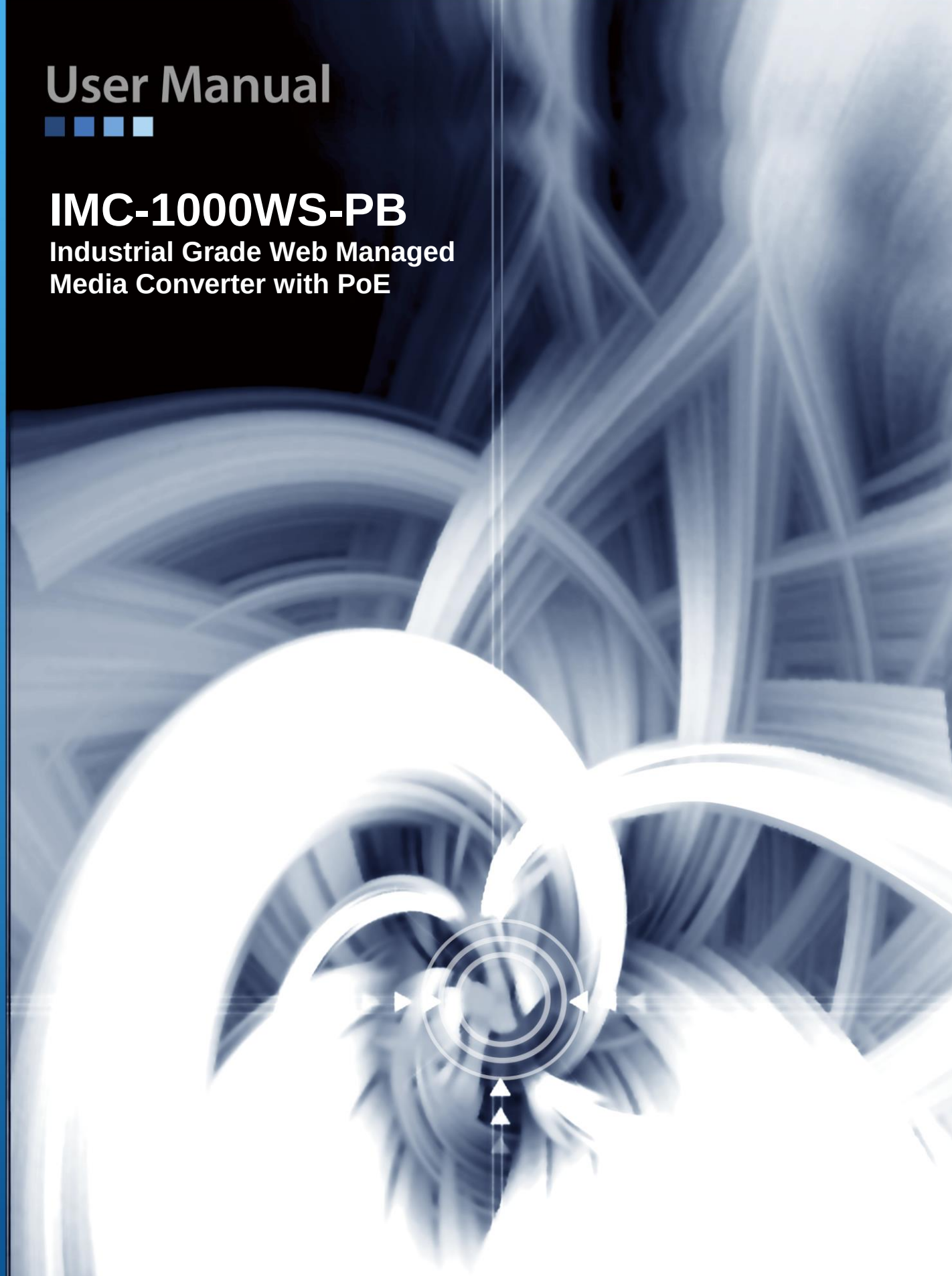
User Manual

IMC-1000WS-PB

Industrial Grade Web Managed Media Converter with PoE



CTC UNION TECHNOLOGIES CO., LTD.

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This is a Class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

IMC-1000WS-PB Series
Industrial Grade Web Managed PoE Media Converter

User Manual
Version 1.1 February 2024

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CHAPTER 1. INTRODUCTION

1.1 Welcome

Welcome and thank you for purchasing this product from CTC Union. We hope this product is everything you wanted and more. Our Product Managers and R&D team have placed a "quality first" motto in our development of this series of Ethernet switches with the desire of providing a highly stable and reliable product that will give years of trouble free operation. We are so sure of our product design, we offer an unconditional 5 years warrantee.

In this chapter we will introduce all of the various models available in this series. These models can be either wall mounted or DIN rail mounted. Chapter 2 will describe the panels and mounting installation methods. All the models in this series utilize almost identical Web management interface. Chapter 3 will detail all of the configuration settings by using an easy to point and click Web interface which can be accessed from any available web browser.

1.2 Product Description

IMC-1000WS-PB are industrial grade 1-port Ethernet PoE (Power over Ethernet) media converter. PoE technology describes a system to pass electrical power safely, along with data, on Ethernet cabling. The original IEEE 802.3af-2003 PoE standard provides up to 15.4W of DC power to connected devices. The updated IEEE 802.3at-2009 PoE standard also known as PoE+ or PoE plus, provides up to 30W of power. It is worth mentioning that IMC-1000WS-PB can provide up to 90W per port through the non-standard use of all 4 pairs of category 5e/6 cable. Thus, IMC-1000WS-PB are ideal products for various applications especially used in industrial networking.

Housed in a rugged DIN rail or wall mountable enclosure, this product is designed for harsh environments, such as industrial networking, intelligent transportation systems (ITS) and is also suitable for many military and utility market applications where environmental conditions exceed commercial product specifications.

1.3 Product Features

- Provides 1-port IEEE 802.3at/af/bt PoE
- DC input power 48VDC (44~57VDC)
- Redundant dual power inputs
- IP30 rugged metal housing
- Fanless design
- Supports wide operating temperature range -20°C~70°C
- Railway Traffic EN50121-4, EMS & EMI for heavy industrial environment EN61000-6-2 & EN61000-6-4

1.4 Product Specifications

<table>
<tr><td rowspan="10">Standards</td><td>IEEE 802.3</td><td>10Base-T 10Mbit/s Ethernet</td></tr>
<tr><td>IEEE 802.3u</td><td>100Base-TX, 100Base-FX, Fast Ethernet</td></tr>
<tr><td>IEEE 802.3ab</td><td>1000Base-T Gbit/s Ethernet over twisted pair</td></tr>
<tr><td>IEEE 802.3z</td><td>1000Base-X Gbit/s Ethernet over Fiber-Optic</td></tr>
<tr><td>IEEE 802.1Q</td><td>Virtual LANs (VLAN)</td></tr>
<tr><td>IEEE 802.3x</td><td>Flow control for Full Duplex</td></tr>
<tr><td>IEEE 802.3af</td><td>PoE (Power over Ethernet)</td></tr>
<tr><td>IEEE 802.3at</td><td>PoE+ (Power over Ethernet Enhancement)</td></tr>
<tr><td>IEEE 802.3bt</td><td>PoE++</td></tr>
<tr><td rowspan="3">Switch</td><td>Data Processing</td><td>Pass Through or Store and Forward mode</td></tr>
<tr><td>Flow Control</td><td>IEEE 802.3x for full duplex mode</td></tr>
<tr><td>MTU</td><td>16K Bytes (Jumbo Frames)</td></tr>
<tr><td rowspan="2">Connectors</td><td>LAN</td><td>1 x RJ-45 10/100/1000BaseT(X)
Auto-detected speed, auto negotiation duplex, auto MDI/MDI-X function, Full/Half duplex</td></tr>
<tr><td>Fiber</td><td>1 x 100M/1000M speed mode SFP+ slot</td></tr>
<tr><td rowspan="2">Power</td><td>Power Supply</td><td>DC Input Power: 48VDC (44~57VDC)
➢ 54~57VDC is recommended for 90W (4 Pairs) PoE applications
➢ 52~57VDC is recommended for 60W (4 Pairs) PoE applications
➢ 52~57VDC is recommended for 30W (2 Pairs) PoE applications
➢ 44~57VDC is recommended for 15.4W (2 Pairs) PoE applications</td></tr>
<tr><td>Power Consumption</td><td><table><tr><th>Input Voltage</th><th>Total Power Consumption</th><th>Device Power Consumption</th><th>Power Budget</th></tr><tr><td>55VDC</td><td>98.5W</td><td>5W</td><td>90W</td></tr></table></td></tr>
<tr><td rowspan="3">Power over Ethernet (PoE)</td><td>PoE Standards</td><td>IEEE 802.3af (15.4W), IEEE 802.3at (30W), IEEE 802.3bt (90W)</td></tr>
<tr><td>PoE Port</td><td>RJ-45 pin assignment
Support IEEE 802.3af / IEEE 802.3at / Ultra power/ IEEE 802.3bt End-Span Alternative A Mode</td></tr>
<tr><td>PoE Modes</td><td>2-Pair (30Watts) Positive (V+) pins: 1, 2; Negative (V-) pins 3, 6; Data 1, 2, 3, 6, 4, 5, 7, 8
4-Pair (60Watts) Positive (V+) pins: 1, 2, 4, 5; Negative (V-) pins 3, 6, 7, 8; Data 1, 2, 3, 6, 4, 5, 7, 8</td></tr>
<tr><td>Terminal Block</td><td>Power</td><td>Two redundant power inputs</td></tr>
<tr><td rowspan="8">Certifications</td><td>EMC</td><td>CE (EN55032, EN55035)</td></tr>
<tr><td>EMI</td><td>FCC Part 15 subpart B class A</td></tr>
<tr><td>Railway Traffic</td><td>EN50121-4</td></tr>
<tr><td>Immunity for Heavy Industrial Environment</td><td>EN61000-6-2</td></tr>
<tr><td>Emission for Heavy Industrial Environment</td><td>EN61000-6-4</td></tr>
<tr><td>EMS (Electromagnetic Susceptibility) Protection Level</td><td>EN61000-4-2 (ESD) Level 3, Criteria B
EN61000-4-3 (RS) Level 3, Criteria A
EN61000-4-4 (Burst) Level 3, Criteria A
EN61000-4-5 (Surge) Level 3, Criteria B
EN61000-4-6 (CS) Level 3, Criteria A
EN61000-4-8 (PFMF, Magnetic Field) Field Strength: 300A/m, Criteria A</td></tr>
<tr><td>Shock</td><td>EN60068-2-27</td></tr>
<tr><td>Freefall</td><td>EN60068-2-32</td></tr>
<tr><td>Vibration</td><td>EN60068-2-6</td></tr>
<tr><td>MTBF</td><td colspan="2">1,178,420 hours</td></tr>
</table>

CHAPTER 2. PANELS & INSTALLATION

2.1 Panels

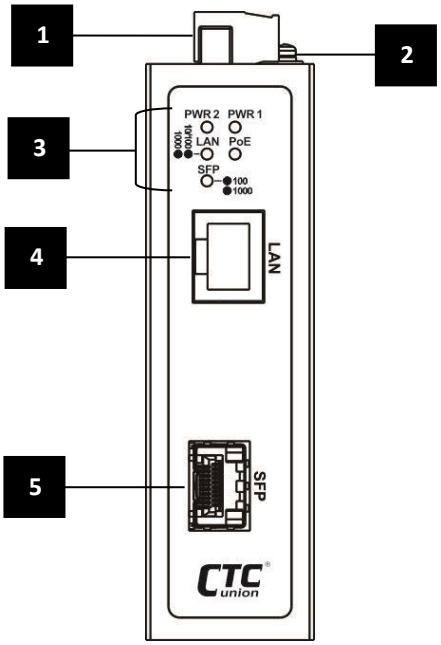


Figure 1. Front Panel

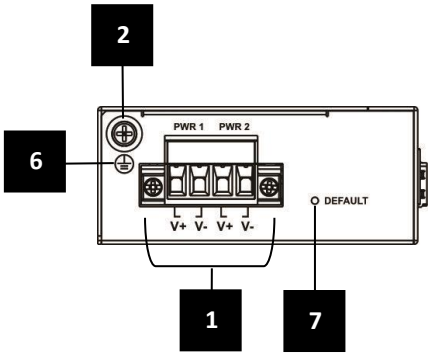


Figure 2. Top Panel

No.	Description
1	Power terminal block
2	Earth ground connector
3	LED indicators
4	LAN interface
5	Optical fiber interface (SFP slot)
6	Earth ground sign
7	Reset to default push-button

2.2 LAN & Fiber Port

IMC-1000WS-PB devices have one electrical LAN port and one SFP-based fiber port on the front panel. The LAN port that utilizes shielded RJ-45 connector supports 10/100/1000M and PoE function; while the fiber port supports dual rate 100/1000M.

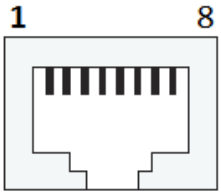
2.3 Power over Ethernet (PoE)

The LAN port supports PoE per IEEE802.3af (15.4W), IEEE802.3at (30W) or IEEE802.3bt (90W) for connection to standard PoE PD (Power Devices) such as IP Cameras, Access Points, IP Phones, Digital Signage, etc. PoE eliminates the need to run separate power to these devices thereby simplifying deployment and reducing expenses.

The LAN port may also connect to any non-PoE device for normal Ethernet transmission without any damage to the non-PoE device or to this device.

Note: *By default, PoE function is disabled. If you want to use PoE function, please enable this function via Web (GUI) management. For detailed descriptions on Web management operation, please refer to the User Manual.*

2.4 RJ-45 Ethernet Port Pinouts



2.5 RJ-45 Ethernet & PoE Pin Assignments

Pin No.	RJ-45 Ethernet		PoE Output
	100M	1000M	
1	RX+	TRD 0+	V+
2	RX-	TRD 0-	V+
3	TX+	TRD 1+	V-
4	-	TRD 2+	V+
5	-	TRD 2-	V+
6	TX-	TRD 1-	V-
7	-	TRD 3+	V-
8	-	TRD 3-	V-

2.6 Power Connection

IMC-1000WS-PB media converters are powered up by an external power supply. On the top panel, a removable 4-pin terminal block is provided for two pairs (PWR1 & PWR2) of DC power connection. To connect to the power supply, insert V+ and V- wire into power contacts. Then, tighten the wire-clamp screws to prevent power wires from loosening. If the power supply is connected correctly, then the PWR LED on the front panel will light in green.

2.7 Earth Ground Connection

An earth ground connector is provided on the top panel with an earth ground sign next to it. Grounding the device can help to release leakage of electricity to the earth safely so as to reduce injuries from electromagnetic interference (EMI).

Prior to connecting to the power, it is important to connect the ground wire to the earth. Follow steps below to install ground wire:

1. Remove the ground screw.
2. Attach the ground screw to the ring terminal of the grounding cable. Make sure that the ground cable is long enough to reach the earth.
3. Use a screwdriver to fasten the ground screw.

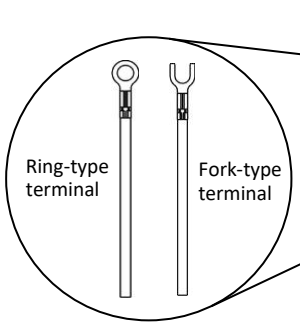


Figure 3. Ground Cable Types

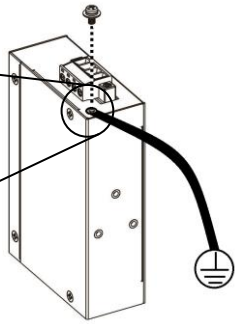


Figure 4. Ground Connection

2.8 LED Indicators

LED	Color	Status	Description
PWR	Green	On	Lit if power is connected and active.
		Off	Power is not connected.
LAN	Amber	On	The connected LAN speed is 1000M.
		Blinking	Blinking when there is Ethernet traffic.
		Off	The LAN link is down or LAN speed is 10/100M.
	Green	On	The connected LAN speed is 10/100M.
		Blinking	Blinking when there is Ethernet traffic.
		Off	The LAN link is down or LAN speed is 1000M.
SFP	Green	On	Fiber link is up and fiber speed is 100M.
		Blinking	Blinking when there is Ethernet traffic.
		Off	Fiber link is down.
	Amber	On	Fiber link is up and fiber speed is 1000M.
		Blinking	Blinking when there is Ethernet traffic.
		Off	Fiber link is down.
PoE	Green	On	PoE LED indicator is lit and remains steady on when the LAN port has successfully negotiated PoE and is supplying output power to the remote connected PD.
		Off	No PoE power input.

2.9 Installation

IMC-1000WS-PB(E) can be installed in DIN rail or mounted on wall (optional). Hardware brackets for DIN rail installation are provided with the device. However, wall-mounting brackets are not provided. If you need wall-mounting installation kit, please contact your sales representative. When installing the DIN rail and wall-mounting bracket, be sure to correctly align the orientation pin.

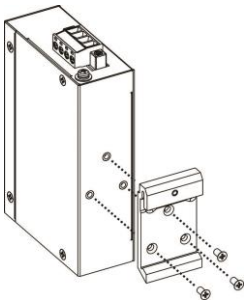


Figure 5. DIN Rail

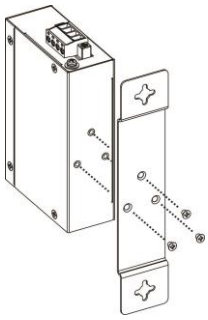


Figure 6. Wall Mounting

IMC-1000WS-PB(E) with DIN Rail bracket have a steel spring in the upper rail of the bracket. This spring is compressed for mounting and un-mounting by applying downward force.

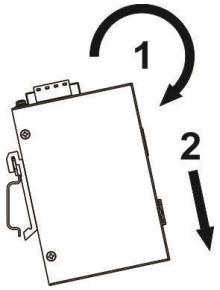


Figure 7. Mounting

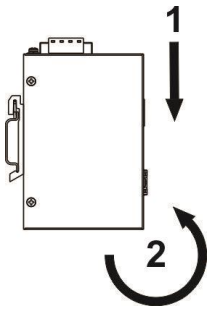


Figure 8. Un-mounting

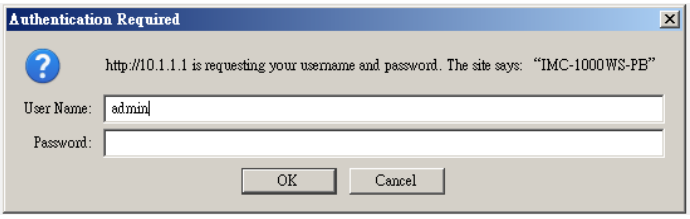
CHAPTER 3. WEB OPERATION & CONFIGURATION

3.1 Introduction

Web-based management provides easy-to-use and straightforward graphic interface for users to configure the device quickly. The web-based management of this device supports various web browsers such as Internet Explorer (Version 9.0 or above is recommended), Firefox or Google Chrome. To access the web management interface for the first time or after returning the device back to factory defaults, enter the default IP address of the **IMC** device in the browser's location bar. See below for explanations.

3.1.1 Login

To enter the web based management for the first time or after returning the device back to factory defaults, input the default IP address "**10.1.1.1**" in your web browser. Then, a standard login prompt will appear depending on the type of browser used. The example below is with Firefox browser.



Enter the factory default username "**admin**" with "**no password**". After successfully entering the web based management, the Port State page will appear.

Web Home Page

3.1.2 Port Status

The initial page, when logged in, displays a graphical overview of the port status for the electrical and optical ports. The "Green" colored port indicates a LAN connection with a speed of 100M. The "Amber" colored port indicates a connection speed of 1000M.

The status display can be reached by using the left side menu, and return to **Ports>State**.

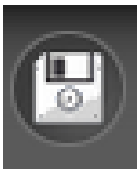
3.1.3 Refresh

To update the screen, click the "Refresh" button.

Unless connected directly on a local LAN, we recommend not using the auto-refresh function as it does generate a bit of traffic.

3.1.4 Save

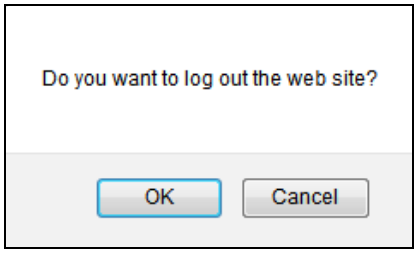
After completing configuration, you must save all your configurations before logging out of the web GUI. This is easily accomplished by clicking the Save icon. The other way to save configurations is to meun tab on the left pane and go to **Maintenance > Configuration > Save startup-config**.



3.1.5 Logout

After completing configuration, we recommend logging out of the web GUI. This is easily accomplished by clicking the logout icon.

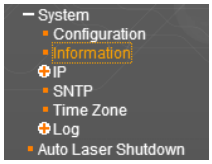
After clicking the logout icon, a confirmation screen will be displayed. Click "OK" to finish logging out or click "Cancel" to return to the web configuration GUI.



For the remainder of this section, each menu item will be explained one by one, in order as they descend down the menu screen, starting with the "System" menu.

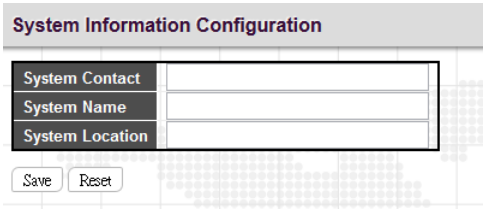
3.2 System

The configuration under the "System" menu includes device settings such as IP address, time server, etc.



3.2.1 System Configuration

The configuration information entered here will be reported in the standard SNMP MIB2 for 'sysContact' (OID 1.3.6.1.2.1.1.4), 'sysName' (OID 1.3.6.1.2.1.1.5) and 'sysLocation' (OID 1.3.6.1.2.1.1.6). Remember to click the “Save” button after entering the configuration information.



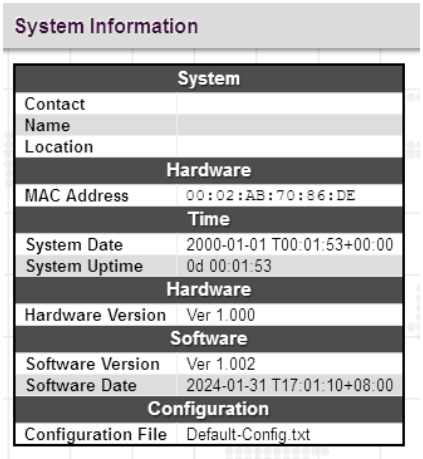
System Contact: Indicate the descriptive contact information. This could be a person’s name, email address or other descriptions. The allowed string length is 0~255 and the allowed content is the ASCII characters from 32~126.

System Name: Indicate the hostname for this device. Alphabets (A-Z; a-z), digits (0-9) and minus sign (-) can be used. However, space characters are not allowed. The first character must be an alphabet character. The first and last character must not be a minus sign. The allowed string length is 0~255.

System Location: Indicate the location of this device. The allowed string length is 0~255.

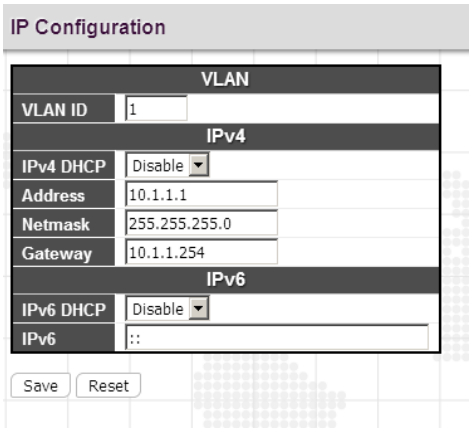
3.2.2 System Information

The system information screen will display the configuration information, the hardware MAC address and version, the system time, the system "uptime" and the software version and build date.



3.2.3 System IP

Setup the IP configuration, interface and routes.



VLAN

VLAN: This is the VLAN associated with the IP interface. Only ports in this VLAN will be able to access the IP interface. This field is only available for input when creating a new interface.

IPv4

IPv4 DHCP: When “Enable” is selected, the system will configure the IPv4 address and mask of the interface using the DHCP protocol. The DHCP client will announce the configured System Name as hostname to provide DNS lookup.

IPv4 Address: The IPv4 address of the interface is entered in dotted decimal notation. If DHCP is enabled, this field is not used. The field may also be left blank if IPv4 operation on the interface is not desired.

Netmask: The IPv4 network mask is entered by a number of bits (prefix length). Valid values are between 0 and 30 bits for a IPv4 address. If DHCP is enabled, this field is not used. The field may also be left blank if IPv4 operation on the interface is not desired.

Gateway: Specify the IPv4 gateway IP address.

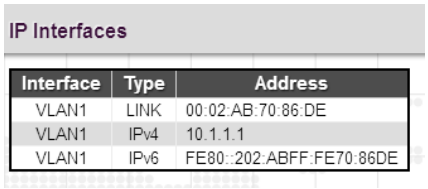
IPv6

Enable: When "Enable" is selected, the system will configure the IPv6 address and mask of the interface using the DHCP protocol.

IPv6 Address: A IPv6 address is a 128-bit record represented as eight fields of up to four hexadecimal digits with a colon separating each field (:). For example, fe80::215:c5ff:fe03:4dc7. The symbol :: is a special syntax that can be used as a shorthand way of representing multiple 16-bit groups of contiguous zeros; but it can appear only once. It can also represent a legally valid IPv4 address. For example, ::192.1.2.34. The field may be left blank if IPv6 operation on the interface is not desired.

3.2.4 System IP Status

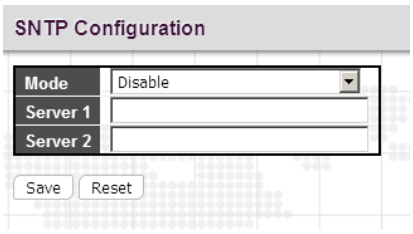
Display the status of IP interfaces and routes.



Please refer to "System IP" for the configuration of the interfaces and routes. This page is informational only. Use "Refresh" button on the far right corner to keep updating IP status.

3.2.5 System NTP

Setup the Network Time Protocol configuration, to synchronize the device's clock to network time.



Mode: Configure the NTP mode operation. Possible modes are:

Enabled: Enable NTP client mode operation.

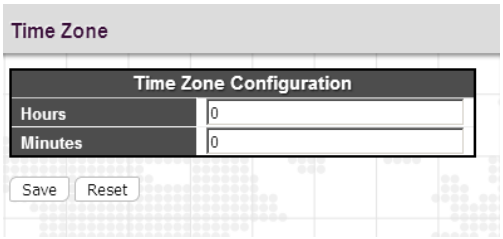
Disabled: Disable NTP client mode operation.

Server #: Enter the IPv4 or IPv6 address of an NTP server. IPv6 address is in 128-bit records represented as eight fields of up to four hexadecimal digits with a colon separating each field (:). For example, 'fe80::215:c5ff:fe03:4dc7'. The symbol '::' is a special syntax that can be used as a shorthand way of representing multiple 16-bit groups of contiguous zeros; but it can appear only once. NTP servers can also be represented by a legally valid IPv4 address. For example,

'::192.1.2.34'. The NTP servers are tried in numeric order. If 'Server 1' is unavailable, the NTP client will try to contact 'Server 2'.

3.2.6 System Time

Setup the device time.



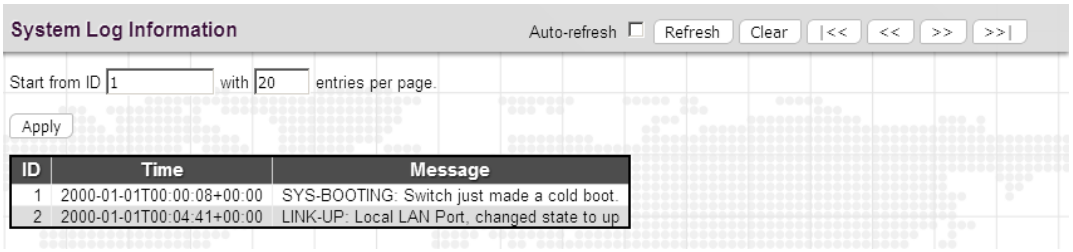
Configures the Time Zone by entering the hours and minutes offset from UTC (Universal Time Coordinates).

Hours: The valid value is from -23 to 23.

Minutes: The valid value is from 0 to 59.

3.2.7 System Log Information

Displays the collected log information.

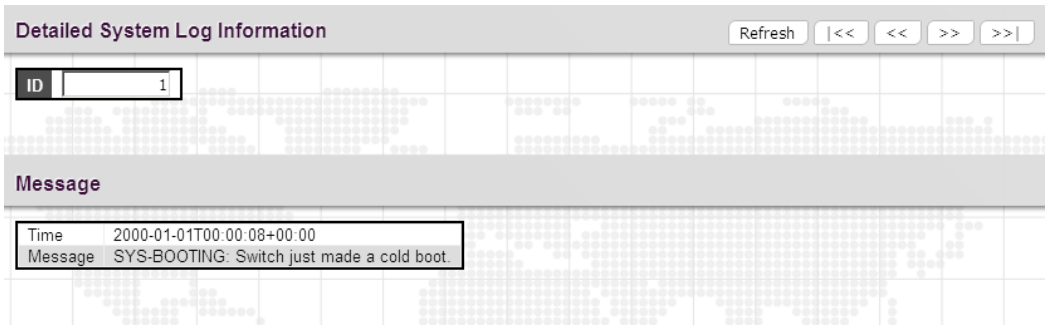


Start from ID [ ] **with** [ ] **entries per page:** Input a range of log ID number and then click “Apply” to view log messages you selected.

Browsing buttons: Use these buttons to quickly go to the beginning or end of the log or to go through the log message.

3.2.8 System Detailed Log

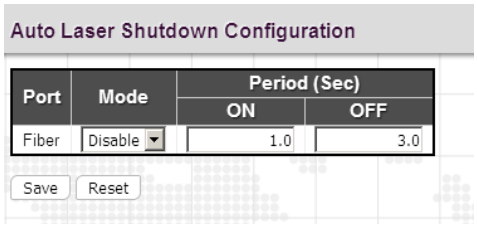
Displays the individual log record.



Browsing buttons: Use these buttons to quickly go to the beginning or end of the log or to go through the individual log message.

3.3 Auto Laser Shutdown

Automatic Laser Shutdown (ALS) is a technique used to automatically shut down the output power of the transmitter in case of fiber break, according to ITU-T G.664. If a fiber is cut, the receiver will detect a Loss Of Signal (LOS). The ALS agent will turn off the transmitter. The receiver at the far end will then detect an LOS and its ALS agent will turn off the transmitter. In this way the entire fiber will go dark. The protocol will also occasionally turn on the laser briefly, monitoring a link for recovery. This on/off period is configurable.



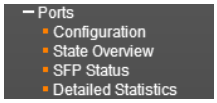
Mode: Select to enable or disable ALS function.

Period ON: Set the period, in seconds (1~5), that turns the laser on to attempt a link recovery. Default is 1 second.

Period OFF: Sets how long, in seconds (1~5), the laser remains off after a failed recovery attempt. Default is 3 seconds.

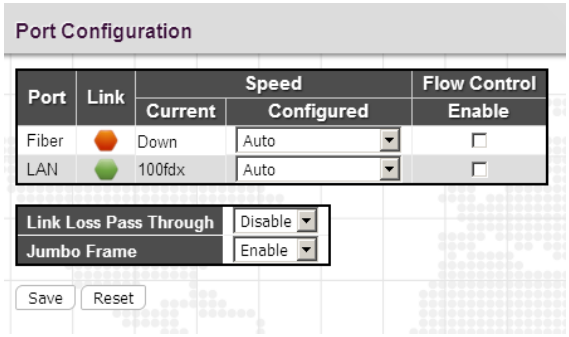
3.4 Ports

Configurations related to the fiber and electrical ports are performed under the Ports menu.



3.4.1 Ports Configuration

This page displays current port configurations and allows some configuration here.



Port: This shows the "Fiber" port or "LAN" port.

Link: The current link state for each port is displayed graphically. Green indicates the link is up and red indicates that it is down.

Current Speed: This column provides the current link speed (100Mbps, 1G) and duplex (FDX=Full Duplex) of each port.

Configured Speed: This pull down selects any available link speed for the given switch port. Only speed items supported by the specific port are shown.

Possible copper port settings are:

Disabled: Disables the switch port operation.

Auto: The port auto-negotiates speed with the link partner and selects the highest speed that is compatible with the link partner and negotiates the duplex mode.

10Mbps HDX: Forces the port to 10Mbps half duplex mode.

10Mbps FDX: Forces the port to 10Mbps full duplex mode.

100Mbps HDX: Forces the port to 100Mbps half duplex mode.

100Mbps FDX: Forces the port to 100Mbps full duplex mode.

1Gbps FDX: Forces the port to 1Gbps full duplex mode.

Possible fiber port settings are:

Disabled: Disables the switch port operation.

Auto: The port auto-negotiates speed with the link partner and selects the highest speed that is compatible with the link partner and negotiates the duplex mode.

1Gbps FDX: Forces the fiber optic port to 1Gbps full duplex.

10Gbps FDX: Forces the fiber optic port to 10Gbps full duplex mode.

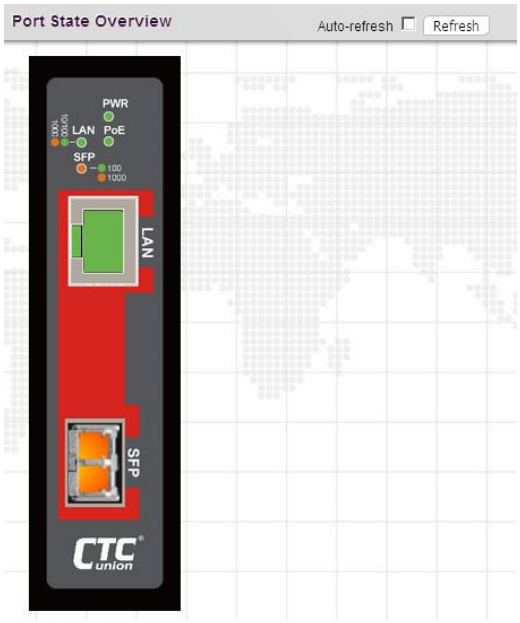
Flow Control: Tick the checkbox to enable the flow control function.

Link Loss Pass Through: Enable or disable Link Loss Pass Through function. Link Loss Pass-through is a method of forwarding a link loss from one media to the other over the media converter. Link Loss Pass Through function of this device supports both fiber to LAN and LAN to fiber link fault application for troubleshooting purposes.

Jumbo Frames: Enable or disable this device to allow jumbo frame packets (16K bytes).

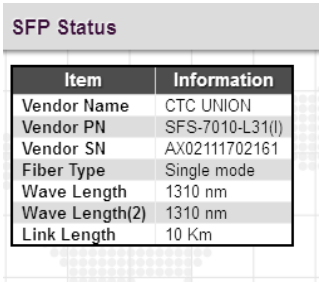
3.4.2 State Overview

Display an overview graphic of the switch.



This is the same graphic overview shown when first logging into the switch for management. When "Auto-refresh" is checked, the display will be updated every 3 seconds. "Green" colored ports indicate a linked state of RJ-45 ports; while, "Amber" colored ports indicate a 1G linked state of SFP fiber ports. "Black" ports have no link and "Gray" ports mean ports are disabled.

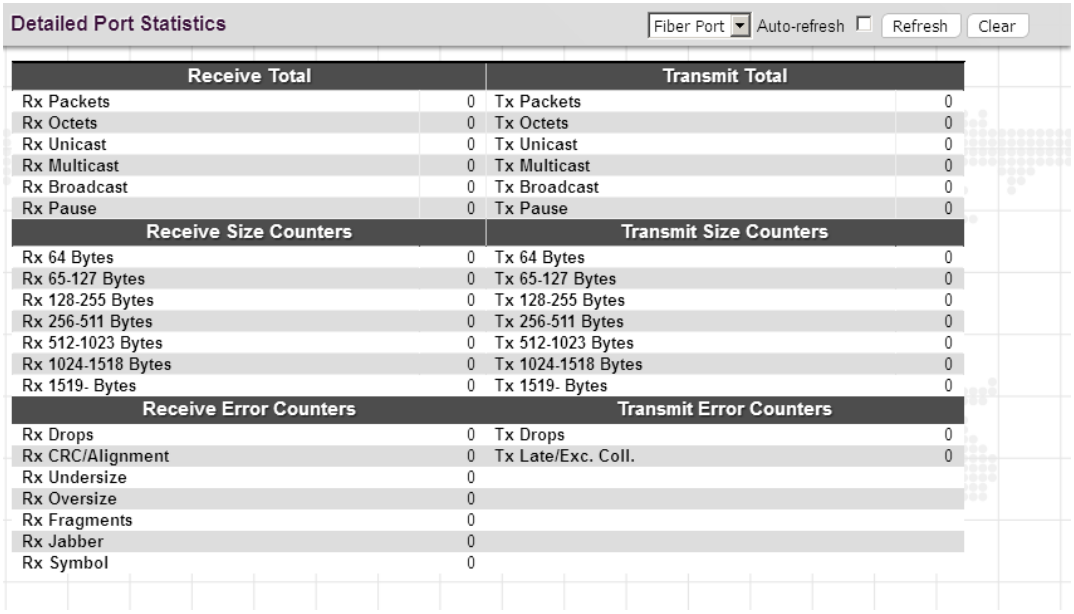
3.4.3 SFP Status



This page shows the information of the inserted SFP.

3.4.4 Detailed Statistics

This page provides detailed traffic statistics for Fiber & LAN port. The displayed counters are the totals for receive and transmit, the size counters for receive and transmit, and the error counters for receive and transmit. Use the port select pull down to select which switch port details to display.



Receive Total		Transmit Total	
Rx Packets	0	Tx Packets	0
Rx Octets	0	Tx Octets	0
Rx Unicast	0	Tx Unicast	0
Rx Multicast	0	Tx Multicast	0
Rx Broadcast	0	Tx Broadcast	0
Rx Pause	0	Tx Pause	0
Receive Size Counters		**Transmit Size Counters**	
Rx 64 Bytes	0	Tx 64 Bytes	0
Rx 65-127 Bytes	0	Tx 65-127 Bytes	0
Rx 128-255 Bytes	0	Tx 128-255 Bytes	0
Rx 256-511 Bytes	0	Tx 256-511 Bytes	0
Rx 512-1023 Bytes	0	Tx 512-1023 Bytes	0
Rx 1024-1518 Bytes	0	Tx 1024-1518 Bytes	0
Rx 1519- Bytes	0	Tx 1519- Bytes	0
Receive Error Counters		**Transmit Error Counters**	
Rx Drops	0	Tx Drops	0
Rx CRC/Alignment	0	Tx Late/Exc. Coll.	0
Rx Undersize	0		
Rx Oversize	0		
Rx Fragments	0		
Rx Jabber	0		
Rx Symbol	0		

Receive Total and Transmit Total

Rx and Tx Packets: The number of received and transmitted (good and bad) packets.

Rx and Tx Octets: The number of received and transmitted (good and bad) bytes. Includes FCS, but excludes framing bits.

Rx and Tx Unicast: The number of received and transmitted (good and bad) unicast packets.

Rx and Tx Multicast: The number of received and transmitted (good and bad) multicast packets.

Rx and Tx Broadcast: The number of received and transmitted (good and bad) broadcast packets.

Rx and Tx Pause: A count of the MAC Control frames received or transmitted on this port that have an opcode indicating a PAUSE.

Receive and Transmit Size Counters

Rx 64~1527 Bytes & Tx 64~1519 Bytes: Displays the number of received and transmitted (good and bad) packets split into categories based on their respective frame sizes.

Receive and Transmit Queue Counters

Rx Q0~Q7 & Tx Q0~Q7: Displays the number of received and transmitted packets per input and output queue.

Receive Error Counters

Rx Drops: The number of frames dropped due to lack of receive buffers or egress congestion.

Rx CRC/Alignment: The number of frames received with CRC or alignment errors.

Rx Undersize: The number of short [1] frames received with valid CRC.

Rx Oversize: The number of long [2] frames received with valid CRC.

Rx Fragments: The number of short [1] frames received with invalid CRC.

Rx Jabber: The number of long [2] frames received with invalid CRC.

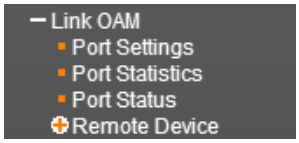
Rx Filtered: The number of received frames filtered by the forwarding process.
[1] Short frames are frames that are smaller than 64 bytes.
[2] Long frames are frames that are longer than the configured maximum frame length for this port.

Transmit Error Counters

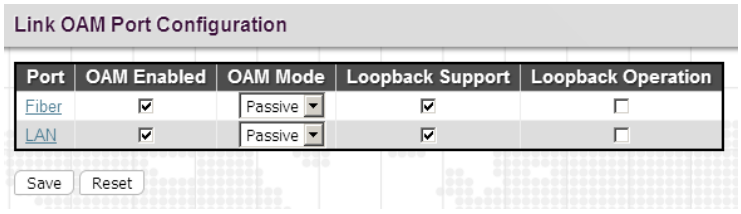
Tx Drops: The number of frames dropped due to output buffer congestion.

Tx Late/Exc. Coll.: The number of frames dropped due to excessive or late collisions.

3.5 Link OAM



3.5.1 Port Settings



This media converter supports standard IEEE802.3ah OAMPDU such as discovery and loopback. Additionally, organizational specific OAMPDU are used to create layer 2 in-band management between a local and a remote converter, either another IMC-1000WS-PB device.

Port: This shows “Fiber” or LAN port.

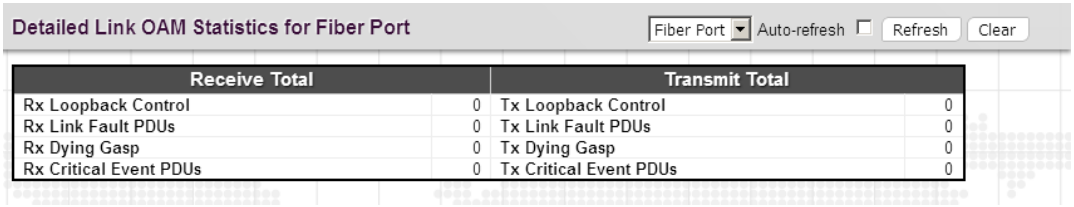
OAM Enabled: Tick the checkbox to enable OAM function.

OAM Mode: Select the desire OAM mode, either Active or Passive.

Loopback Support: Tick the checkbox to support Loopback function.

Lookback Operation: If the “Loopback Support” is enabled, selecting the “Loopback Operation” checkbox will start a loopback operation for the port.

3.5.2 Port Statistics



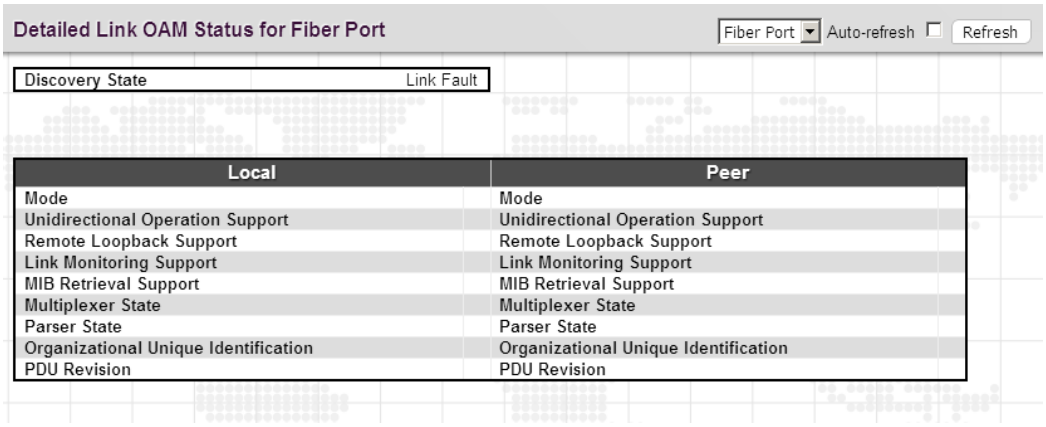
Rx & Tx Loopback Control: The number of Loopback Control OAMPDUs received and transmitted on this interface.

Rx & Tx Link fault PDU's: The number of Link fault PDU's received and transmitted on this interface.

Rx & Tx Dying Gasp: The number of Dying Gasp events received and transmitted on this interface.

Rx & Tx Critical Event PDU's: The number of Critical event PDU's received and transmitted on this interface.

3.5.3 Port Status



Discovery State: Displays the current state of the discovery process. Possible states are Fault state, Active state, Passive state, SEND_LOCAL_REMOTE_STATE, SEND_LOCAL_REMOTE_OK_STATE, SEND_ANY_STATE.

Local & Peer

Mode: This field shows the Mode in which the Link OAM is operating, Active or Passive.

Unidirectional Operation Support: This feature is not available to be configured by the user. The status of this configuration is retrieved from the PHY.

Remote Loopback Support: If status is enabled, the device is capable of OAM remote loopback mode.

Link Monitoring Support: If status is enabled, the device supports interpreting Link Events.

MIB Retrieval Support: If status is enabled, the device supports sending Variable Response OAMPDUs.

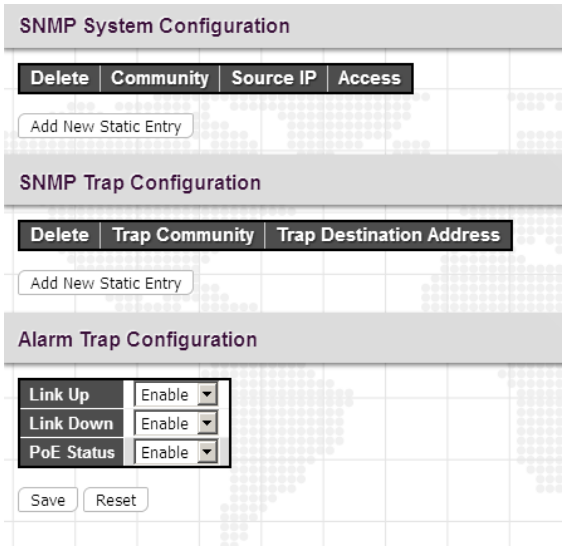
MTU Size: It represents the largest OAMPDU, in octets, supported by the device. This value is compared to the remotes Maximum PDU Size and the smaller of the two is used.

Parser State: When in forwarding state, the device is forwarding non-OAMPDUs to higher sub-layer. When in loopback, the device is looping back non-OAMPDUs to the lower sub-layer. When in discarding state, the device is discarding non-OAMPDUs.

Organizational Unique Identification: 24-bit Organizationally Unique Identifier of the vendor.

PDU Revision: It indicates the current revision of the Information TLV. The value of this field shall start at zero and be incremented each time something in the Information TLV changes. Upon reception of an Information TLV from a peer, an OAM client may use this field to decide if it needs to be processed (an Information TLV that is identical to the previous Information TLV doesn't need to be parsed as nothing in it has changed).

3.6 SNMP



Click “Add New Static Entry” to create a new entry.

SNMP System Configuration

Community: Specify a community string.

Source IP: Specify a source IP address. Up to four IPs can be configured.

Access: A read-only manager is only able to perform 'get' commands. All 'set' commands are reserved for a manager given read-write control.

SNMP Trap Configuration

Trap Community: Indicates the community access string when sending SNMP trap packet. The allowed string length is 0 to 255, and the allowed content is ASCII characters from 0x21 to 0x7E.

Trap Destination Address: Indicates the SNMP trap destination address. It allows a valid IP address in dotted decimal notation ('x.y.z.w'). Also allowed is a valid hostname. A valid hostname is a string drawn from the alphabet (A-Z; a-z), digits (0-9), dot (.) and dash (-). Spaces are not allowed. The first character must be an alpha character, and the first and last characters cannot be a dot or a dash.

Alarm Trap Configuration

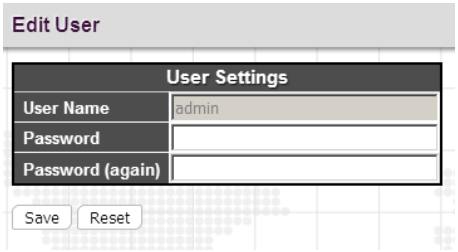
Link Up: Enable or disable link up SNMP trap. When enabled, SNMP trap will be issued if the link is up.

Link Down: Enable or disable link down SNMP trap. When enabled, SNMP trap will be issued if the link is down.

PoE Status: Enable or disable PoE status SNMP trap. When enabled, SNMP trap will be issued if PoE status changes.

3.7 Security

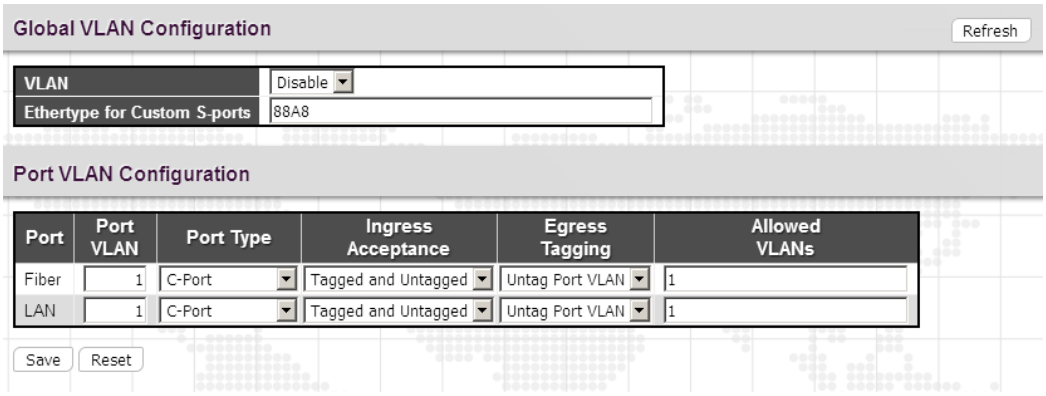
3.7.1 Users



Password: Create a password if none exists or change the password here. Input password again and then click the 'Save' button.

3.8 VLAN

3.8.1 Configuration



Global VLAN Configuration

Allowed Access VLANs: This shows the allowed access VLANs. This setting only affects ports set in “Access” mode. Ports in other modes are members of all VLANs specified in “Allowed VLANs” field. By default, only VLAN 1 is specified. More allowed access VLANs can be entered by specifying the individual VLAN ID separated by comma. If you want to specify a range, separate it by a dash. For example, 1, 5, 10, 12-15, 100

Ethertype for Custom S-ports: Specify ether type used for customer s-ports.

Port VLAN Configuration

Port: List the number of each port. "Port *" settings apply to all ports.

Port VLAN: Configures the VLAN identifier for the port. The allowed values are from 1 through 4095. The default value is 1.

Port Type: There are two port types available. Each port type's ingress and egress action is described in the following table.

Action / Port Type	Ingress Action	Egress Action
C-port	When a tagged frame is received on a port, If a tagged frame with TIPID=0x8100, it is forwarded. If the TPID of tagged frame is not 0x8100 (ex. 0x88A8), it will be discarded.	The TPID of frame transmitted by C-port will be set to 0x8100.
	When an untagged frame is received on a port, a tag (PVID) is attached and then forwarded.	
S-custom port	When a tagged frame is received on a port, If a tagged frame with TPID=0x88A8, it is forwarded. If the TPID of tagged frame is not 0x88A8 (ex. 0x8810), it will be discarded.	The TIPID of frame transmitted by S-custom-port will be set to an self-customized value, which can be set by the user using the column of Ethertype for Custom S-ports.
	When an untagged frame is received on a port, a tag (PVID) is attached and then forwarded.	

Ingress Acceptance: Select the acceptable ingress traffic type on a port. (Available when Hybrid mode is selected.)

Tagged and Untagged: Both tagged and untagged ingress packets are acceptable on a port.

Tagged Only: Only tagged ingress packets are acceptable on a port. Untagged packets will be dropped.

Untagged Only: Only untagged ingress packets are acceptable on a port. Tagged packets will be dropped.

Egress Tagging: The action taken when packets are sent out from a port. (Available when Hybrid or Trunk mode is selected.)

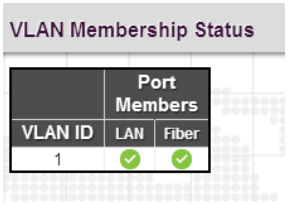
Untag Port VLAN: Frames that carry PVID will be removed when leaving from a port. Frames with tags other than PVID will be transmitted with the carried tags.

Tag All: Frames are transmitted with a tag.

Untag All: Frames are transmitted without a tag. This option is only available for ports in Hybrid mode.

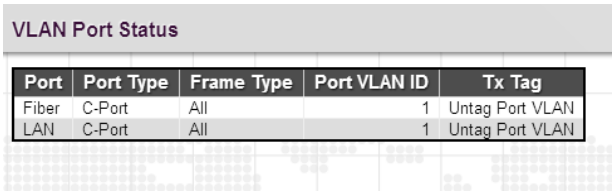
Allowed VLAN: Ports in Trunk and Hybrid mode may control which VLANs they are allowed to become members of. Access ports can only be member of one VLAN, the Access VLAN. By default, a Trunk or Hybrid port will become member of all VLANs, and is therefore set to 1-4095.

3.8.2 Membership



This is a display only of all VIDs and their port membership.

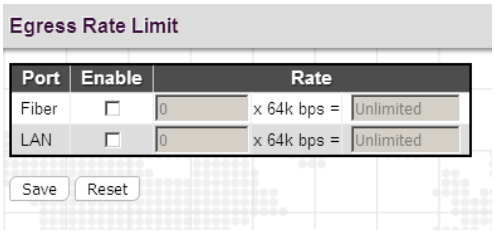
3.8.3 Status



This is a display only overview of VLAN port status.

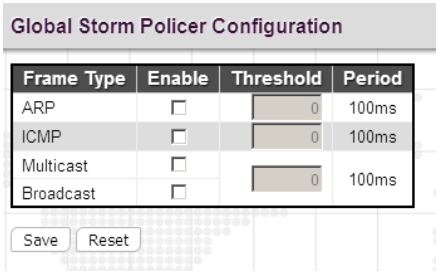
3.9 QoS

3.9.1 Bandwidth Control



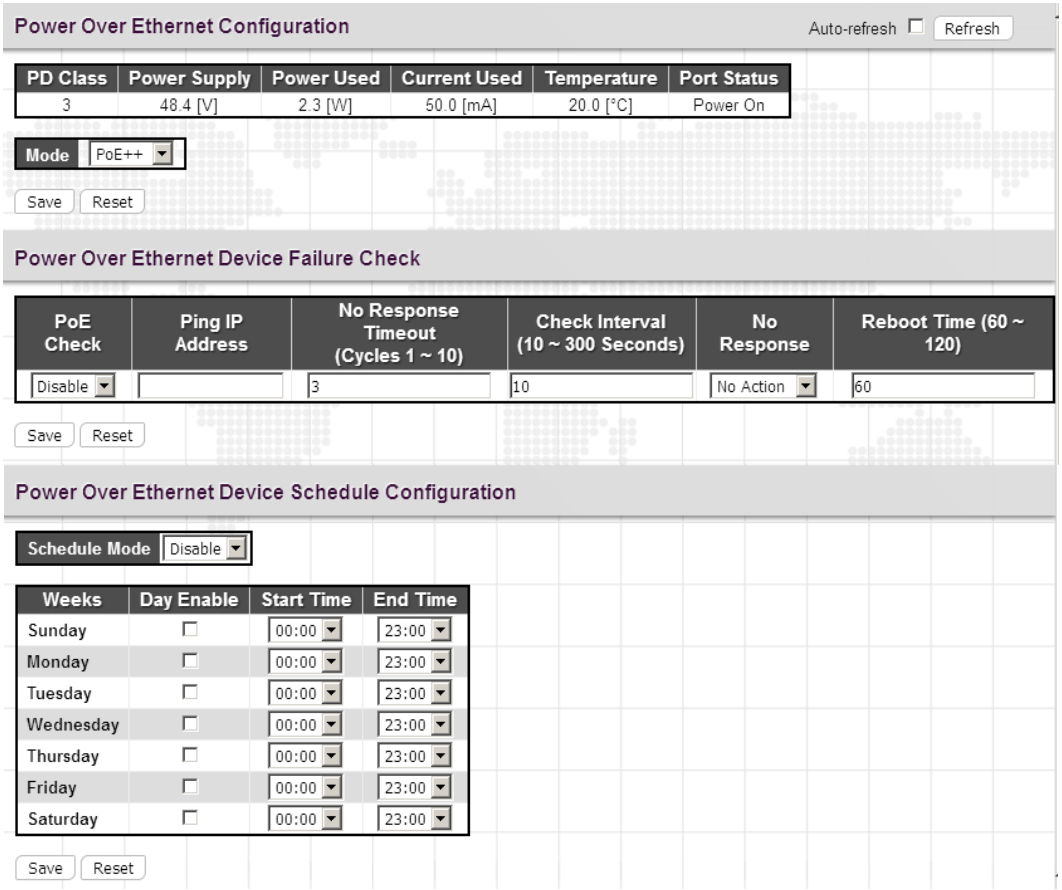
The outgoing rate limits, in Kbps, can be set on the LAN and/or Fiber ports. The rate is set with a granularity of 64Kbps, from 1 (64Kbps) to 16000 (1024000Kbps). Packets which exceed the outgoing rate will be dropped. Better bandwidth control (without packet loss) can be achieved if the link is using flow control (802.3x).

3.9.2 Storm Policing



Enable: Tick the relevant checkbox to enable the device to prevent ARP, ICMP, broadcast, and multicast packets that may impact the performance of CPU. This device can drop those ARP, ICMP, broadcast and multicast frames in a specific period. This storm prevention may be enabled separately for ARP, ICMP, broadcast and multicast packets. Storm threshold, in packets per 100ms, can be individually set (0~255) for ARP and ICMP with a single setting shared for both broadcast and multicast packets.

3.10 PoE



PD class: Each PD is classified according to the maximum power it will use. The PD classes include:

Class 0: Max. power 15.4 W
Class 1: Max. power 4.0 W
Class 2: Max. power 7.0 W
Class 3: Max. power 15.4 W
Class 4: Max. power 30.0 W
Class 5: Max. power 45.0 W
Class 6: Max. power 60.0 W
Class 7: Max. power 75.0 W
Class 8: Max. power 90.0 W

Power Supply: This shows the current power supply voltage.

Power Used: How much power the PD is currently using.

Current Used: How much current the PD is currently using.

Temperature: The current temperature of the device.

Port Status: PoE service status for the attached device.

Mode: Select the PoE mode. Available modes include 'Disable', 'PoE', 'PoE+', 'PoE+ (Ultra)', 'PoE++'.

Disable: Disable PoE mode.

PoE: Comply with IEEE 802.3af (15.4W) standard.

PoE+: Comply with IEEE 802.3at (30W) standard.

PoE+ (Ultra): Support maximum 60W power supply.

PoE++: Comply with IEEE 802.3bt (90W) standard.

Power over Ethernet Device Failure Check

PoE Check: Enable or disable PD PoE Check function.

Ping IP Address: Specify the PD's IP address for ping purposes. Both IPv4 and IPv6 IP addresses are supported.

No Response Timeout (Cycles 1~10): Specify the total retry times of IP checking.

Check Interval (10~300 Seconds): Specify the interval between each ping checking.

No Response Action: If PDs fails to respond ping requests sent by the switch (PSE), then the switch (PSE) can take an appropriate action selected here.

No Action: The switch (PSE) will not take any actions on the PD.

Reboot PD: The switch (PSE) reboots the PD after the PD failure check.

Power Off PD: The switch (PSE) turns off the PD after the PD failure check.

Reboot Time: This is the waiting period while the PD is still in start up process and is unable to work. The allowed range is 60~120 seconds.

Power over Ethernet Device Schedule Configuration

In some working environments, PDs only work for a limited of time. Therefore, PoE schedule mechanism can be used to plan PoE schedule on a per port basis so as to ease the PSE's power burden.

Schedule Mode: Enable or disable PoE schedule mode.

Weekday: List of weekdays.

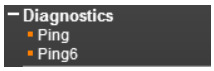
Day Enable: Tick on days that you would like the PD to receive power from the PSE.

Start Time: Select the starting time for the PSE to provide power to the PD.

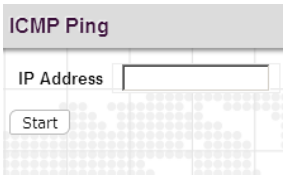
End Time: Select the end time for the PSE to stop providing power to the PD.

3.11 Diagnostics

The "Diagnostics" menu provides ping function to test the connectivity of a certain IP.



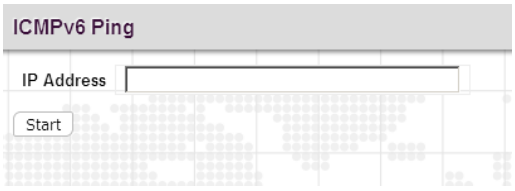
3.11.1 ICMP Ping



IP Address: Specify the IP address.

Start: Click the Start button to start the pint test.

3.11.2 ICMPv6 Ping



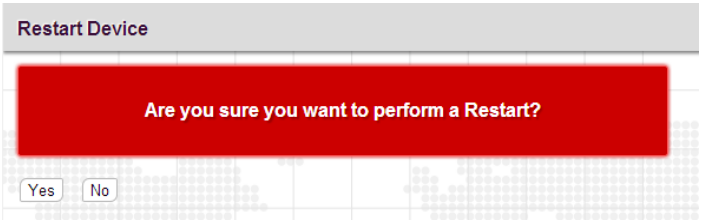
IP Address: Enter the destination hostname or IP address that you wish to ping.

Start: Click the Start button to start the pint test.

3.12 Maintenance

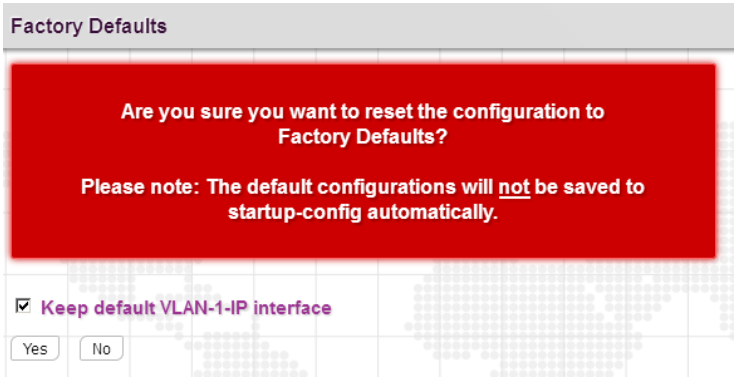
The “Maintenance” menu contains several sub menus. Select the appropriate sub menu to restart the device, set the device to the factory default or upgrade firmware image.

3.12.1 Restart Device



Click Yes button to restart the switch.

3.12.2 Factory Defaults

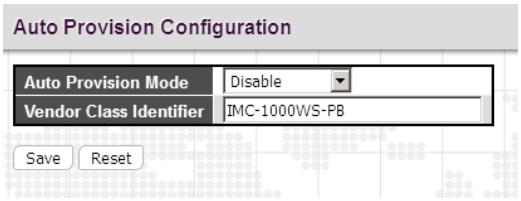


Tick the checkbox to keep VLAN1 IP interface setting.

Click Yes button to reset your device to factory defaults settings. Please note that all changed settings will be lost. It is recommended that a copy of the current configuration is saved to your local device.

3.12.3 Auto Provisioning

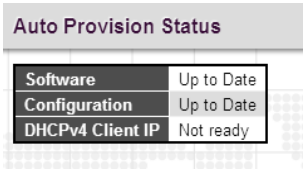
3.12.3.1 Configuration



Auto Provision Configuration: This device supports auto provisioning using DHCP Option 66, 67 and 254. Setup of DHCP server is beyond the scope of this user manual. Select “Enable” option to enable auto provisioning mode.

Vendor Class Identifier: By default, the vendor class identifier is the model name.

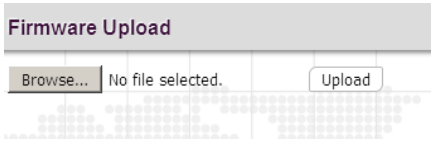
3.12.3.2 Status



This page shows the status of auto provisioning.

3.12.4 Software

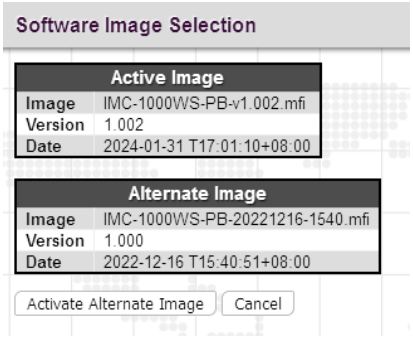
3.12.4.1 Upload



Update the latest Firmware file.

Select a Firmware file from your local device and then click “Upload” to start updating. The upload process will take about 3-5 minutes. After the Firmware file has been successfully uploaded to the switch, the switch will use the new Firmware file and reboot the switch to activate settings.

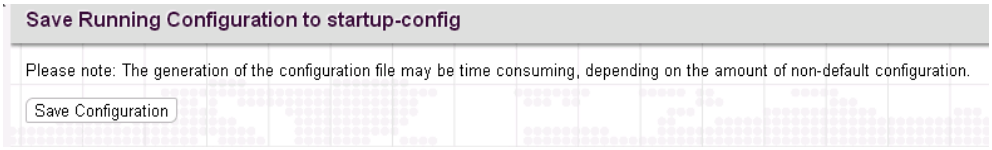
3.12.4.2 Image Select



Select the image file to be used in this device.

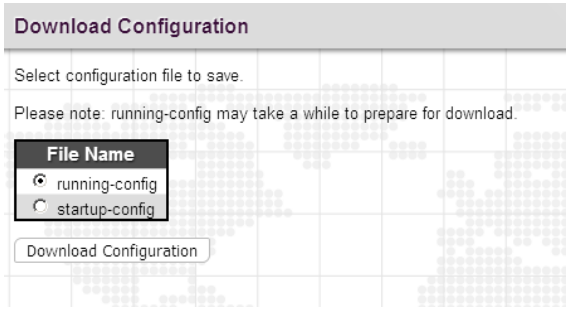
3.12.5 Configuration

3.12.5.1 Save startup-config



Click on the Save Configuration button to save current running configurations to startup configurations.

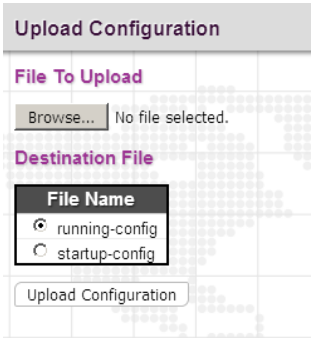
3.12.5.2 Download



running-config: Download a copy of the current running configurations to your local device.

startup-config: Download a copy of startup configurations to your local device.

3.12.5.3 Upload



Select a file and then click Upload Configuration to start uploading the file.

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