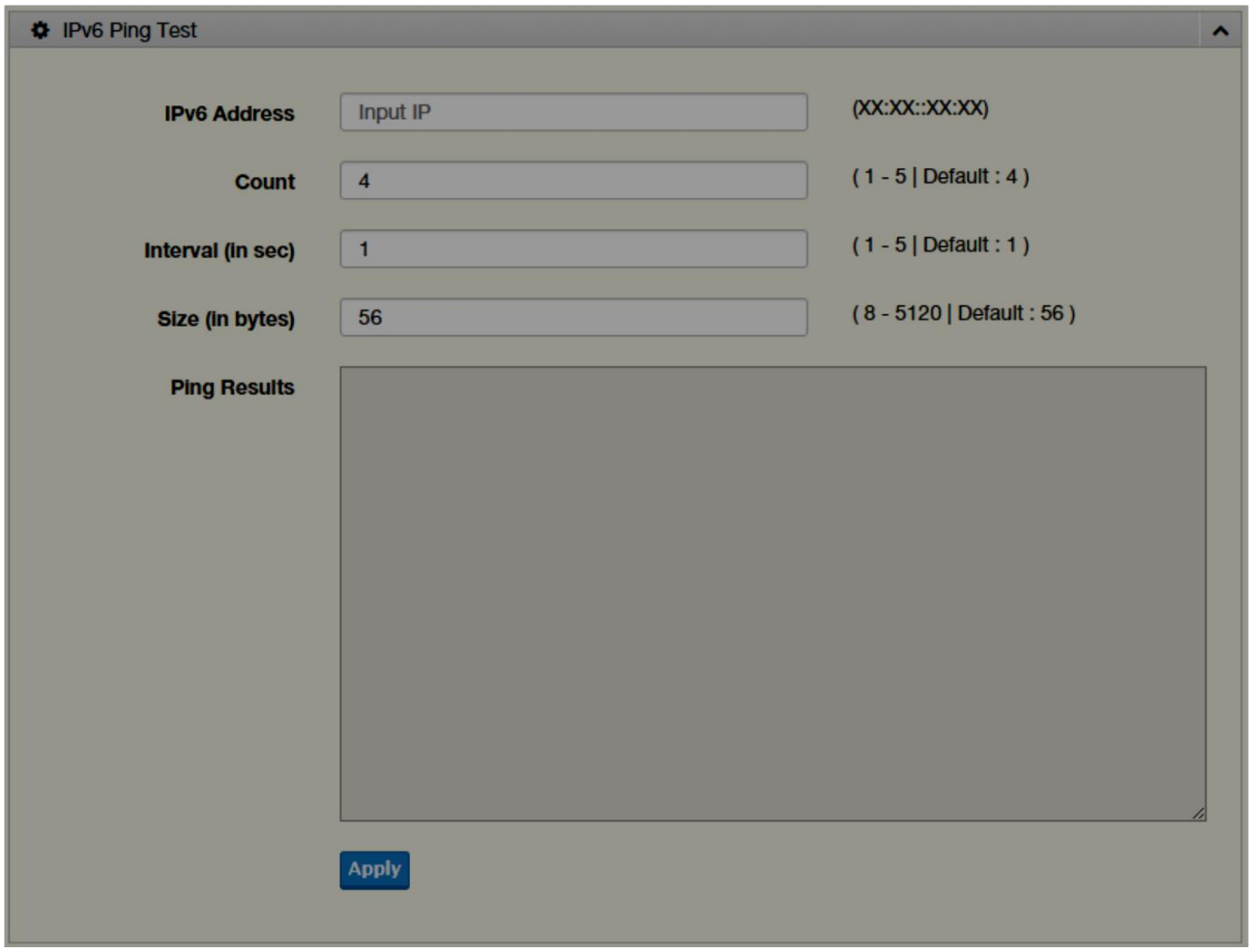


Figure 132: Diagnostics > IPv6 Ping Test

The following table describes the items in the previous figure.

Item	Description
IPv6 Address	Enter the IP address or host name of the station you want the switch to ping. The initial value is blank. The IP Address or host name you enter is not retained across a power cycle. Host names are composed of series of labels concatenated with dots. Each label must be between 1 and 63 characters long, and the entire hostname has a maximum of 64 characters.
Count	Enter the number of echo requests you want to send. The default value is 4. The value ranges from 1 to 5. The count you enter is not retained across a power cycle.
Interval (in sec)	Enter the interval between ping packets in seconds. The default value is 1. The value ranges from 1 to 5. The interval you enter is not retained across a power cycle.
Size (in bytes)	Enter the size of ping packet. The default value is 56. The value ranges from 8 to 5120. The size you enter is not retained across a power cycle.
Ping Results	Display the reply format of ping. PING 2222::777 (2222::777): 56 data bytes --- 2222::777 ping statistics --- 4 packets transmitted, 0 packets received, 100% packet loss Or PING 2222::717 (2222::717): 56 data bytes 64 bytes from 2222::717: icmp6_seq=0 ttl=128 time=10.0 ms 64 bytes from 2222::717: icmp6_seq=1 ttl=128 time=0.0 ms 64 bytes from 2222::717: icmp6_seq=2 ttl=128 time=0.0 ms 64 bytes from 2222::717: icmp6_seq=3 ttl=128 time=0.0 ms --- 2222::717 ping statistics --- 4 packets transmitted, 4 packets received, 0% packet loss round-trip min/avg/max = 0.0/2.5/10.0 ms
Apply	Click **Apply** to display ping result for the IP address.

Table 120: Diagnostics > IPv6 Ping Test

4.10.4 SYSTEM LOG

Logging Service

The Logging Service page allows you to setup the logging services feature for the system log.

To access this page, click **Diagnostics** > **System Log** > **Logging Service**.

Figure 133: Diagnostics > System Log > Logging Service

The following table describes the items in the previous figure.

Item	Description
Logging Service	Click Enabled or Disabled to set the Logging Service status.
Apply	Click **Apply** to save the values and update the screen.

Table 121: Diagnostics > System Log > Logging Service

Local Logging

The Local Logging page allows you to designate a local target when the severity criteria is reached.

To access this page, click **Diagnostics** > **System Log** > **Local Logging**.

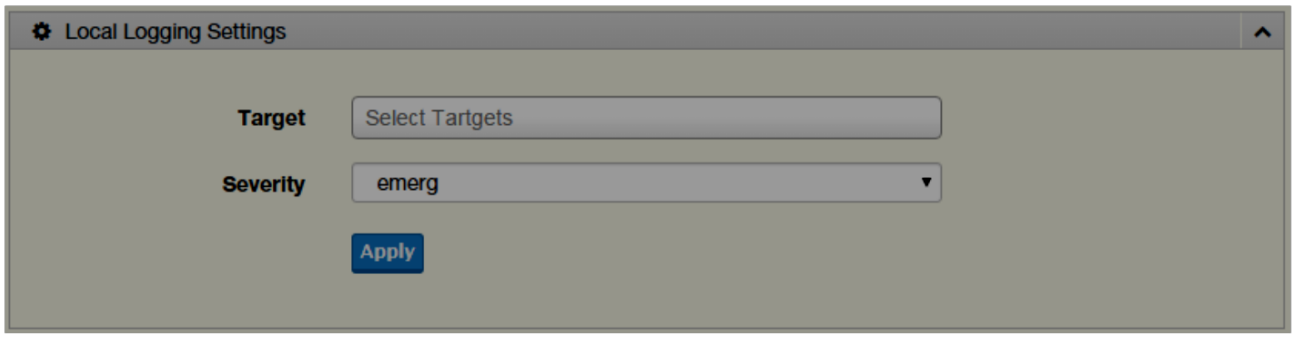


Figure 134: Diagnostics > System Log > Local Logging

The following table describes the items in the previous figure.

Item	Description
Target	Enter the local logging target.
Severity	Click the drop-down menu to select the severity level for local log messages. The level options are: ● emerg: Indicates system is unusable. It is the highest level of severity ● alert: Indicates action must be taken immediately ● crit: Indicates critical conditions ● error: Indicates error conditions ● warning: Indicates warning conditions ● notice: Indicates normal but significant conditions ● info: Indicates informational messages ● debug: Indicates debug-level messages
Apply	Click **Apply** to save the values and update the screen.

Table 122: Diagnostics > System Log > Local Logging

System Log Server

The System Log Server page allows you to configure the log server.

To access this page, click **Diagnostics** > **System Log** > **System Log Server**.

Figure 135: Diagnostics > System Log > System Log Server

The following table describes the items in the previous figure.

Item	Description
Server Address	Enter the IP address of the log server.
Server Port	Enter the Udp port number of the log server.
Severity	Click the drop-down menu to select the severity level for local log messages. The default is emerg. The level options are: ● emerg: Indicates system is unusable. It is the highest level of severity ● alert: Indicates action must be taken immediately ● crit: Indicates critical conditions ● error: Indicates error conditions ● warning: Indicates warning conditions ● notice: Indicates normal but significant conditions ● info: Indicates informational messages ● debug: Indicates debug-level messages
Facility	Click the drop-down menu to select facility to which the message refers.
Apply	Click **Apply** to save the values and update the screen.

Table 123: Diagnostics > System Log > System Log Server

4.10.5 DDM

The DDM page allows you to setup the diagnostic alarm status.

To access this page, click **Diagnostics** > **DDM**.

Figure 136: Diagnostics > DDM

The following table describes the items in the previous figure.

Item	Description
Diagnostic Alarm	Click the drop-down menu to designate the announcement method: Disabled, SysLog, E-mail, or SNMP.
Apply	Click **Apply** to save the values and update the screen.

Table 124: Diagnostics > DDM

These settings are informational only: Diagnostic Alarm.

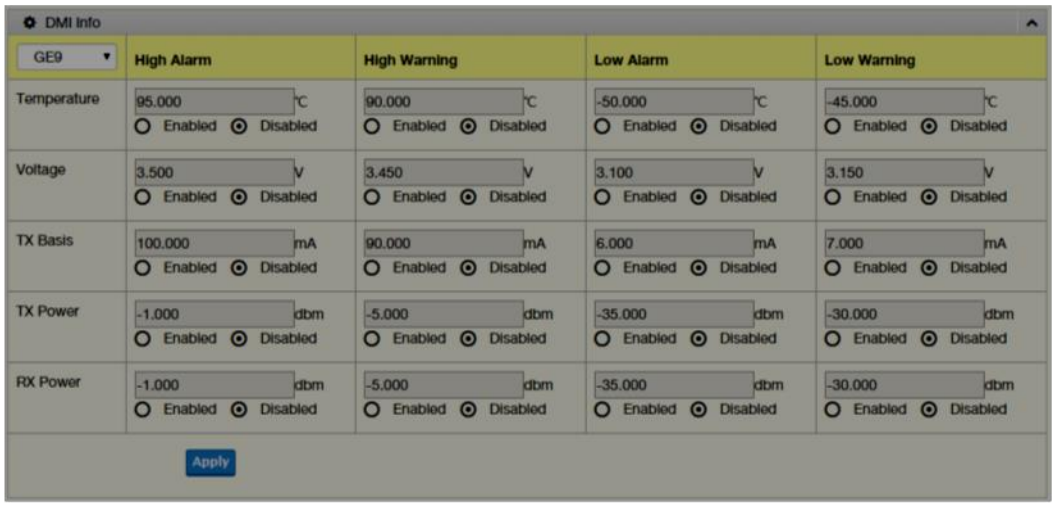


Figure 137: Diagnostics > DDM

The following table describes the items in the previous figure.

Item	Description
High Alarm	Click **Enabled** or **Disabled** to set the alarm state.
High Warning	Click **Enabled** or **Disabled** to set the alarm state.
Low Alarm	Click **Enabled** or **Disabled** to set the alarm state.
Low Warning	Click **Enabled** or **Disabled** to set the alarm state.
Apply	Click **Apply** to save the values and update the screen.

Table 125: Diagnostics > DDM

4.11 TOOLS

4.11.1 IXM

The IXM tool is an industrial Ethernet switch solution to help the users deploy industrial Ethernet switch hardware by allowing users with multiple, managed Ethernet switches in the field to eliminate the need to individually connect to each device to configure it.

To access this page, click **Tools** > **IXM**.

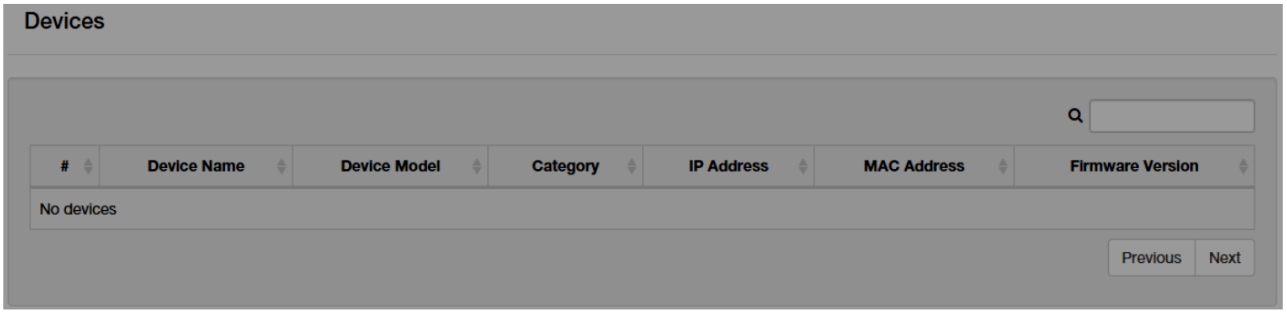


Figure 138: Tools > IXM

The following table describes the items in the previous figure.

Item	Description
Search Field	Enter criteria to search the IXM information.
#	Displays the reference to the device number.
Device Name	Displays the device name.
Device Model	Displays the device model type.
Category	Displays the device's category type.
IP Address	Displays the device's IP address.
MAC Address	Displays the device's IP MAC address.
Firmware Version	Displays the device's firmware version.
Previous	Click **Previous** to back to previous page.
Next	Click **Next** to go to next page.

Table 126: Tools > IXM

4.11.2 BACKUP MANAGER

The Backup Manager page allows you to configure a remote TFTP sever or host file system in order to back up the firmware image or configuration file.

To access this page, click **Tools** > **Backup Manager**.

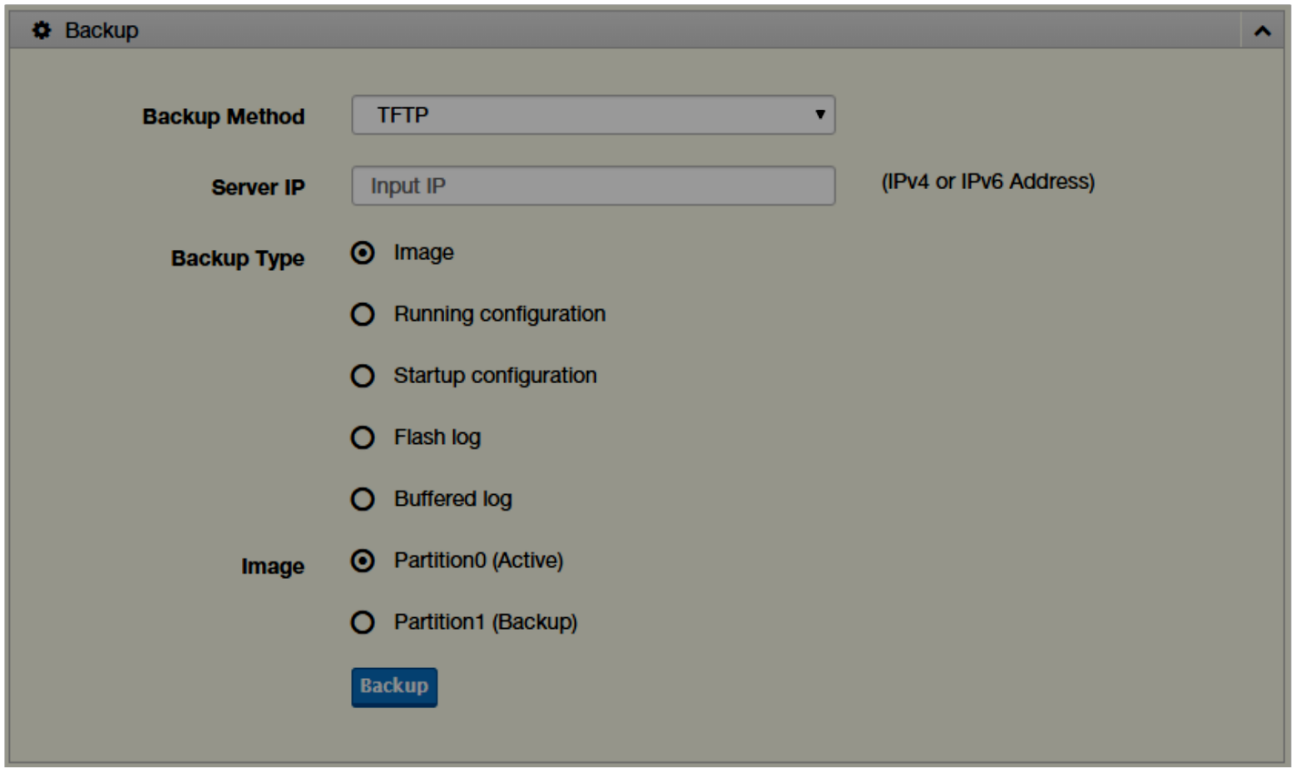


Figure 139: Tools > Backup Manager

The following table describes the items in the previous figure.

Item	Description
Backup Method	Click the drop-down menu to select the backup method: TFTP or HTTP.
Server IP	Enter the IP address of the backup server.
Backup Type	Click a type to define the backup method: image: running configuration, startup configuration, flash log, or buffered log.
Image	Click the format for the image type: 7710E_2C_1_00_13.bix (Active) or vmlinux.bix (backup).
Backup	Click **Backup** to back up the settings.

Table 127: Tools > Backup Manager

4.11.3 UPGRADE MANAGER

The Upgrade Manager page allows you to configure a remote TFTP sever or host file system in order to upload firmware upgrade images or configuration files.

To access this page, click **Tools** > **Upgrade Manager**.

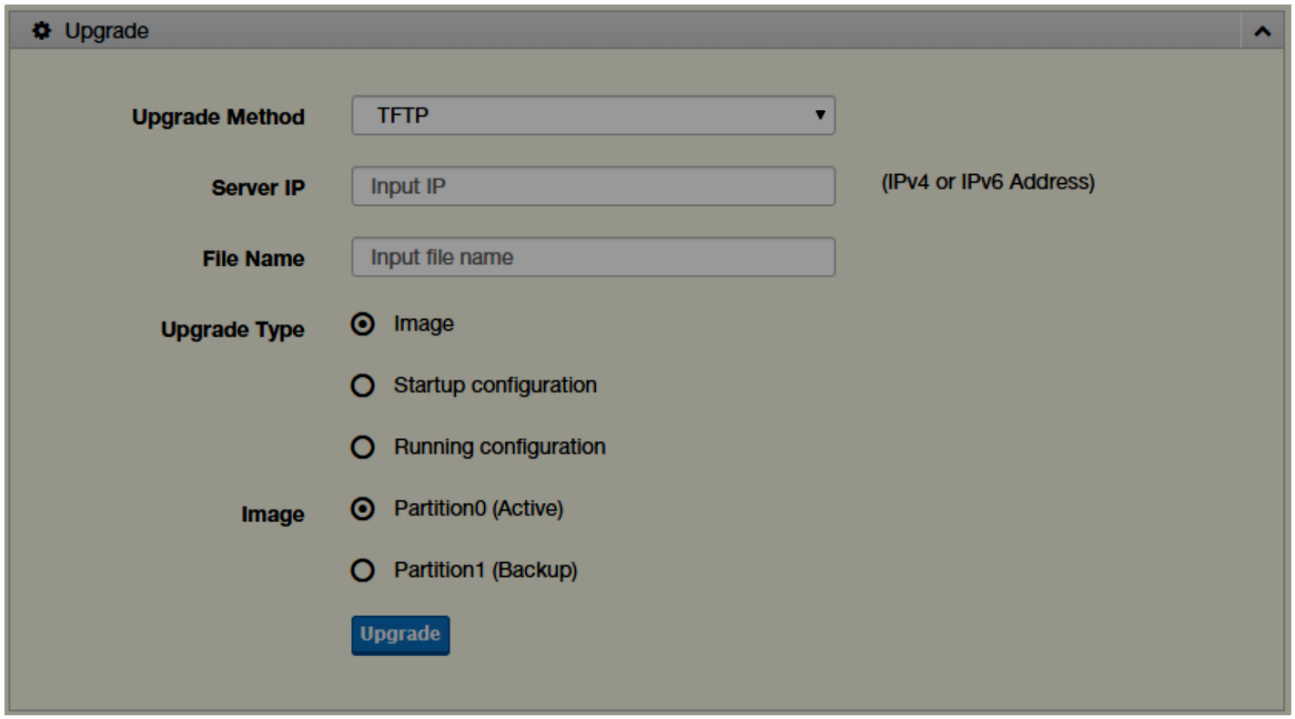


Figure 140: Tools > Upgrade Manager

The following table describes the items in the previous figure.

Item	Description
Upgrade Method	Click the drop-down menu to select the upgrade method: TFTP or HTTP.
Server IP	Enter the IP address of the upgrade server.
File Name	Enter the file name of the new firmware version.
Upgrade Type	Click a type to define the upgrade method: image, startup configuration, or running configuration.
Image	Click the format for the image type: 7710E_2C_1_00_13.bix (Active) or vmlinux.bix (backup).
Upgrade	Click **Upgrade** to upgrade to the current version.

Table 128: Tools > Upgrade Manager

4.11.4 DUAL IMAGE

The Dual Image page allows you to setup an active and backup partition for firmware image redundancy.

To access this page, click **Tools** > **Dual Image**.

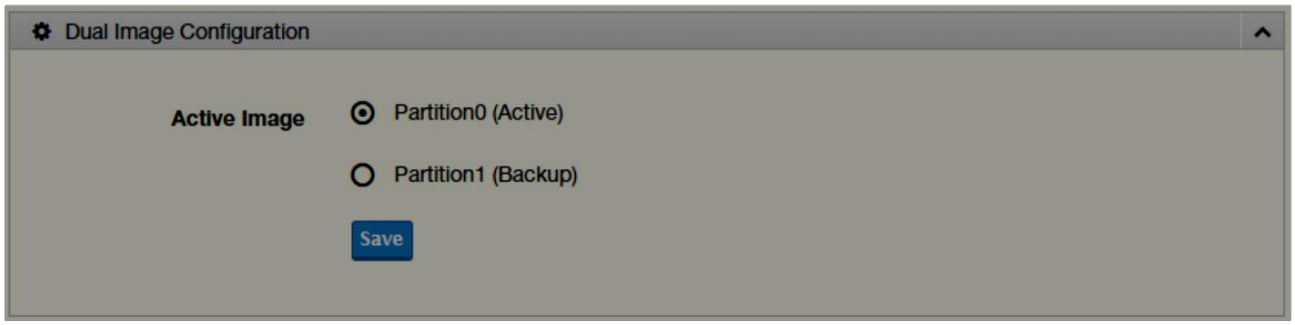


Figure 141: Tools > Dual Image

The following table describes the items in the previous figure.

Item	Description
Active Image	Click the format for the image type: Partition0 (Active) or Partition1 (backup).
Save	Click **Save** to save and keep the new settings.

Table 129: Tools > Dual Image

4.11.5 SAVE CONFIGURATION

To access this page, click **Tools** > **Save Configuration**.

Click **Save Configuration to FLASH** to have configuration changes you have made to be saved across a system reboot. All changes submitted since the previous save or system reboot will be retained by the switch.

4.11.6 USER ACCOUNT

The User Account page allows you to setup a user and the related parameters.

To access this page, click **Tools** > **User Account**.

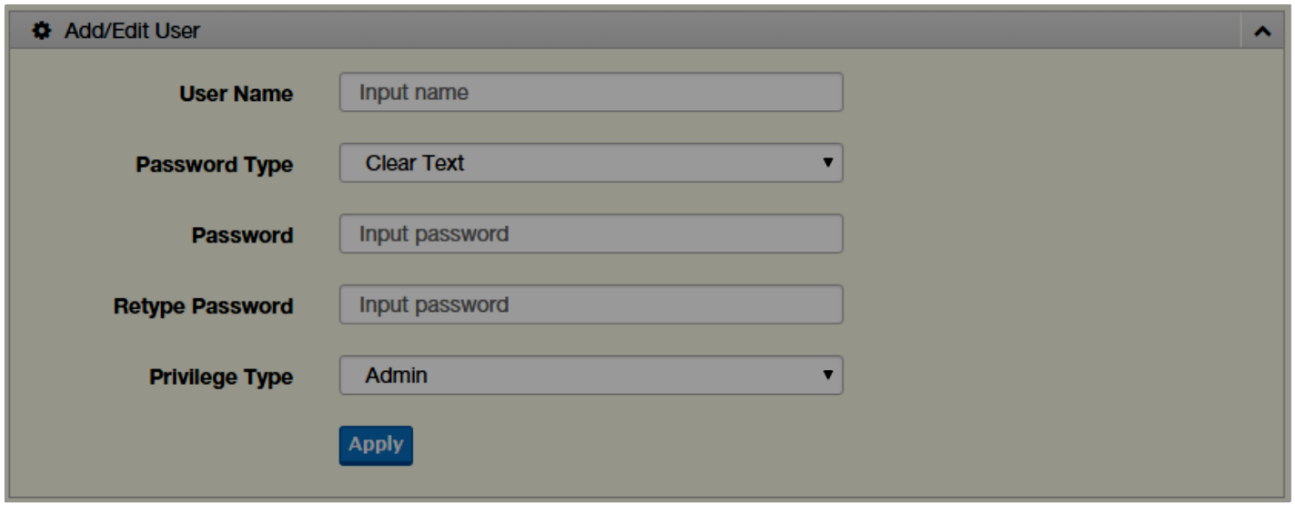


Figure 142: Tools > User Account

The following table describes the items in the previous figure.

Item	Description
User Name	Enter the name of the new user entry.
Password Type	Click the drop-down menu to define the type of password: **Clear Text**, **Encrypted** or **No Password**.
Password	Enter the character set for the define password type.
Retype Password	Retype the password entry to confirm the profile password.
Privilege Type	Click the drop-down menu to designate privilege authority for the user entry: **Admin** or **User**.
Apply	Click **Apply** to create a new user account.

Table 130: Tools > User Account

4.11.7 RESET SYSTEM

To access this page, click **Tools** > **Reset System**.

Click **Restore** to have all configuration parameters reset to their factory default values. All changes that have been made will be lost, even if you have issued a save.

Reset settings take effect after a system reboot.

4.11.8 REBOOT DEVICE

To access this page, click **Tools** > **Reboot Device**.

Click **Reboot** to reboot the switch. Any configuration changes you have made since the last time you issued a save will be lost.

TROUBLESHOOTING

Verify that you are using the right power cord/adapter (DC 12-48V), please don't use the power adapter with DC output higher than 48V, or it may damage this device.

Select the proper UTP/STP cable to construct the user network. Use unshielded twisted-pair (UTP) or shield twisted-pair (STP) cable for RJ-45 connections that depend on the connector type the switch equipped: 100R Category 3, 4 or 5 cable for 10Mbps connections, 100R Category 5 cable for 100Mbps connections, or 100R Category 5e/above cable for 1000Mbps connections. Also be sure that the length of any twisted-pair connection does not exceed 100 meters (328 feet).

R = replacement letter for Ohm symbol.

Diagnosing LED Indicators: To assist in identifying problems, the switch can be easily monitored through panel indicators, which describe common problems the user may encounter and where the user can find possible solutions.
If the power indicator does not light on when the power cord is plugged in, you may have a problem with power cord. Then check for loose power connections, power losses or surges at power outlet. If you still cannot resolve the problem, contact the local dealer for assistance.

If the LED indicators are normal and the connected cables are correct but the packets still cannot be transmitted. Please check the user system's Ethernet devices' configuration or status.

ADVANTECH B+B SMARTWORX TECHNICAL SUPPORT

Phone: **1-800-346-3119**
(Monday - Friday, 7 a.m. to 5:30 p.m. CST)
Fax: **815-433-5109**
Email: support@advantech-bb.com
Web: www.advantech-bb.com