

Managed Ethernet Media Converter Configuration Guide

Models: MMC-1SC1T-SM/MMC-1F1T

Contents

1. Introduction.....	2
1.1 About the Managed Media Converter.....	2
1.2 Product Features.....	2
2. Media Converter Management.....	3
2.1 Overview.....	3
2.2 Management Methods.....	3
2.2.1 Web Management.....	3
2.2.2 SNMP Management.....	3
2.2.3 Login the Managed Media Converter.....	4
3. WEB Management.....	5
3.1 Main Menu.....	5
3.2 System.....	6
3.2.1 System Information.....	6
3.3 Port Management.....	17
3.3.1 Port Configuration.....	17
3.3.2 Port Status.....	20
3.3.3 Port Statistics.....	21
3.4 Converter Configuration.....	22
3.5 VLAN.....	23
3.5.1 VLAN Group.....	25
3.5.2 VLAN per Port Setting.....	27
3.5.3 Q-in-Q VLAN Setting.....	28
3.6 Quality of Service.....	29
3.7 OAM Setup.....	31
3.7.1 Local TS-1000 OAM Setup.....	31
3.7.2 Remote TS-1000 OAM Setup.....	32
3.7.3 TS-1000 Loop Back Test.....	33
3.7.4 802.3ah Setup.....	35
3.7.5 802.3ah Loop Back Test.....	36
3.8 Security.....	38
3.9 Logout.....	39

1. Introduction

1.1 About the Managed Media Converter

The Managed Media Converter provides conversion between 10/100/1000Base-T and 1000Base-X network. There are SC and SFP connectors with single mode or multimode media types for your needs. Ethernet signal allows two types of segments connecting easily, efficiently and inexpensively.

The Managed Media Converter is equipped with a remote Web/SNMP interface. With its built-in Web-based management, the Managed Media Converter offers an easy-to-use, platform-independent management and configuration facility and can be programmed for advanced management functions. Such as IP address Configuration/DHCP Client function, password setting/firmware upgrade, system reboot/factory default, port configuration that includes TP/Fiber port speed duplex mode setting, flow control setting and Ingress/Egress bandwidth control setting, converter configuration that includes maximum packet length setting, Broadcast/Multicast/Unicast storm control setting, 16 IEEE 802.1Q VLAN groups support and powerful Q-in-Q VLAN function, Quality of Service (QoS), TS-1000/ IEEE 802.3ah OAM function and TCP & UDP filter function. It supports standard Simple Network Management Protocol (SNMP) and can be managed via any standard-based management software as well.

With high performance of data transmission and easy installation, the Managed Media Converter can build an ISP network solution of FTTH (Fiber to the Home) or FTTC (Fiber to the Curb) for ISPs and FTTB (Fiber to the Building) for small office network environment from enterprises. The Web Management helps network administrators to monitor and set up the converter, speed and duplex through web browsers.

1.2 Product Features

- Comply with IEEE 802.3 / IEEE 802.3u/ IEEE 802.3ab/ IEEE 802.3z
- TP port supports 10/100/1000Base-T auto-negotiation and auto-MDI/MDI-X
- 1000Base-T: 2-pair Cat. 5/5e/6 UTP cable, up to 100 meters
- Built-in IP-Based Web interface for remote management
- Layer 2 Management Feature
 - Store-and-Forward mechanism
 - Built-in Web operation interface for remote management and setup
 - Manual IP address setting/DHCP client for IP address assignment
 - SNMP v1/v2c monitor/private Enterprise MIB
 - Event trap and SNMP trap support
 - Speed duplex mode configuration/Flow Control setting/bandwidth Control on TP/Fiber port
 - Supports Port Status/Ethernet Statistics on both TP and Fiber interface
 - Supports Maximum frame size to 16K bytes
 - Loop detection/Broadcast/Multicast/Unicast storm control
 - Management VLAN/16 IEEE 802.1Q VLAN groups/Q-in-Q VLAN
 - 802.1p Tag Priority/IP address priority/IP DSCP option in Quality of Service Mode and Strict Priority/Weighted Round Robin (WRR) QoS policies
 - TS-1000 OAM/IEEE 802.3ah OAM/Loop Back Test
 - 16 TCP/UDP Filter groups
 - Password setting, IP setting and devices description setting through Planet Smart discovery utility
 - Firmware upgrade via remote Web interface
- External DC 5V 2A power supply
- Compact in size, easy installation
- LED indicators for easy network diagnosing
- Reset Button at the front panel for resetting the factory default

2. Media Converter Management

This chapter describes how to manage the Managed Media Converter. Topics include:

- Overview
- Management methods
- Assigning an IP address to the Managed Media Converter
- Logging on to the Managed Media Converter

2.1 Overview

This chapter gives an overview of Managed Media Converter management. The Managed Media Converter provides a simple WEB browser interface. Using this interface, you can perform various Managed Media Converter configuration and management activities, including:

- **System**
- **Port Management**
- **Converter Configuration**
- **VLAN**
- **Quality of Service**
- **OAM Setup**
- **Security**
- **Logout**

Please refer to the following Chapter 3 for more details.

2.2 Management Methods

The way to manage the Managed Media Converter:

- Web Management via a network or dial-up connection
- Using SNMP Network Management Station

2.2.1 Web Management

The Managed Media Converter provides a built-in browser interface. You can manage the Managed Media Converter remotely by having a remote host with Web browser, such as Microsoft Internet Explorer, Netscape Navigator or Mozilla Firefox.

The following shows how to startup the Web Management of the Managed Media Converter, please note the Managed Media Converter is configured through an Ethernet connection, make sure the manager PC must be set on the same **IP subnet address**, for example, the default IP address of the Managed Media Converter is **192.168.0.100** (the factory-default IP address), then the manager PC should be set at 192.168.0.x (where x is a number between 1 and 254, except 100), and the default subnet mask is 255.255.255.0.

Use Internet Explorer 6.0 or above Web browser, enter default IP address **http://192.168.0.100**

After entering the username and password (default username and password is “**admin**”) in login screen, then the Web main screen appears.

2.2.2 SNMP Management

You can manage the Managed Media Converter across a LAN using an SNMP Network Management Station with a graphical user interface.

This management method lets you monitor statistical counters and set Managed Media Converter parameters from the remote Network Management Station.

Using this management method:

- The network must run the IP protocol.
- The Managed Media Converter must have an IP address.

2.2.3 Login the Managed Media Converter

Before you start configuring the Managed Media Converter, please note the Managed Media Converter is configured through an Ethernet connection, make sure the manager PC must be set on same the **IP subnet address**. For example, the default IP address of the Managed Media Converter is **192.168.0.100**, then the manager PC should be set at 192.168.0.x (where x is a number between 2 and 254), and the default subnet mask is 255.255.255.0. Use Internet Explorer 6.0 or above Web browser. Enter IP address **http://192.168.0.100** (the factory-default IP address) to access the Web interface.

When the following login screen appears, please enter the default username and password (default username and password is "**admin**"). Press Login to enter the main screen of Managed Media Converter. The login screen in **Figure 2-1** appears.

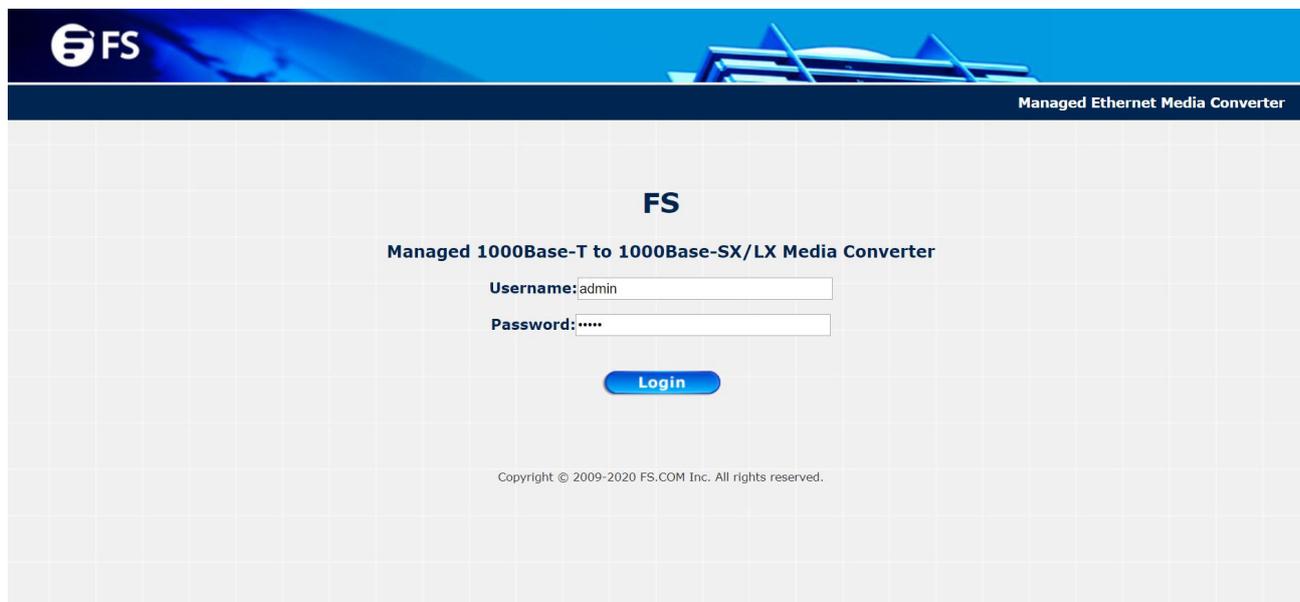


Figure 2-1 Login Web Page Screen

NOTE:

- (1) For security reasons, please change and memorize the new password after this first setup.
- (2) Only accept command in lowercase letter under the web interface.

3. WEB Management

The Managed Media Converter provides Web interface for management function configuration and makes the Managed Media Converter operate more effectively: they can be configured through the Web Browser. A network administrator can manage and monitor the Managed Media Converter from the local LAN. This section indicates how to configure the Managed Media Converter to enable its management function.

3.1 Main Menu

After a successful login, the main screen appears, the main screen displays the Managed Media Converter Welcome page. The screen in **Figure 3-1** appears.



Figure 3-1 Web Main Screen

As listed at the left of the main screen, the configurable management functions are shown as below:

- **System:** Provide System configuration of Managed Media Converter. **Explained in section 3.2.**
- **Port Management:** Provide Port Management configuration of Managed Media Converter. **Explained in section 3.3.**
- **Converter Configuration:** Provide Converter configuration of Managed Media Converter. **Explained in section 3.4.**
- **VLAN:** Provide VLAN configuration of Managed Media Converter. **Explained in section 3.5.**
- **Quality of Service:** Provide Quality of Service (QoS) function of the Managed Media Converter. **Explained in section 3.6.**
- **OAM Setup:** Provide OAM Setup function of the Managed Media Converter. **Explained in section 3.7.**
- **Security:** Provide Security function of the Managed Media Converter. **Explained in section 3.8.**
- **Logout:** Provide Logout function of the Managed Media Converter. **Explained in section 3.9.**

3.2 System

3.2.1 System Information

The System Information Web page provides information for the current device. System Information Web page helps network administrator to identify the firmware versions, IP Subnet Address and etc. The screen in **Figure 3-2** appears and **Table 3-1** describes the System Information object of Managed Media Converter.

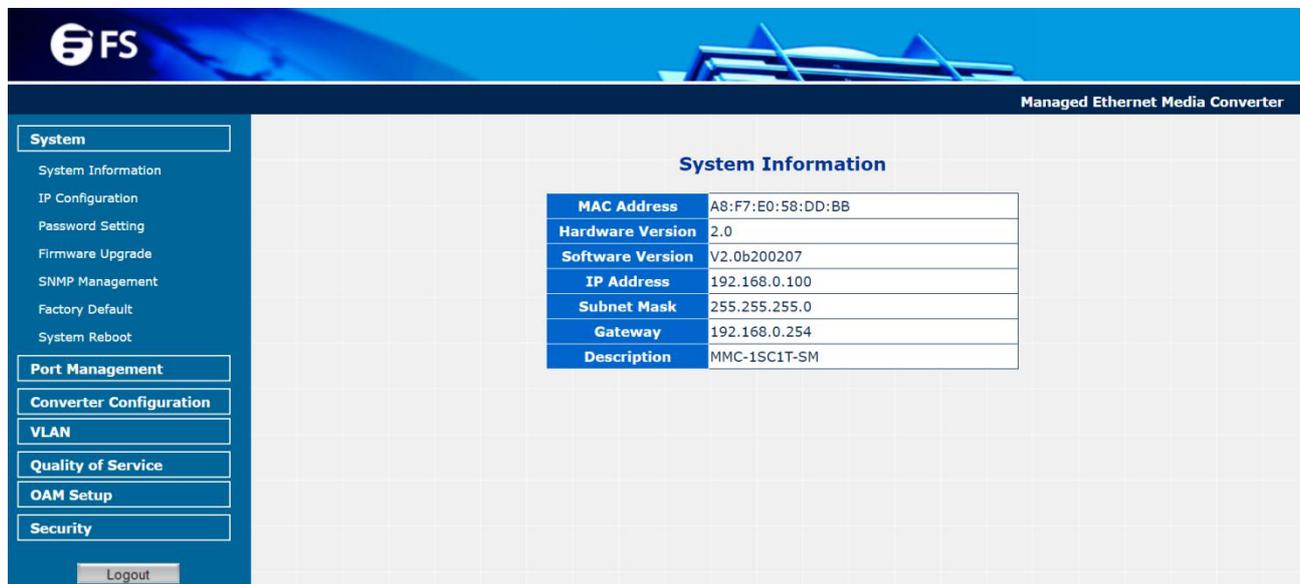


Figure 3-2 System Information Web Page Screen

The System Information Web page screen includes the following fields:

Objects	Descriptions
MAC Address	Specify the MAC address of Managed Media Converter.
Hardware Version	The current hardware version of the Managed Media Converter.
Software Version	The current software version running on the Managed Media Converter.
IP Address	The current IP Address of Managed Media Converter, the default IP Address is 192.168.0.100 .
Subnet Mask	The current Subnet Mask of Managed Media Converter, the default Subnet Mask is 255.255.255.0 .
Gateway	The current gateway of Managed Media Converter, the factory default gateway is 192.168.0.254 .
Description	The current description of Managed Media Converter, the factory default description is MMC-1SC1T-SM.

Table 3-1 Descriptions of the System Information Web Page Screen Objects

3.2.2 IP Configuration

The IP Configuration includes the DHCP Client, IP Address, Subnet Mask, Gateway and Description. The screen in **Figure 3-3** appears and **Table 3-2** describes the IP Configuration object of Managed Media Converter.

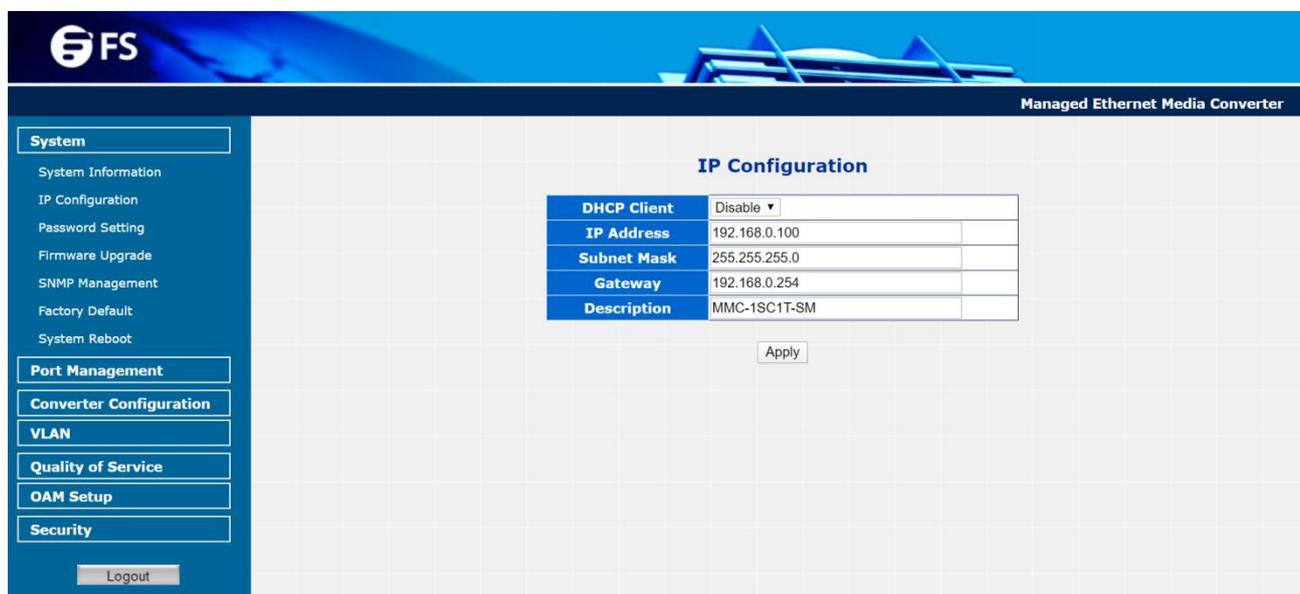


Figure 3-3 IP Configuration Web Page Screen

The IP Configuration Web page screen includes the following configurable data:

Objects	Descriptions
DHCP Client	Allow disabling or enabling the DHCP Client function of the Managed Media Converter, the factory default mode is Disable .
IP Address	Allow assigning a new IP address for the Managed Media Converter, the factory default IP address is 192.168.0.100 .
Subnet Mask	Allow assigning a new subnet mask for the Managed Media Converter, the factory default subnet mask is 255.255.255.0 .
Gateway	Allow assigning a new gateway for the Managed Media Converter, the factory default gateway is 192.168.0.254 .
Description	Allow inputting a new description for the Managed Media Converter, up to maximum 32 characters is allowed.
Apply Button	Press " Apply " button to save current configuration of Managed Media Converter.

Table 3-2 Descriptions of the IP Configuration Web Page Screen Objects

NOTE: After changing the default IP subnet address, if you forget the IP subnet address. Please press the "**Reset**" button in the front panel of Managed Media Converter for 10 seconds, the current setting will be lost and the Managed Media Converter will restore to factory default mode.

3.2.3 Password Setting

This function provides administrator a secure Web login. The screen in **Figure 3-4 & 3-5** appears and **Table 3-3** describes the Password Setting object of Managed Media Converter.

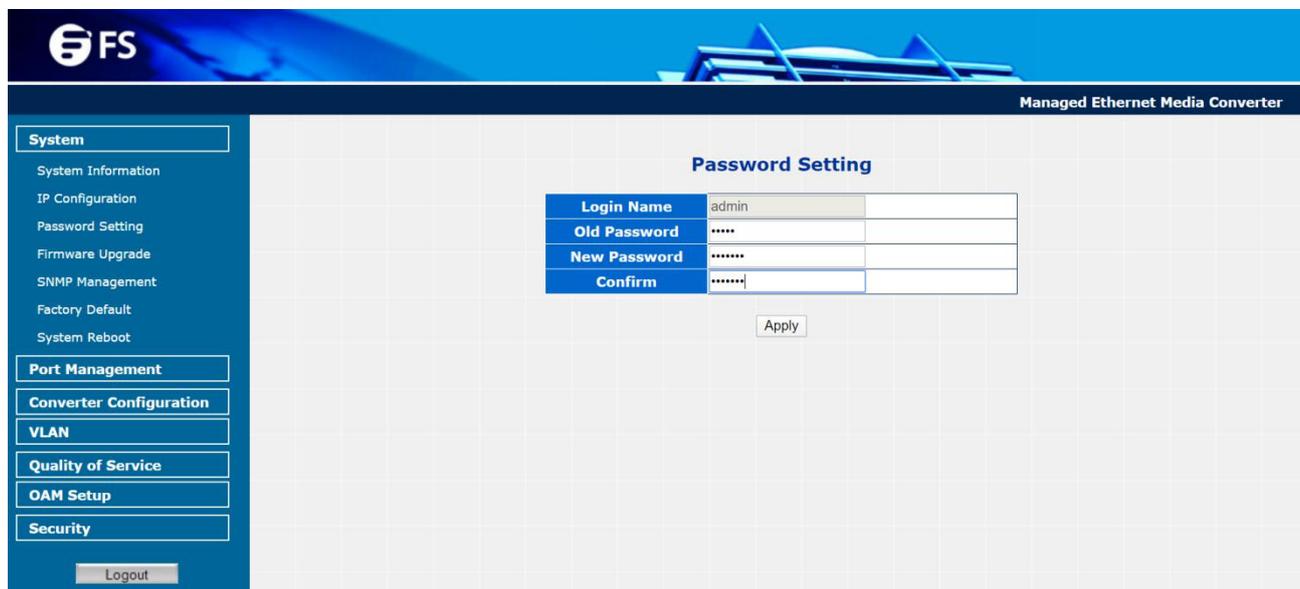


Figure 3-4 Password Setting Web Page Screen

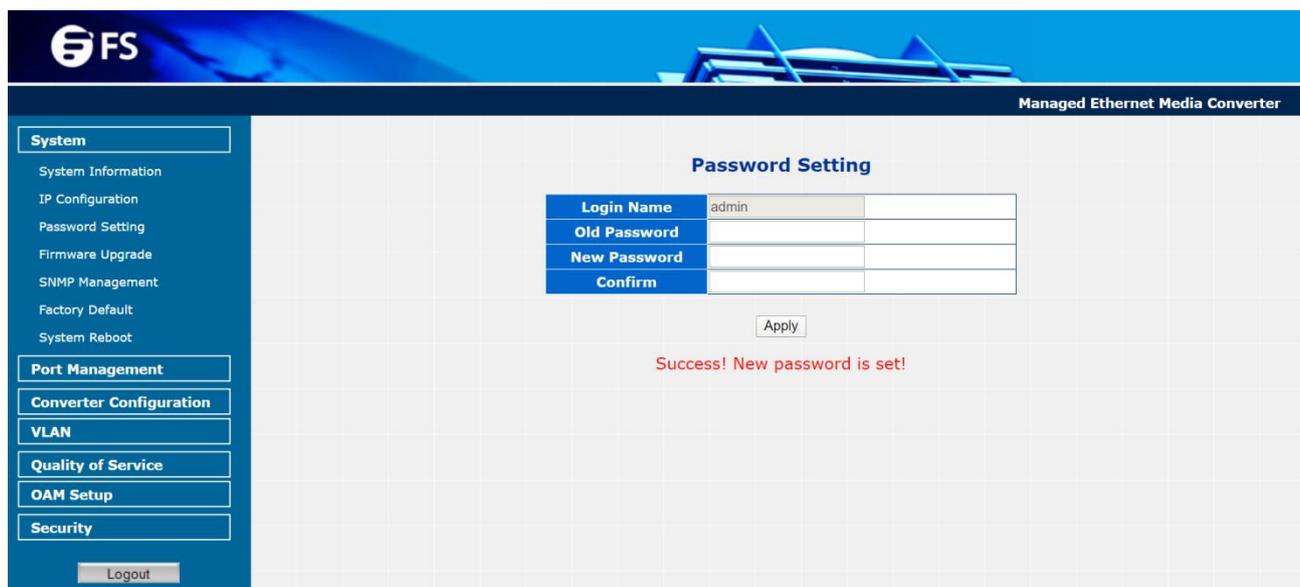


Figure 3-5 Password Setting Successful Web Page Screen

The Password Setting Web page includes the following configurable data:

Objects	Descriptions
Login Name	Display the username (admin).
Old Password	Entering the old password is required before entering the new password.
New Password	Specify the new password. The password is not displayed. As it entered an "*" corresponding to each character displayed in the field. (The maximum length is 16 characters)
Confirm	This confirms the new password. The password entered into this field must be exactly the same as the password entered in the New Password field.
Apply Button	Press "Apply" button to save current configuration of Managed Media Converter.

Table 3-3 Descriptions of the Password Setting Web Page Screen Objects

3.2.4 Firmware Upgrade

This function provides Firmware Upgrade of the Managed Media Converter and the screen in **Figure 3-6** appears.

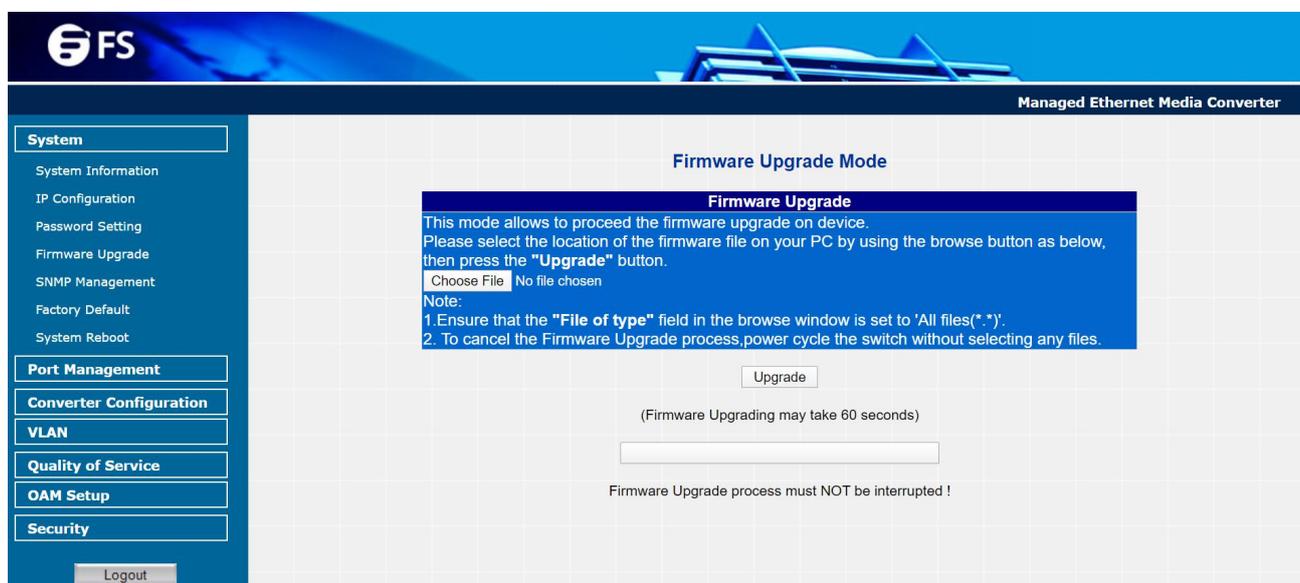


Figure 3-6 Firmware Upgrade Web Page Screen

Press **“Choose File”** button to find the firmware location administrator PC. After finding the firmware location from administrator PC, press **“Upgrade”** button to start the firmware upgrade process. The screen in **Figure 3-7** appears.

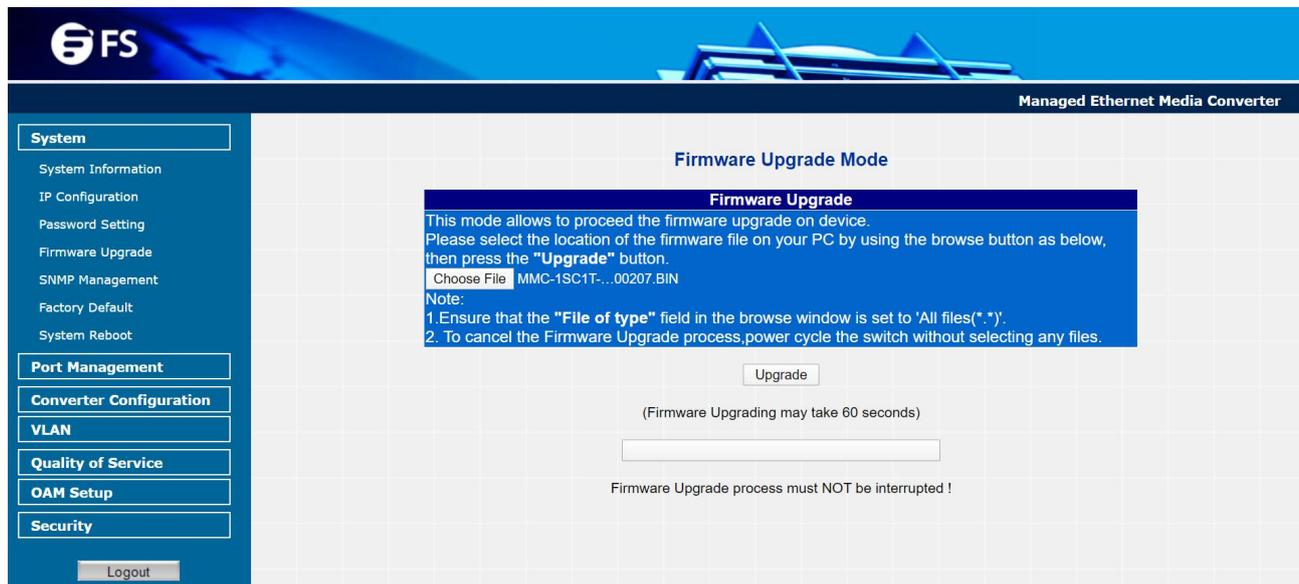


Figure 3-7 Firmware Upgrade Web Page Screen

When firmware upgrade process is completed, then the following screen appears, please click **“here”** to re-login the Managed Media Converter with latest firmware and the screen in **Figure 3-8 & 3-9** appears.

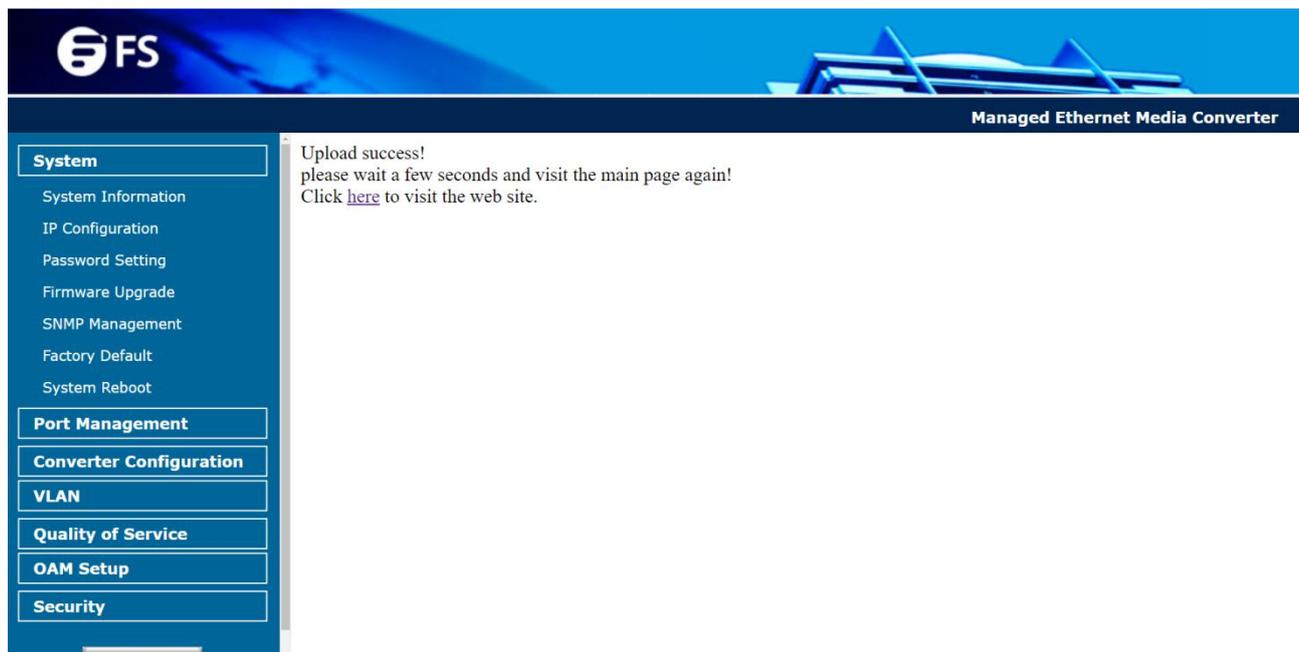


Figure 3-8 Firmware Upgrade Web Page Screen

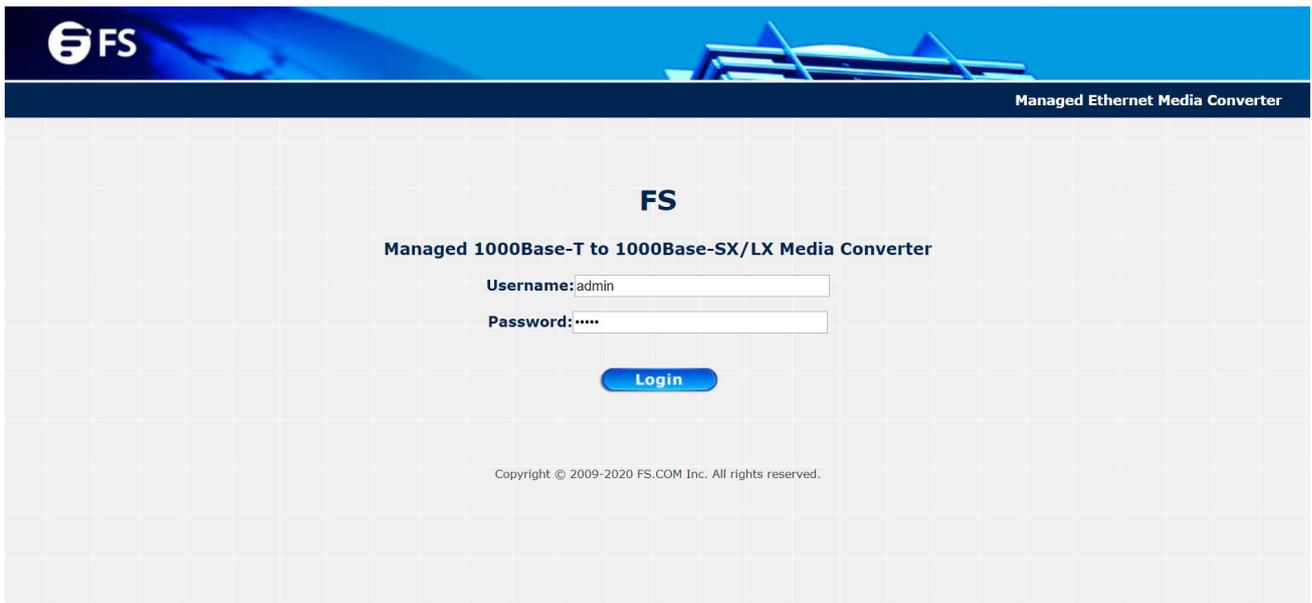


Figure 3-9 Login Web Page Screen

3.2.5 SNMP Management

This function provides SNMP Management and SNMP Trap Receiver Configuration function of the Managed Media Converter and the screen in **Figure 3-10 & 3-11** appears and **Table 3-4 & 3-5** describes the SNMP Management and SNMP Trap Receiver object of Managed Media Converter.

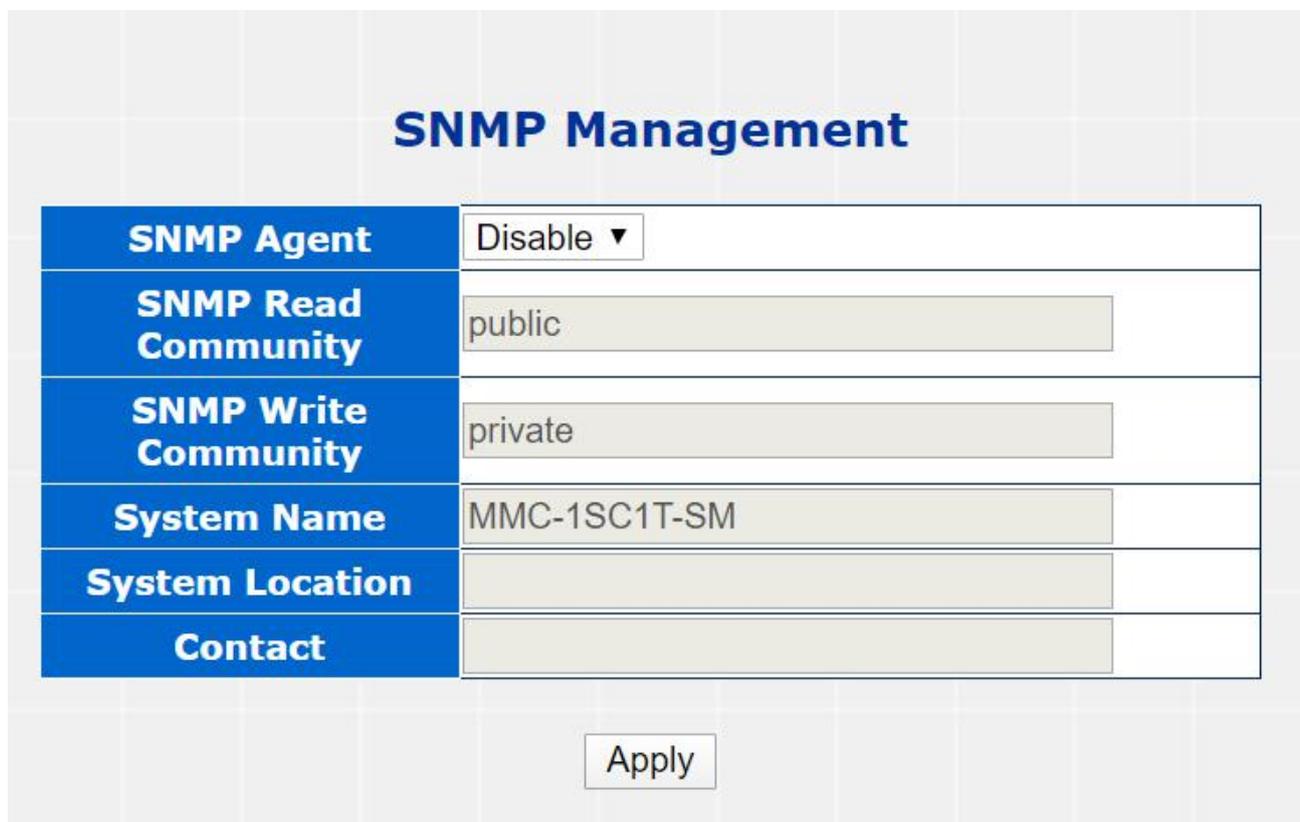


Figure 3-10 SNMP Management Web Page Screen

The SNMP Management Web page includes the following configurable data:

Objects	Descriptions
SNMP Agent	Allow disabling or enabling the SNMP Agent function, the default mode is “Enable” .
SNMP Read Community	Allow inputting the characters for SNMP Read Community, up to maximum 16 characters are allowed.
SNMP Write Community	Allow inputting the characters for SNMP Write Community, up to maximum 16 characters are allowed.
System Name	Allow inputting the characters for System Name, up to maximum 16 characters are allowed.
System Location	Allow inputting the characters for System Location, up to maximum 16 characters are allowed.
Apply Button	Press “Apply” button to save current configuration of Managed Media Converter.

Table 3-4 Descriptions of the SNMP Management Web Page Screen Objects

NOTE: The Managed Media Converter series support SNMP v1/v2



Figure 3-11 SNMP Trap Receiver Configuration Web Page Screen

The SNMP Trap Receiver Configuration Web page includes the following configurable data:

Objects		Descriptions
SNMP Trap		Allow disabling or enabling the SNMP Trap function, the default mode is “Disable” .
SNMP Trap Destination		Allow inputting the IP address of SNMP Trap Destination.
Trap Event	Warm Start	When Managed Media Converter executes Warm Start operation, the administrator PC (SNMP Trap Destination) will receive a Warm Start Trap.
	Login Fail	When Web login fail situation appears on Managed Media Converter, the administrator PC (SNMP Trap Destination) will receive a Login Fail Trap.
	Link Up	When TP or Fiber port connection is build up, the administrator PC (SNMP Trap Destination) will receive a Link Up Trap.
	Link Down	When TP or Fiber port connection is Disconnect, the administrator PC (SNMP Trap Destination) will receive a Link Down Trap.
	Dying Gasp	When Managed Media Converter has lost power, the administrator PC (SNMP Trap Destination) will receive a Dying Gasp Trap.
Apply Button		Press “Apply” button to save current configuration of Managed Media Converter.

Table 3-5 Descriptions of the SNMP Trap Receiver Configuration Web Page Screen Objects

3.2.6 Factory Default

This function provides Factory Default function of the Managed Media Converter and the screen in **Figure 3-12 & 3-13 & 3-14** appears.

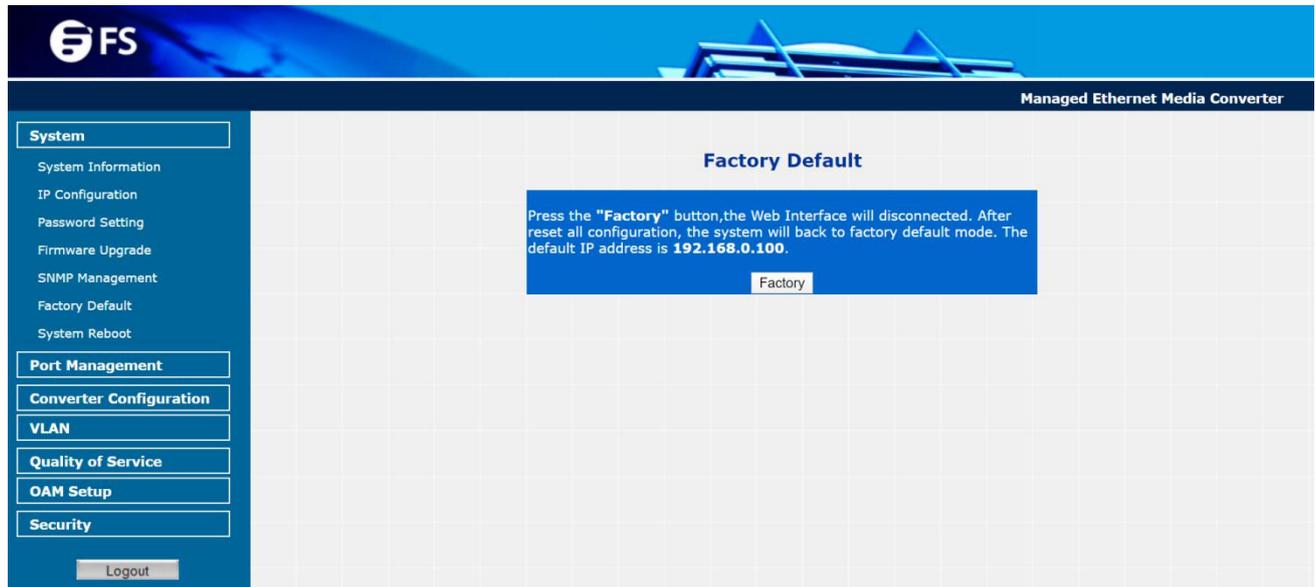


Figure 3-12 Factory Default Web Page Screen

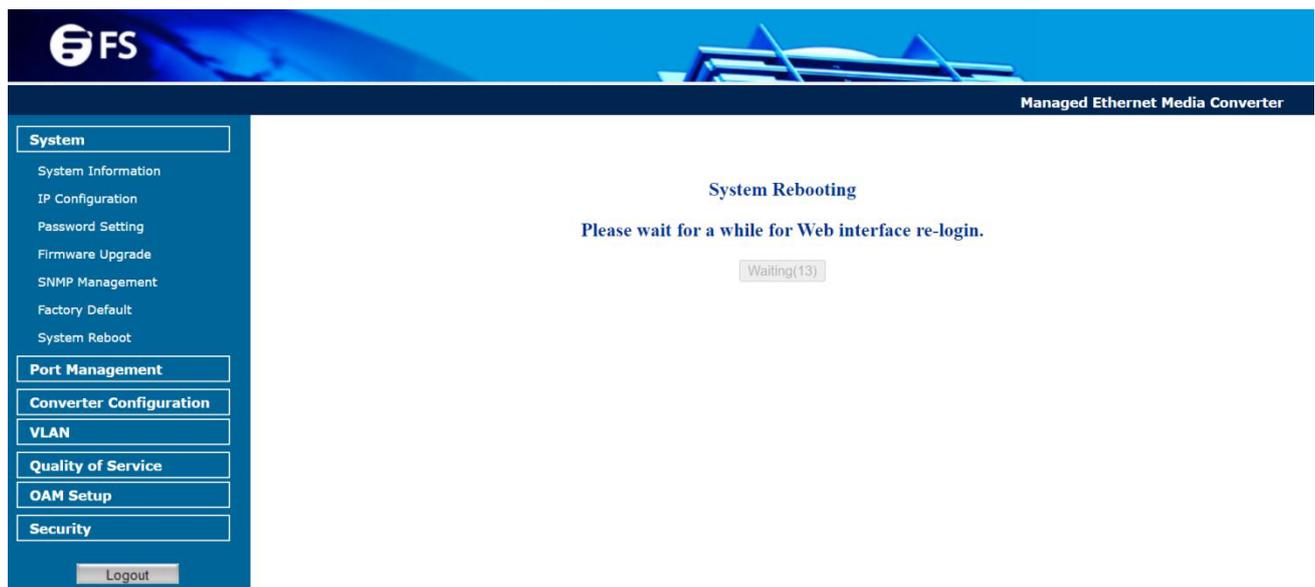


Figure 3-13 Factory Default Web Page Screen

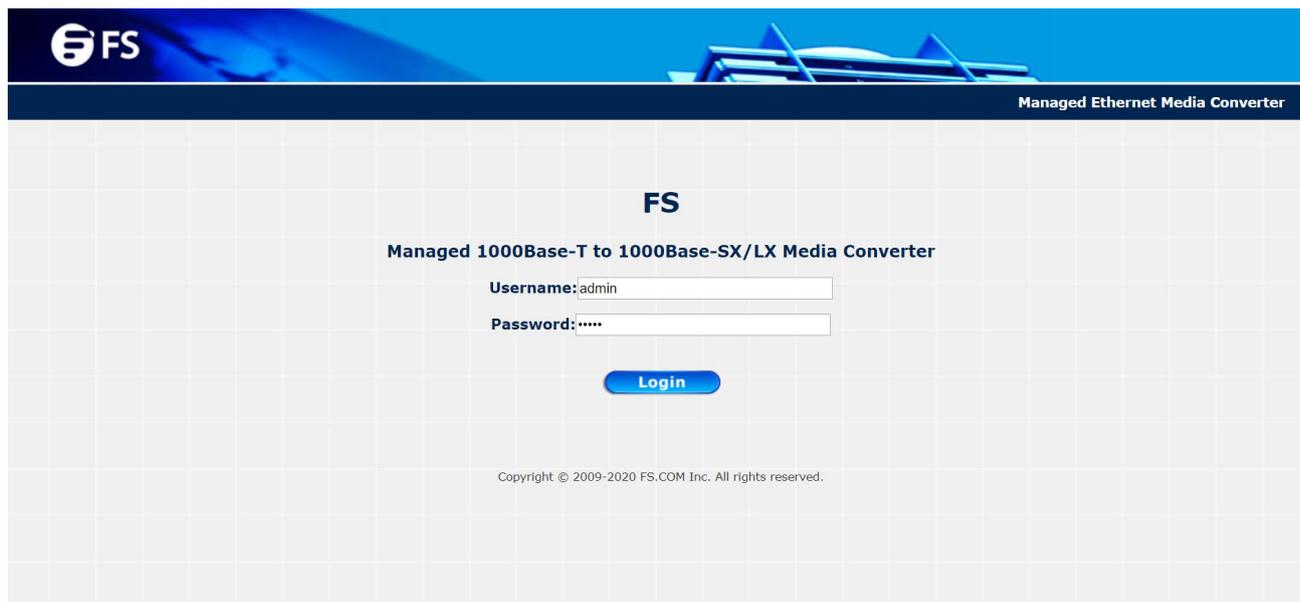


Figure 3-14 Login Web Page Screen

3.2.7 System Reboot

This function provides System Reboot function of the Managed Media Converter and the screen in **Figure 3-15 & 3-16 & 3-17** appears.

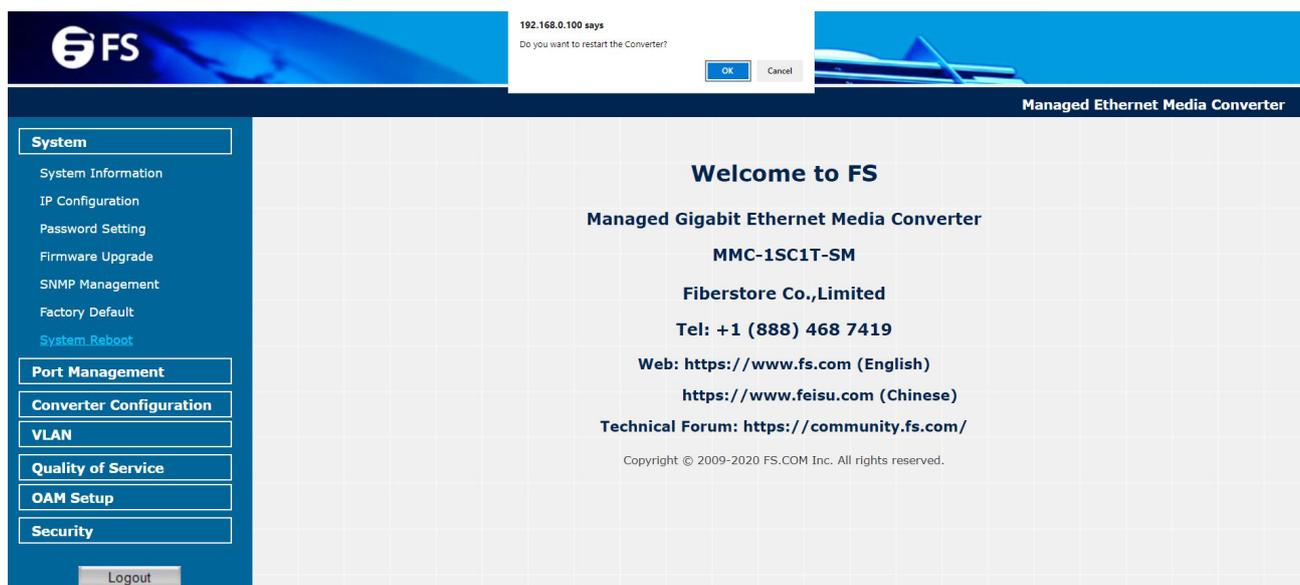


Figure 3-15 System Reboot Web Page Screen



Figure 3-16 System Reboot Web Page Screen

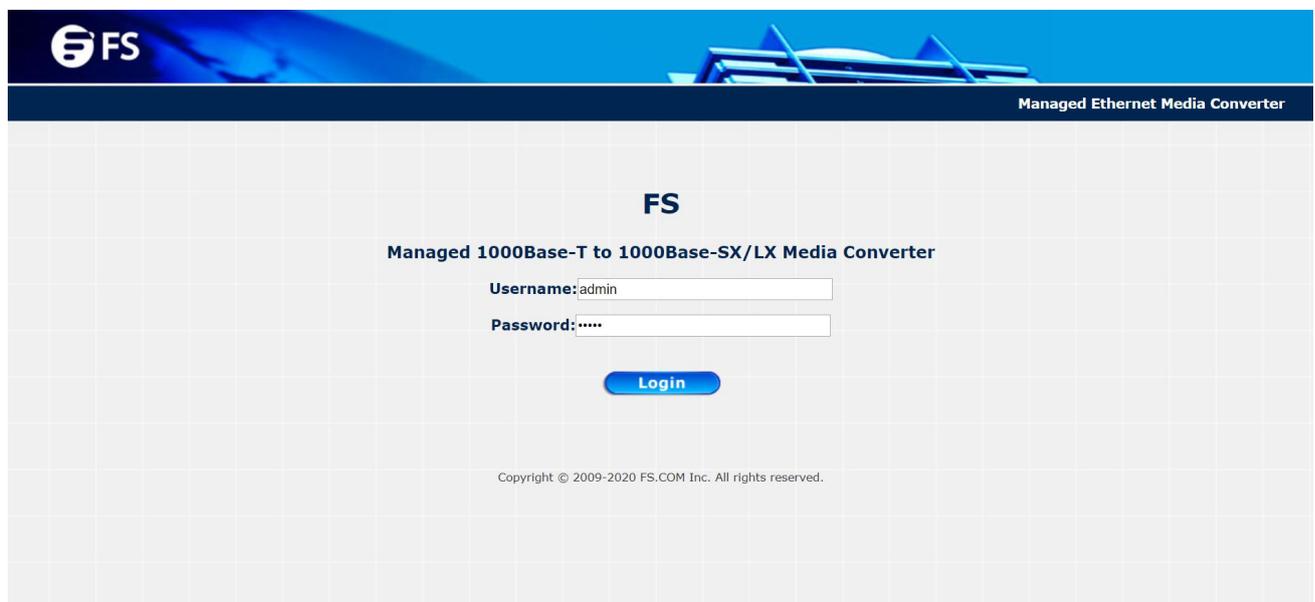


Figure 3-17 Login Web Page Screen

3.3 Port Management

3.3.1 Port Configuration

This function allows displaying TP/Fiber port status. The Link Status in the screen displays the current connection speed and duplex mode; else this function will show red **“Down”** when the TP/Fiber port is disconnected. Press the **“Refresh”** button to renew the screen. The screen in **Figure 3-18** appears and **Table 3-6** describes the Port Configuration object of Managed Media Converter.

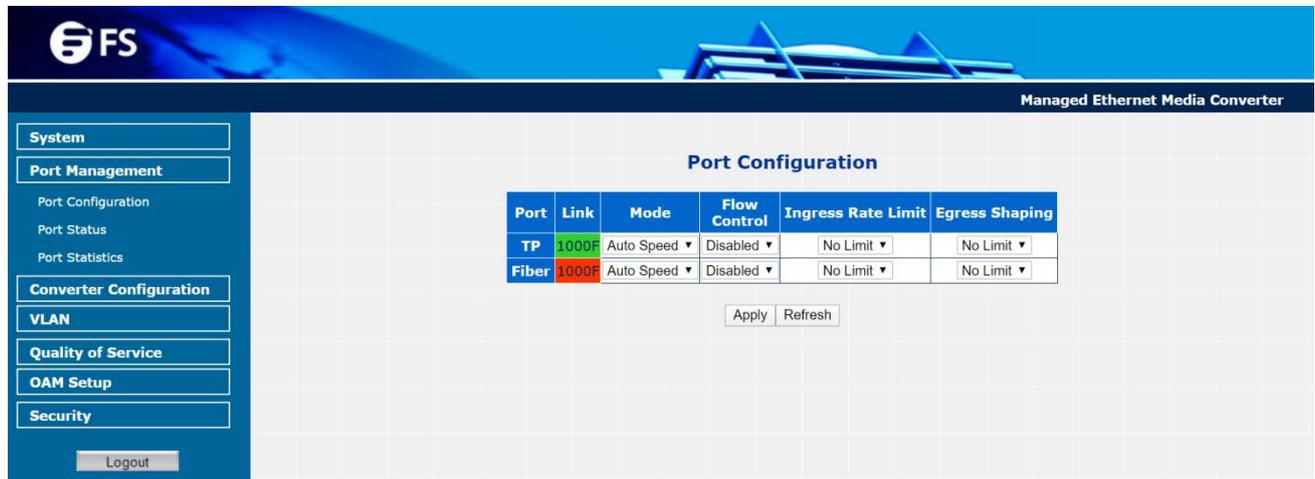


Figure 3-18 Port Configuration Web Page Screen

The Port Configuration Web page includes the following configurable data:

Objects	Descriptions
Port	Indicate the TP port and Fiber port.
Link	Display the current connection speed and duplex mode of TP or Fiber port.
Mode	<p>Allow configuring the TP or Fiber port speed and operation mode. Draw the menu bar to select the mode.</p> <p>TP Port:</p> <ul style="list-style-type: none"> • Auto Speed - Setup Auto negotiation. • 1000 Full- Force sets 1000Mbps Full-Duplex mode. • 100 Full- Force sets 100Mbps Full-Duplex mode. • 100 Half- Force sets 100Mbps Half-Duplex mode. • 10 Full- Force sets 10Mbps Full-Duplex mode. • 10 half- Force sets 10Mbps Half-Duplex mode. <p>The default mode: Auto Speed.</p> <p>Fiber Port:</p> <ul style="list-style-type: none"> • Auto Speed - Setup Auto negotiation. • 1000 Full- Force sets 1000Mbps Full-Duplex mode. <p>The default mode: Auto Speed.</p>
Flow Control	<p>Allow Disabling or Enabling Flow Control of TP or Fiber port.</p> <ul style="list-style-type: none"> • Enable – IEEE 802.3x Flow Control is enabled on Full-Duplex mode or Backpressure is enabled on Half-Duplex mode • Disable – No Flow Control or backpressure function on no matter Full-Duplex or Half-Duplex mode <p>The default mode: Disable</p>
Ingress Rate Limit	<p>The value of inbound traffic limitation in kilobit-per-second (kbps). The available options are :</p> <ul style="list-style-type: none"> • No Limit • 512K • 1M • 2M • 4M • 8M • 10M • 50M • 100M • 500M <p>The default mode: No Limit</p> <p>The Ingress Rate Limit configuration field as show in Figure 3-19.</p>
Egress Shaping	<p>The value of outbound traffic limitation in kilobit-per-second (kbps). The available options are :</p> <ul style="list-style-type: none"> • No Limit • 512K • 1M • 2M • 4M • 8M • 10M • 50M • 100M • 500M <p>The default mode: No Limit</p> <p>The Egress Shaping configuration field as show in Figure 3-20.</p>
Apply Button	Press this button to save current configuration of Managed Media Converter.
Refresh Button	Press “ Refresh ” button to refresh current status.

Table 3-6 Descriptions of the Port Configuration Web Page Screen Object

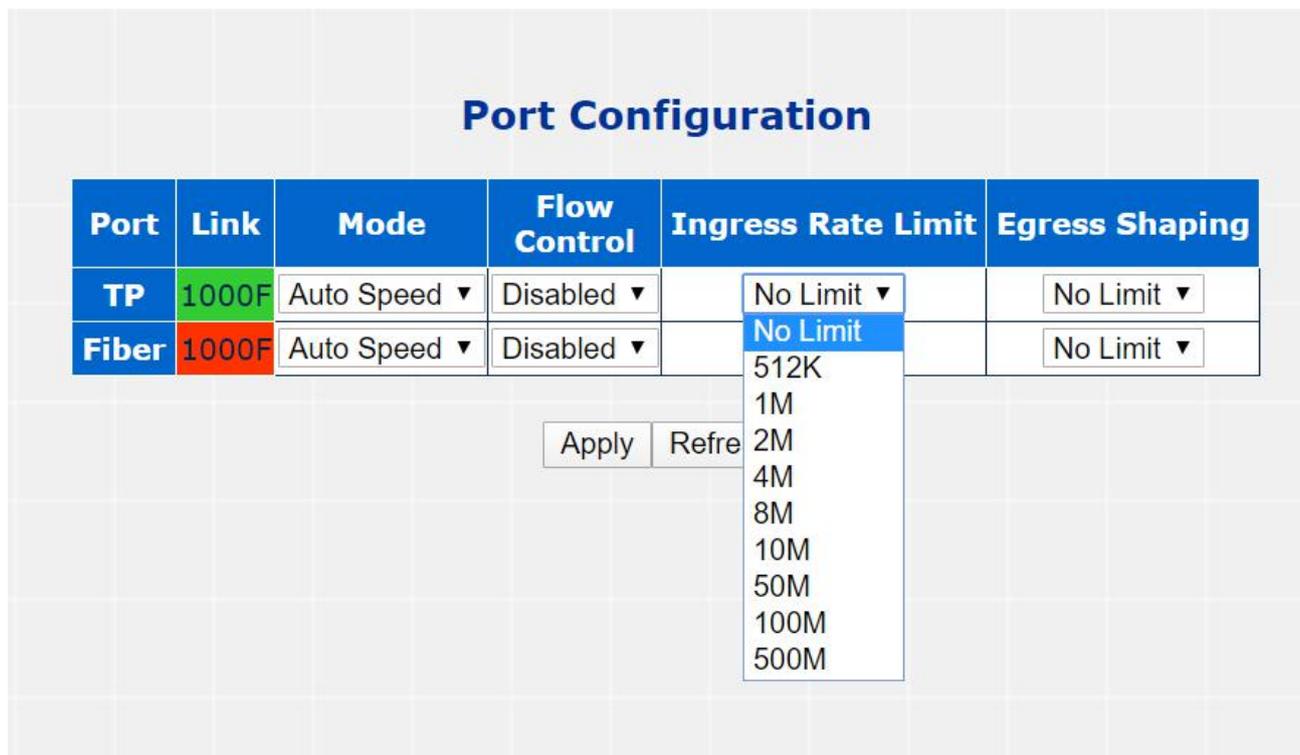


Figure 3-19 Port Configuration-Ingress Rate Limit Web Page Screen

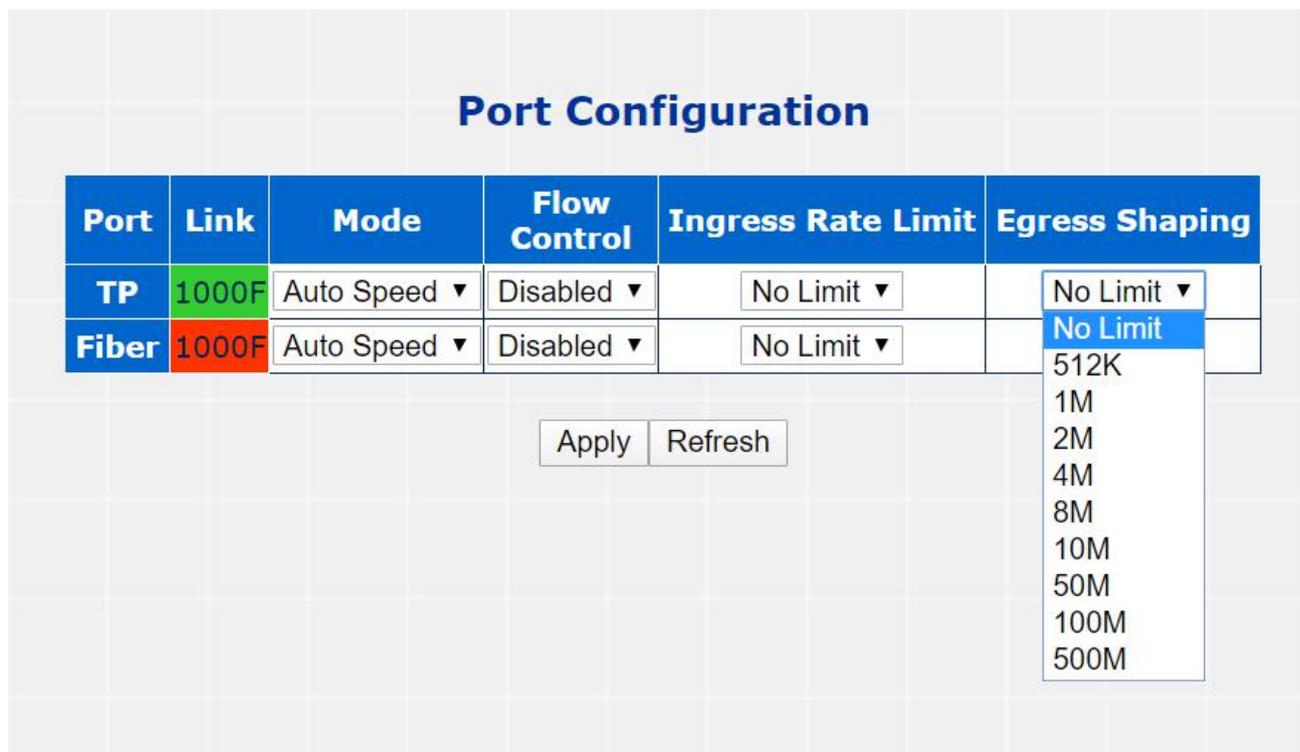


Figure 3-20 Port Configuration-Egress Shaping Web Page Screen

3.3.2 Port Status

This function allows displaying TP/Fiber port detail status, such as Link Status, Duplex Mode, Flow control, Speed and Auto negotiation. Press the **“Refresh”** button to renew the screen, the screen in **Figure 3-21** appears and **Table 3-7** describes the Port Status object of Managed Media Converter.

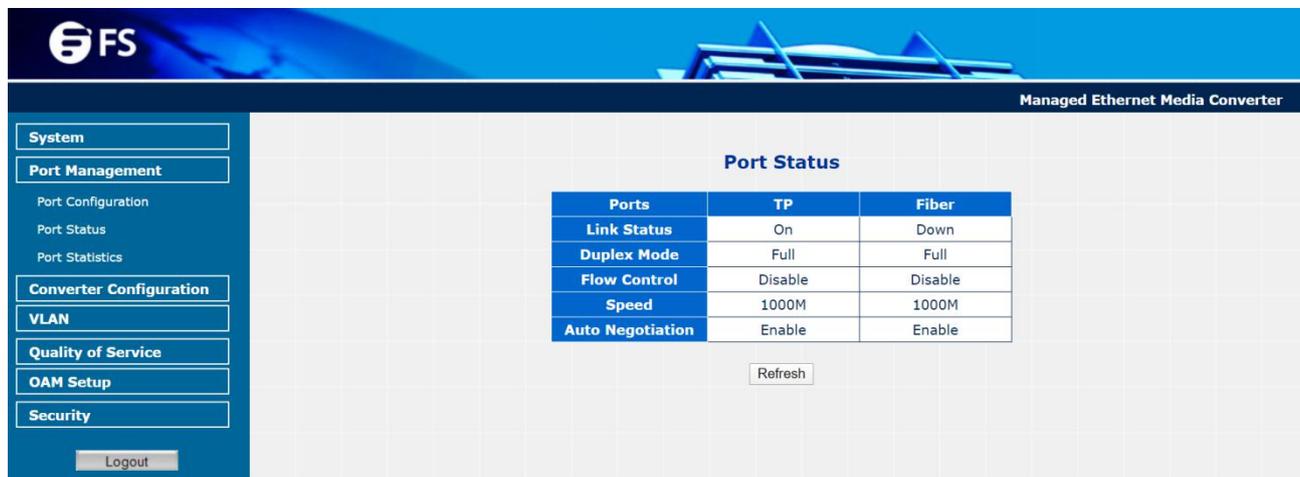


Figure 3-21 Port Status Web Page Screen

The Port Status Web page includes the following configurable data:

Objects	Descriptions
Port	Indicate the TP port and Fiber port.
Link Status	Displays the current link status of TP and Fiber port.
Duplex Mode	Displays the current duplex mode of TP and Fiber port.
Flow Control	Displays the current Flow Control status of TP and Fiber port.
Speed	Displays the current speed mode of TP and Fiber port.
Auto Negotiation	Displays the current Auto negotiation status of TP and Fiber port.
Refresh Button	Press “Refresh” button to refresh current status.

Table 3-7 Descriptions of the Port Status Web Page Screen Objects

3.3.3 Port Statistics

This function allows displaying TP/Fiber port detail Statistics; press the **“Clear”** button to clear current counter information. Press the **“Refresh”** button to renew the screen, the screen in **Figure 3-22 & 3-23** appears.

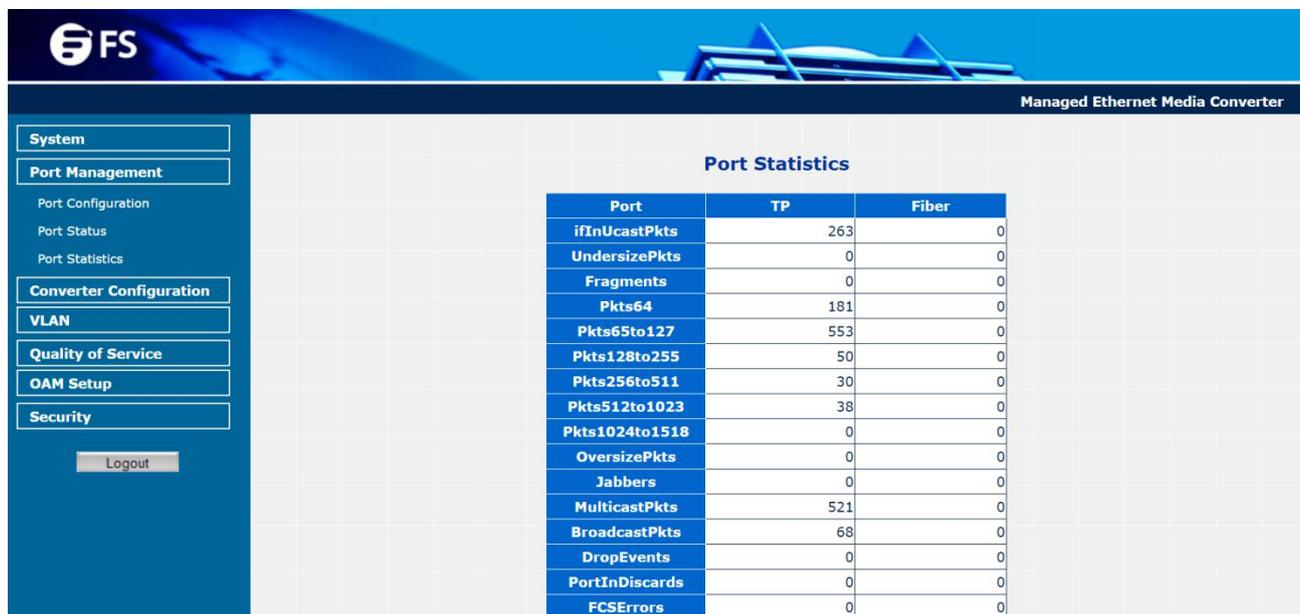


Figure 3-22 Port Statistics Web Page Screen

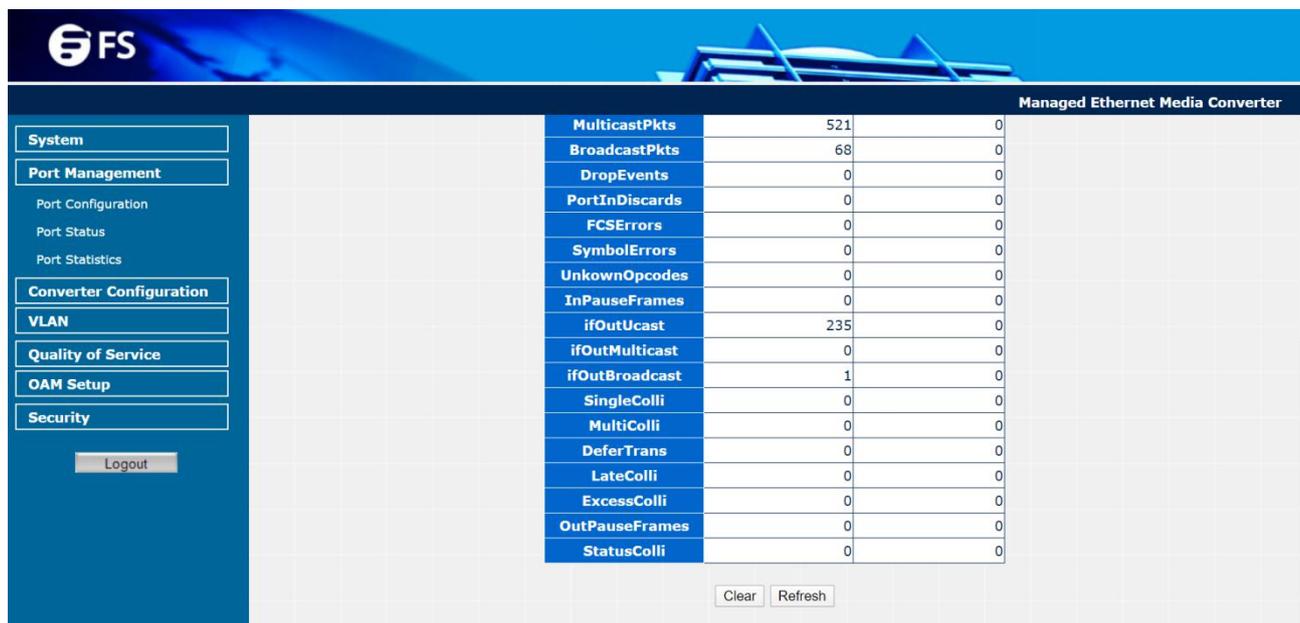


Figure 3-23 Port Statistics Web Page Screen

3.4 Converter Configuration

This function provides useful setting for the Managed Media Converter, such as Maximum Packet length, Loop detection, storm control and etc. The screen in **Figure 3-24** appears and **Table 3-8** describes the Converter Configuration object of Managed Media Converter.

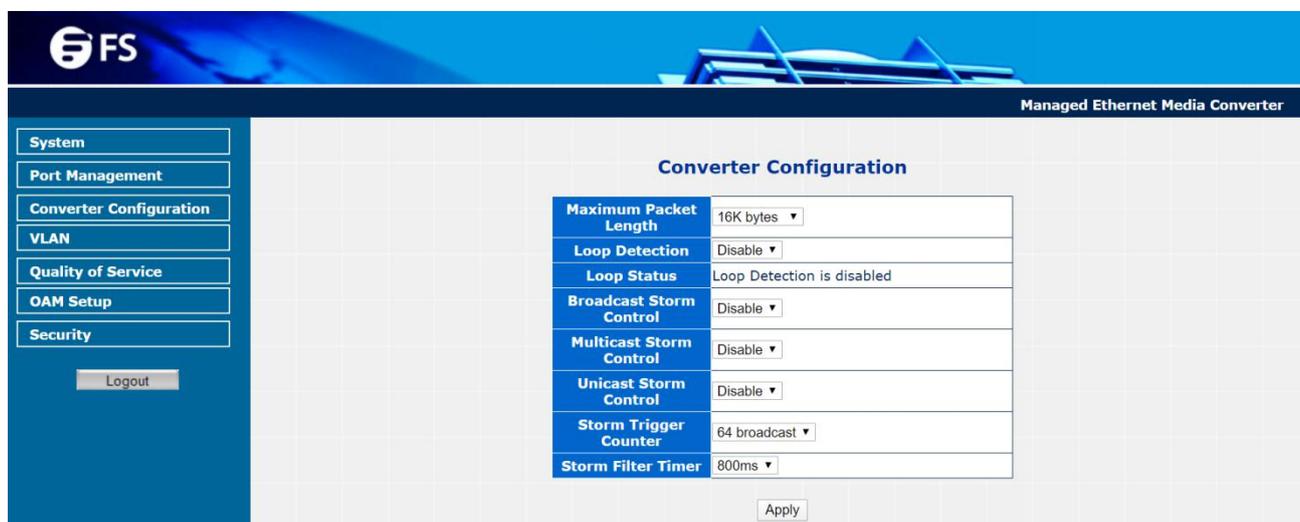


Figure 3-24 Converter Configuration Web Page Screen

The Converter Configuration Web page includes the following configurable data:

Objects	Descriptions
Maximum Packet Length	Provide maximum packet length setting for the Managed Media Converter, the available options are 1518 bytes, 2048 bytes and 16K bytes. The default mode is 16K bytes .
Loop Detection	Provide Disable or enable the Loop detection function. The default mode is Disable .
Loop Status	Display the Loop Detection status.
Broadcast Storm Control	Provide Disable or enable the Broadcast Storm Control function. The default mode is Disable .
Multicast Storm Control	Provide Disable or enable the Multicast Storm Control function. The default mode is Disable .
Unicast Storm Control	Provide Disable or enable the Unicast Storm Control function. The default mode is Disable .
Storm Trigger Counter	Provide Storm Trigger Counter setting and the available options are: 64 broadcast 32 broadcast 16 broadcast 8 broadcast The default mode is 64 broadcast .
Storm Filter Timer	Provide storm Filter Timer setting and the available options are: 800ms 400ms 200ms 100ms The default mode is 800ms .
Apply Button	Press this button to save current configuration of Managed Media Converter.

Table 3-8 Descriptions of the Converter Configuration Web Page Screen Objects

3.5 VLAN

A Virtual LAN (VLAN) is a logical network grouping that limits the broadcast domain. It allows you to isolate network traffic so only members of the VLAN receive traffic from the same VLAN members. Basically, creating a VLAN from a converter is logically equivalent to reconnect a group of network devices to another Layer 2 switch. However, all the network devices are still plug into the same switch physically.

The Managed Media Converter supports IEEE 802.1Q (tagged-based) VLAN setting in web management page. In the default configuration, VLAN support is “**No VLAN**”.

IEEE 802.1Q VLANs

IEEE 802.1Q (tagged) VLANs are implemented on the Managed Media Converter. 802.1Q VLAN requires tagging, which enables them to span the entire network (assuming all devices on the network are IEEE 802.1Q-compliant).

VLAN allows a network to be segmented in order to reduce the size of broadcast domains. All packets entering a VLAN will only be forwarded to the stations (over IEEE 802.1Q enabled switches) that are members of that VLAN, and this includes broadcast, multicast and unicast packets from unknown sources.

VLAN can also provide a level of security to your network. IEEE 802.1Q VLAN will only deliver packets between stations that are members of the VLAN. Any port can be configured as either tagging or untagging. The untagging feature of IEEE 802.1Q VLAN allows VLAN to work with legacy switches that don't recognize VLAN tags in packet headers. The tagging feature allows VLAN to span multiple 802.1Q-compliant switches through a single physical connection and allows Spanning Tree to be enabled on all ports and work normally.

Some relevant terms:

Tag - The act of putting 802.1Q VLAN information into the header of a packet.

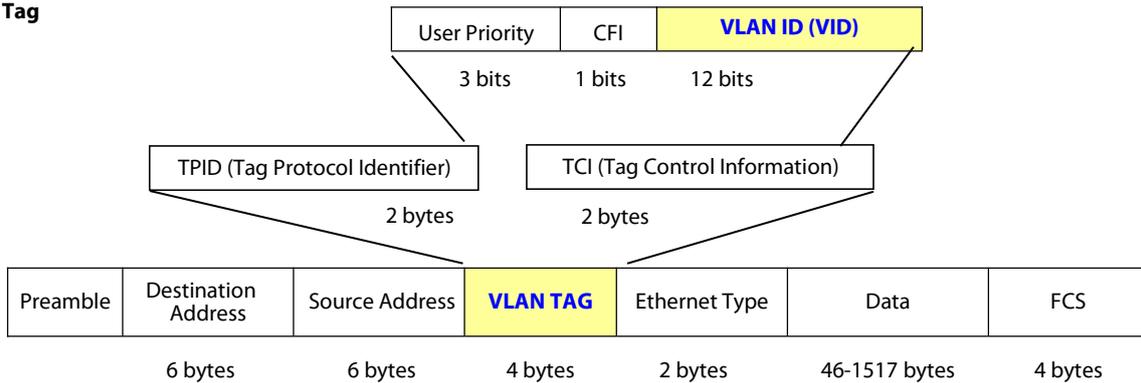
Untag - The act of stripping 802.1Q VLAN information out of the packet header.

802.1Q VLAN Tags

The figure below shows the 802.1Q VLAN tag. There are four additional octets inserted after the source MAC address. Their presence is indicated by a value of 0x8100 in the Ether Type field. When a packet's Ether Type field is equal to 0x8100, the packet carries the IEEE 802.1Q/802.1p tag. The tag is contained in the following two octets and consists of 3 bits of user priority, 1 bit of Canonical Format Identifier (CFI - used for encapsulating Token Ring packets so they can be carried across Ethernet backbones), and 12 bits of VLAN ID (VID). The 3 bits of user priority are used by 802.1p. The VID is the VLAN identifier and is used by the 802.1Q standard. Because the VID is 12 bits long, 4094 unique VLAN can be identified.

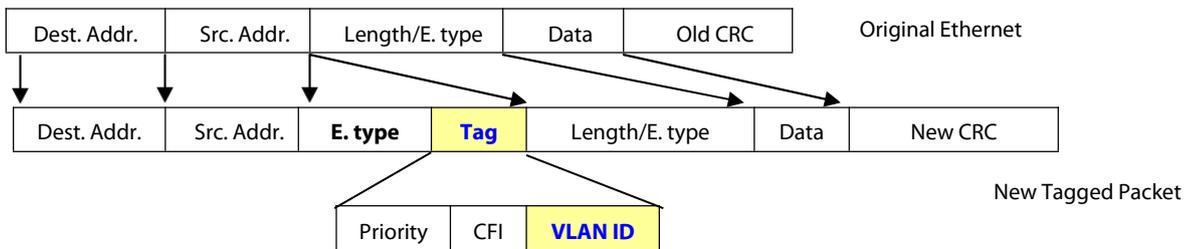
The tag is inserted into the packet header making the entire packet longer by 4 octets. All of the information originally contained in the packet is retained.

802.1Q Tag



The Ether Type and VLAN ID are inserted after the MAC source address, but before the original Ether Type/Length or Logical Link Control. Because the packet is now a bit longer than it was originally, the Cyclic Redundancy Check (CRC) must be recalculated.

Adding an IEEE802.1Q Tag



Port VLAN ID

Packets that are tagged (are carrying the 802.1Q VID information) can be transmitted from one 802.1Q compliant network device to another with the VLAN information intact. This allows 802.1Q VLAN to span network devices (and indeed, the entire network – if all network devices are 802.1Q compliant).

Every physical port on a switch has a PVID. 802.1Q ports are also assigned a PVID, for using within the switch. If no VLAN is defined on the switch, all ports are then assigned to a default VLAN with a PVID equal to 1. Untagged packets are assigned the PVID of the port on which they were received. Forwarding decisions are based upon this PVID, in so far as VLAN is concerned. Tagged packets are forwarded according to the VID contained within the tag. Tagged packets are also assigned a PVID, but the PVID is not used to make packet forwarding decisions, the VID is.

Tag-aware switches must keep a table to relate PVID within the switch to VID on the network. The switch will compare the VID of a packet to be transmitted to the VID of the port that is to transmit the packet. If the two VID is different the switch will drop the packet. Because of the existence of the PVID for untagged packets and the VID for tagged packets, tag-aware and tag-unaware network devices can coexist on the same network.

A switch port can have only one PVID, but can have as many VID as the switch has memory in its VLAN table to store them.

Because some devices on a network may be tag-unaware, a decision must be made at each port on a tag-aware device before packets are transmitted – should the packet to be transmitted have a tag or not? If the transmitting port is connected to a tag-unaware device, the packet should be untagged. If the transmitting port is connected to a tag-aware device, the packet should be tagged.

Default VLANs

The Managed Media Converter initially configures one VLAN, VID = 1, called "**default.**" The factory default setting assigns all ports on the Managed Media Converter to the "**default.**" As new VLAN are configured in Port-based mode, their respective member ports are removed from the "**default.**"

3.5.1 VLAN Group

This function allows disabling or enabling the IEEE 802.1Q VLAN operation mode. Press the **“Apply”** button to save the current configuration of Managed Media Converter. The screen in **Figure 3-25 & 3-26** appears and **Table 3-9** describes the VLAN Group object of Managed Media Converter.

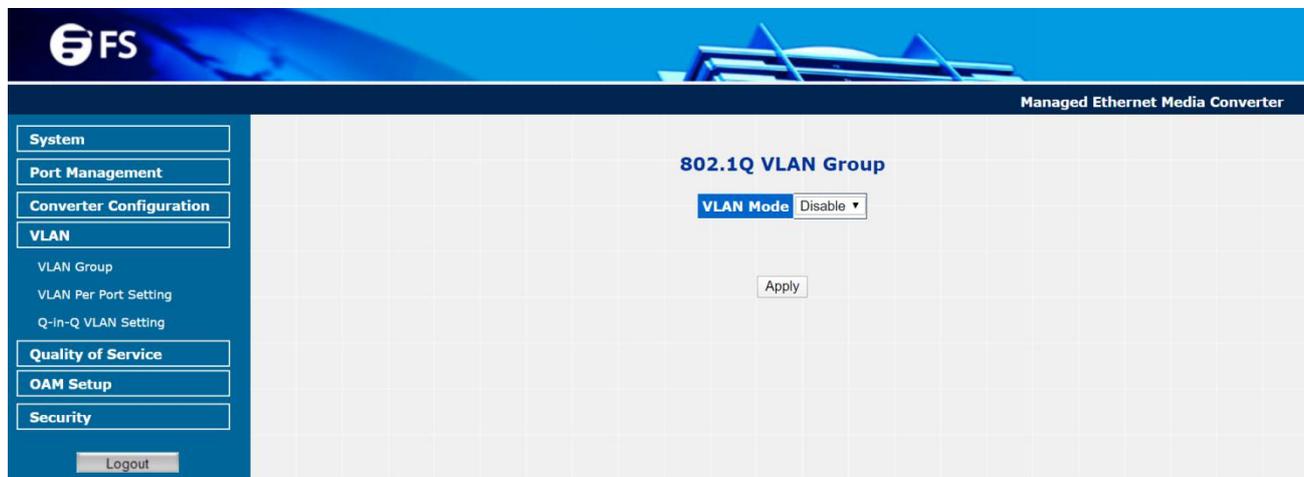


Figure 3-25 VLAN Group Web Page Screen

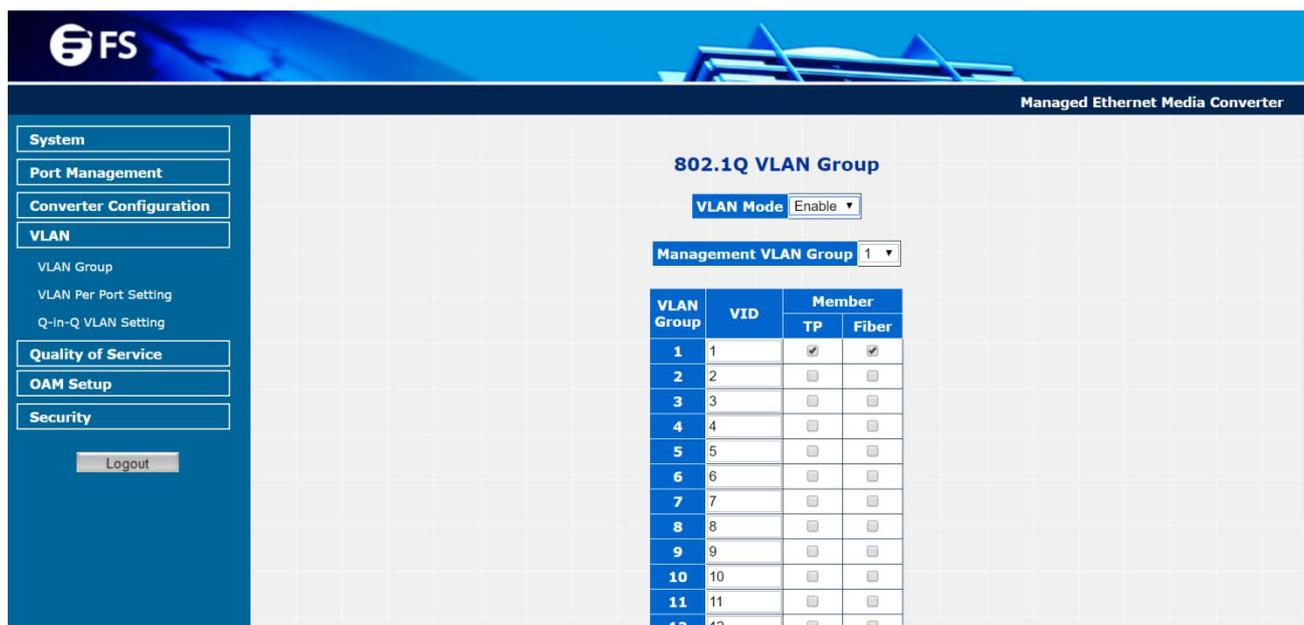


Figure 3-26 VLAN Group Web Page Screen

The VLAN Group Web page includes the following configurable data:

Objects		Descriptions
VLAN Mode		Provide Disable or enable the IEEE 802.1Q VLAN operation mode. The default mode is Disable .
Management VLAN Group		Provide define the Management VLAN group. The default mode is VLAN1 .
VLAN Group		Indicate the VLAN Group from 1 to 16.
VID		Provide define the VLAN Group ID and the available options are 1 to 4094 .
Member	TP	Provide assign TP port into VLAN Groups.
	Fiber	Provide assign Fiber port into VLAN Groups.
Apply button		Press this button to save current configuration of Managed Media Converter.

Table 3-9 Descriptions of the VLAN Group Web Page Screen Objects

NOTE: When changing the Management VLAN Group setting, please assure the TP or fiber port that connect to administrator PC is in the same VLAN Group, otherwise, for further managed is impossible. The only solution is press the reset button 10 seconds to reset the system to the default mode.

3.5.2 VLAN per Port Setting

This function provides IEEE 802.1Q VLAN per port setting for TP and Fiber port of Managed Media Converter. Press the “Apply” button to save the current configuration of Managed Media Converter. The screen in **Figure 3-27** appears and **Table 3-10** describes the VLAN per Port Setting object of Managed Media Converter.

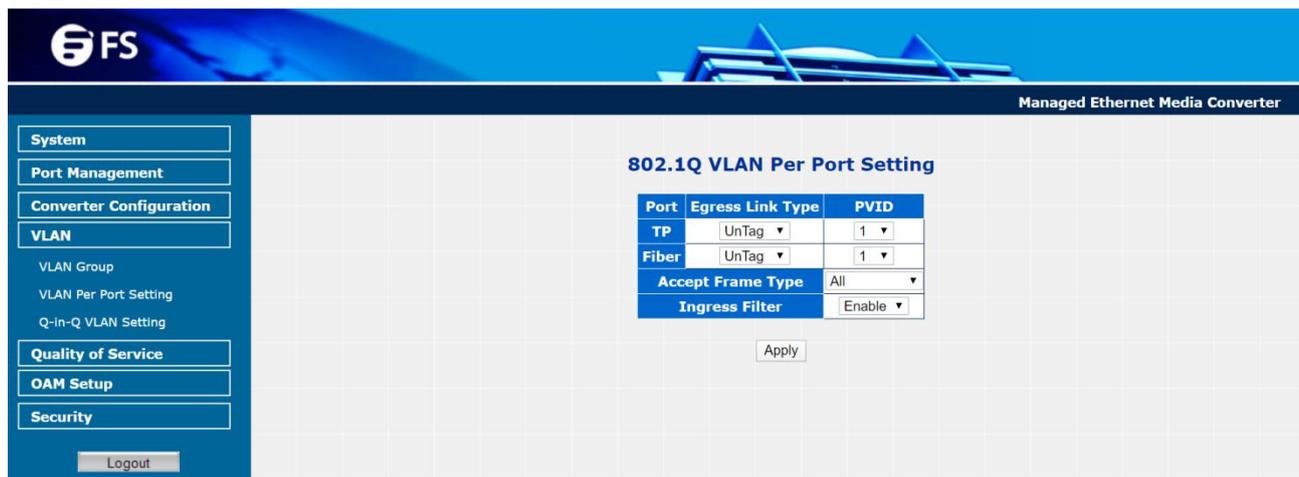


Figure 3-27 VLAN per Port Setting Web Page Screen

The VLAN per Port Setting Web page includes the following configurable data:

Objects	Descriptions
Port	Indicate the TP port and Fiber port.
Egress Link Type	Provide Egress Link Type options for TP port and Fiber port, the available options are: UnTag Tag Bypass The default mode is UnTag .
PVID	Provide PVID assign for TP port and Fiber port, the available options are 1 to 4094. The default mode is 1 to 16 .
Accept Frame Type	Provide define the Accept Frame Type and the available options are: All Tagged Only The default mode is All .
Ingress Filter	Provide disable or enable the Ingress Filter function. The default mode is Enable .
Apply button	Press this button to save current configuration of Managed Media Converter.

Table 3-10 Descriptions of the VLAN per Port Setting Web Page Screen Objects

3.5.3 Q-in-Q VLAN Setting

When enabling Q-in-Q function, the Managed Media Converter can insert or remove 4-bytes Q-in-Q tag in the received 802.3 frames after SA. Users can define Q-in-Q tag value freely. And in default condition, Q-in-Q tag format is same as VLAN tag. In normal application, enable two port's Q-in-Q function. UTP Port set to insert QinQ tag and Fiber port set to remove Q-in-Q Tag. For aggregation layer switch, it will check Q-in-Q tag only, not care about the VLAN tag from the corridor layer switch. Q-in-Q Tag ether type can be set same as VLAN tag ether type or other values.

This function provides IEEE 802.1Q Q-in-Q VLAN setting of Managed Media Converter. Press the **“Apply”** button to save the current configuration of Managed Media Converter. The screen in **Figure 3-28** appears and **Table 3-11** describes the Q-in-Q VLAN setting object of Managed Media Converter.



Figure 3-28 Q-in-Q VLAN setting Web Page Screen

The Q-in-Q VLAN setting Web page includes the following configurable data:

Objects	Descriptions
Q-in-Q Enable	Provide disable or enable the Q-in-Q VLAN function. The default mode is Disable .
Q-in-Q direction	Provide two directions for Q-in-Q function, the available options are: UTP is customer port, Fiber is main port Fiber is customer port, UTP is main port The default mode is UTP is customer port, Fiber is main port .
Out Layer VLAN Tag EtherType (HEX)	Allow defined the Out Layer VLAN Tag EtherType and the default mode is 0x8100 .
Out Layer VLAN VID (DEC)	Allow defined the Out Layer VLAN VID and the default mode is 1 .
Apply Button	Press this button to save current configuration of Managed Media Converter.

Table 3-11 Descriptions of the Q-in-Q VLAN setting Web Page Screen Objects

3.6 Quality of Service

Quality of Service (QoS) is an advanced traffic prioritization feature that allows you to establish control over network traffic. QoS enables you to assign various grades of network service to different types of traffic, such as multi-media, video, protocol-specific, time critical, and file-backup traffic.

QoS reduces bandwidth limitations, delay, loss, and jitter. It also provides increased reliability for delivering of your data and allows you to prioritize certain applications across your network. You can define exactly how you want the switch to treat selected applications and types of traffic.

You can use QoS on your system to:

- Control a wide variety of network traffic by:
- Classifying traffic based on packet attributes.
- Assigning priorities to traffic (for example, to set higher priorities to time-critical or business-critical applications).
- Applying security policy through traffic filtering.
- Provide predictable throughput for multimedia applications such as video conferencing or voice over IP by minimizing delay and jitter.
- Improve performance for specific types of traffic and preserve performance as the amount of traffic grows.
- Reduce the need to constantly add bandwidth to the network.
- Manage network congestion.

This function provides Quality of Service setting of Managed Media Converter. Press the “**Apply**” button to save the current configuration of Managed Media Converter. The screen in **Figure 3-29** appears and **Table 3-12** describes the Quality of Service object of Managed Media Converter.

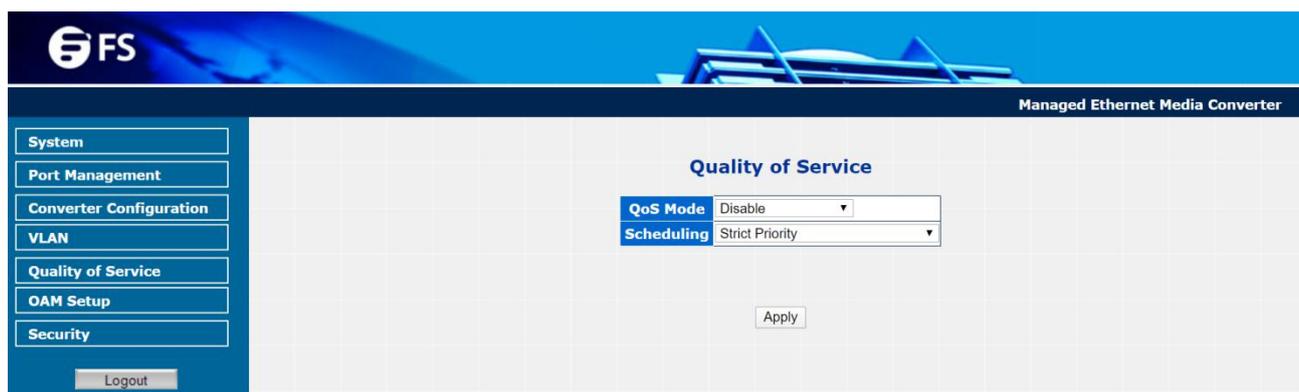


Figure 3-29 Quality of Service Web Page Screen

The Quality of Service Web page includes the following configurable data:

Objects	Descriptions
Qos Mode	Provide 4 different QoS mode for operation, the available options are: Disable 802.1p Tag Priority The 802.1p Tag Priority field as show in Figure 3-30. IP Address Priority The IP Address Priority field as show in Figure 3-31. IP DSCP Priority The IP DSCP Priority field as show in Figure 3-32. The default mode is Disable .
Scheduling	Provide two scheduling method for Quality of Service, the available options are: Strict Priority Weighted Round Robin (16:8:4:1) The default mode is Strict Priority .
Apply Button	Press this button to save current configuration of Managed Media Converter.

Table 3-12 Descriptions of the Quality of Service Web Page Screen Objects

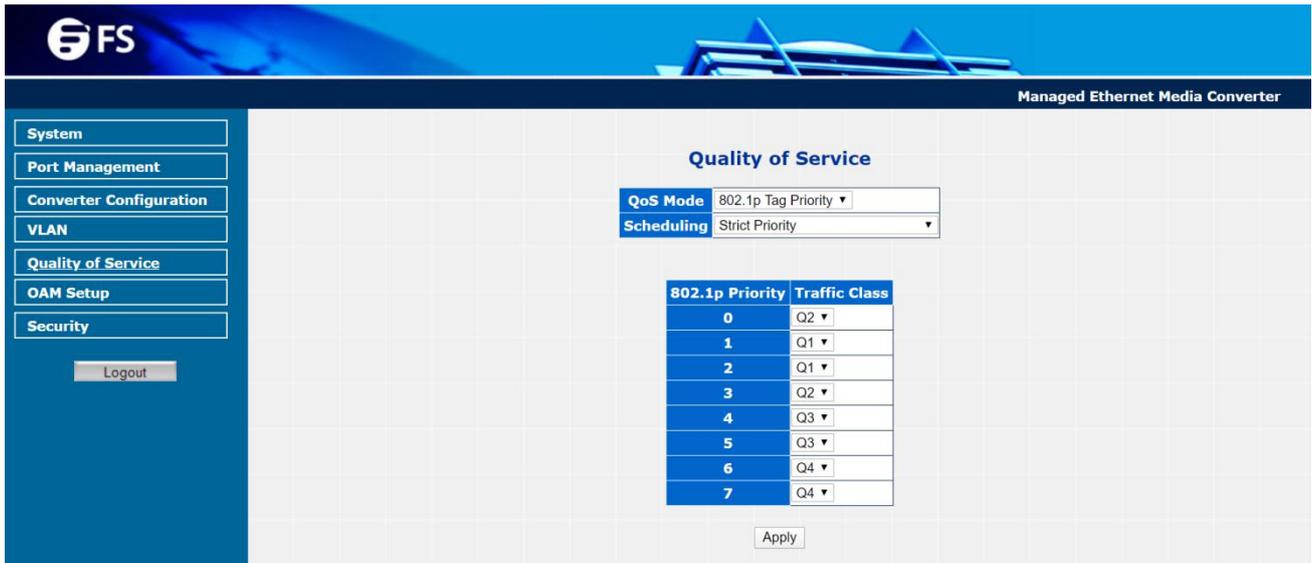


Figure 3-30 802.1p Tag Priority Web Page Screen



Figure 3-31 IP Address Priority Web Page Screen

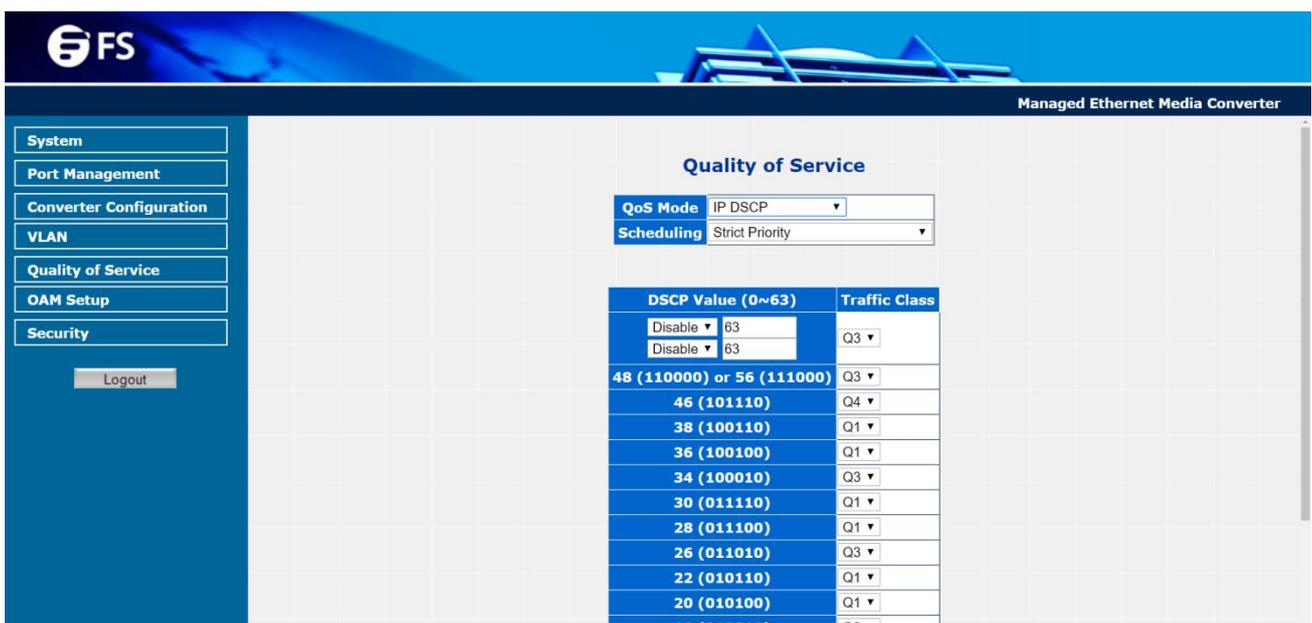


Figure 3-32 IP DSCP Priority Web Page Screen

3.7 OAM Setup

3.7.1 Local TS-1000 OAM Setup

This function provides Local TS-1000 OAM Setup of Managed Media Converter. Press the **“Apply”** button to save the current configuration of Managed Media Converter. The screen in **Figure 3-33** appears and **Table 3-13** describes the Local TS-1000 OAM Setup object of Managed Media Converter.



Figure 3-33 Local TS-1000 OAM Setup Web Page Screen

The Local TS-1000 OAM Setup Web page includes the following configurable data:

Objects	Descriptions
TS-1000 OAM State	Provide disable or enable the TS-1000 OAM operation mode. The default mode is Disable .
TS-1000 Mode	Provide two TS-1000 modes for operation, the available options are: Terminal Center The default mode is Terminal .
Link Transparent	Provide disable or enable the Link Transparent function. The default mode is Disable .
Link Transparent Result	Display the link transparent result.
Apply button	Press this button to save current configuration of Managed Media Converter.

Table 3-13 Descriptions of the Local TS-1000 OAM Setup Web Page Screen Objects

3.7.2 Remote TS-1000 OAM Setup

The Remote TS-1000 OAM Setup is an advanced remote device monitor feature that allows you to Remote monitor and automatically notify status indication.

Remote monitor

- (1) User instructs center Media Converter to issue a status notification request frame defined in TS-1000 to get status of terminal Media Converter.
- (2) Terminal Media Converter receives the status notification request frame and sends out status response frame, which carries its current status.

Autonomous notification

- (1) Terminal Media Converter notifies the center Media Converter autonomously with a status notification indication, if any change occurs in the status monitored internally by the terminal Media Converter.
- (2) Center Media Converter if supports Option A, notifies the terminal Media Converter autonomously with a status notification indication, if any change occurs in the status monitored internally by the center Media Converter.

This function provides Remote TS-1000 OAM Setup of Managed Media Converter. Press the **“Apply”** button to save the current configuration of Managed Media Converter. The screen in **Figure 3-34** appears.

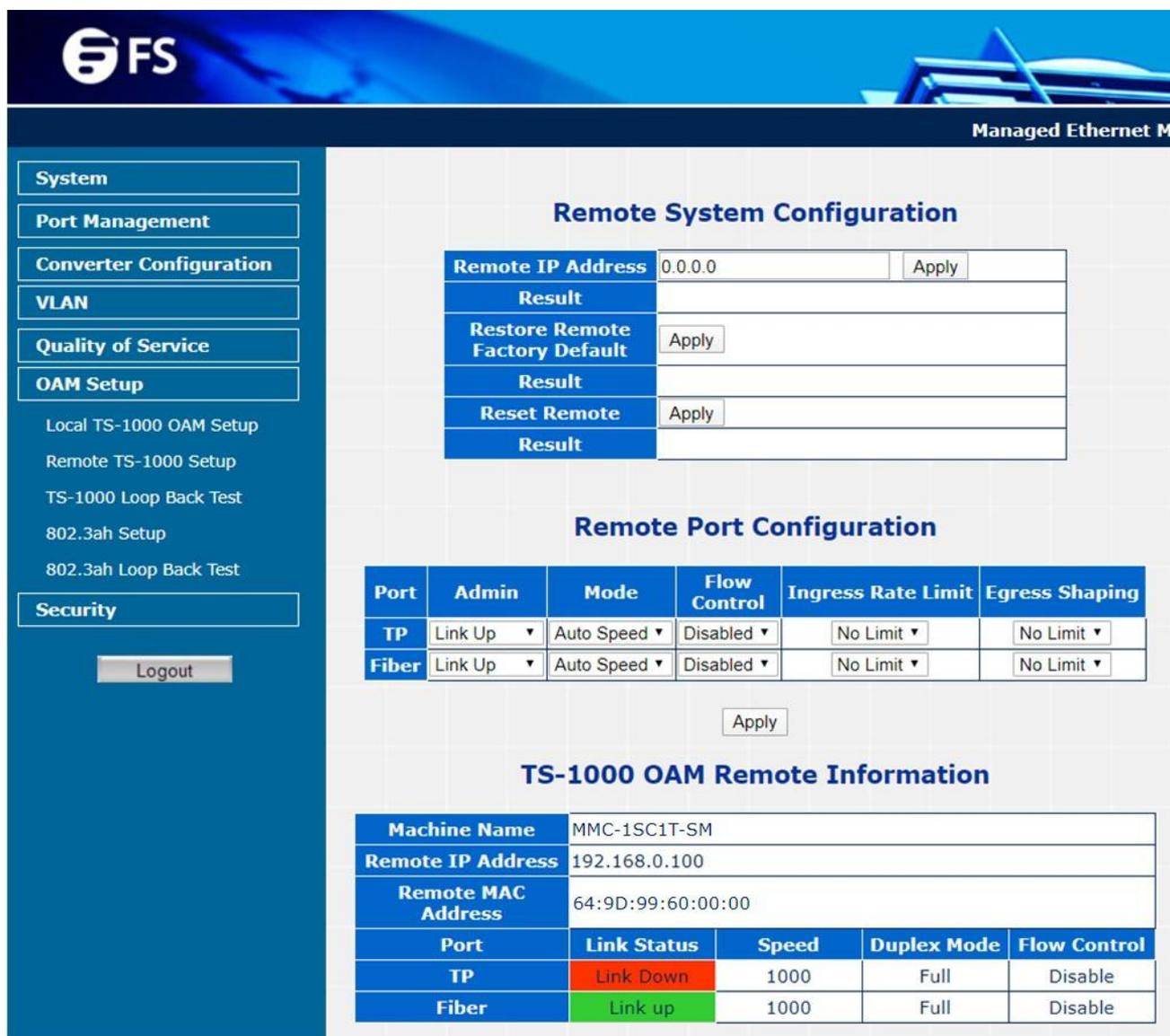
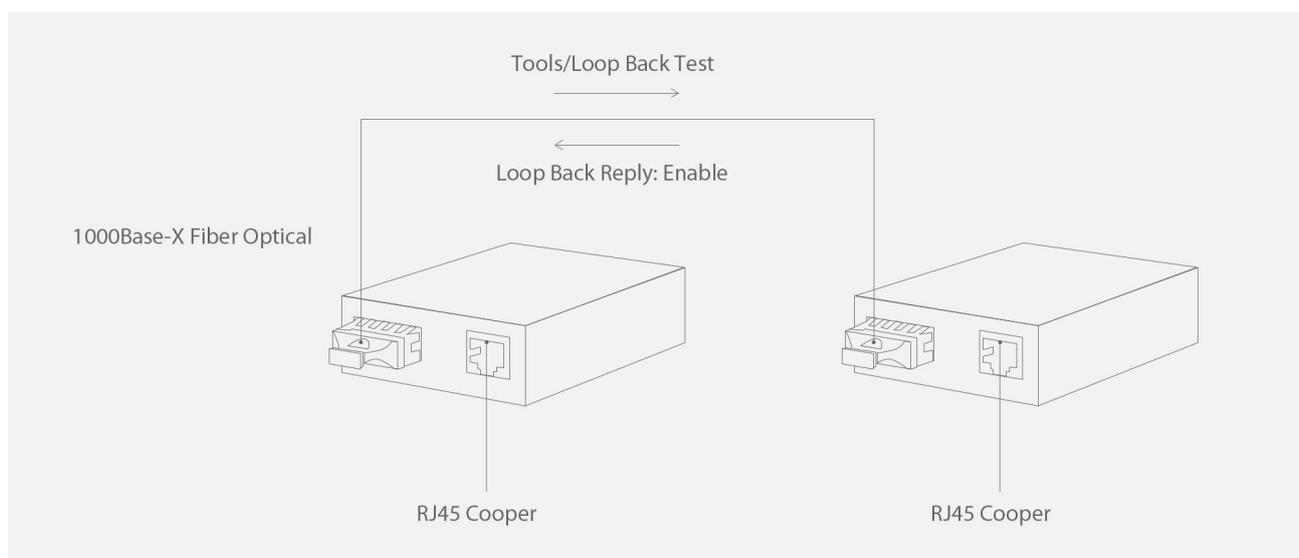


Figure 3-34 Managed Ethernet Media Converter Remote TS-1000 OAM Setup Web Page Screen

NOTE: Please use FS Managed Ethernet Media Converters as the Remote device.

3.7.3 TS-1000 Loop Back Test

The TS-1000 Loop Back Test allows manual run this loop back test to check the interconnection between two Media Converter devices. To assure the Remote TS-1000 OAM function can work correctly.



In-band and out-band Loop back

- (1) Instruct center Media Converter to issue an OAM frame to request a loop back test. Terminal return start response OAM frame to center Media Converter.
- (2) Terminal Media Converter runs at loop back mode.
- (3) Central Media Converter send test frame and terminal Media Converter loop back the frames. Test frame can be generated from central Media Converter's UTP port (Out-Band) or from central Media Converter (In-Band) automatically.
- (4) Center Media Converter check the loop back test result after sending all test frames
- (5) Instruct the central Media Converter to end loop back test.

This function provides TS-1000 Loop Back Test of Managed Media Converter. Press the **"Apply"** button to run Loop Back Test and see the TS-1000 Loop Back Test Result of Managed Media Converter, also press the **"Refresh"** button to renew the Web screen. The screen in **Figure 3-35** appears and **Table 3-14** describes the TS-1000 Loop Back Test object of Managed Media Converter.

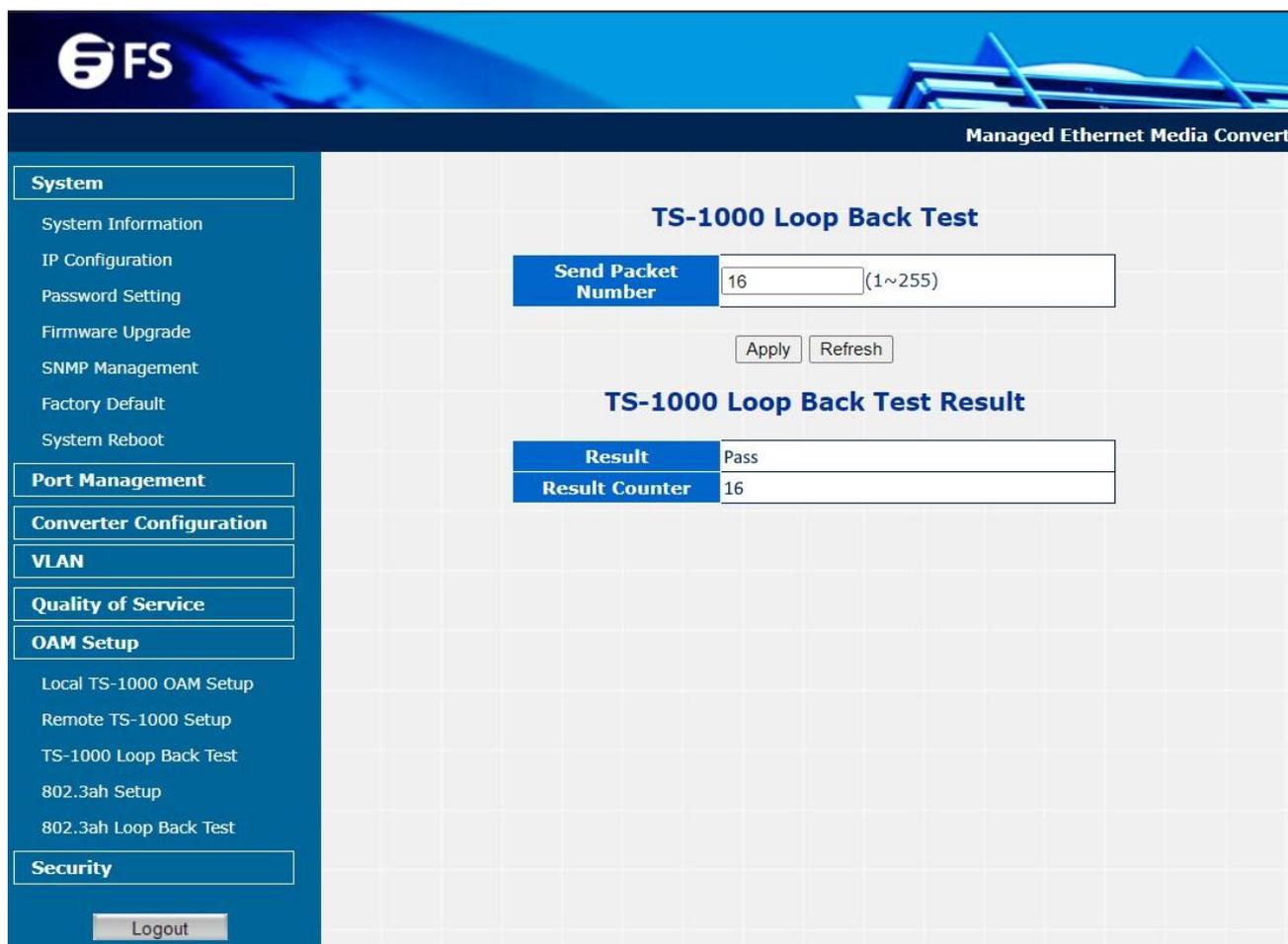


Figure 3-35 Remote TS-1000 Loop Back Test Web Page Screen

The TS-1000 Loop Back Test Web page includes the following configurable data:

TS-1000 Loop Back Test	
Send Packet Number	Allow inputting the number for packet send and the available options is 1 to 255. Default is 16 .
Apply Button	Press this button to save current configuration of Managed Media Converter.
Refresh Button	Press " Refresh " button to refresh current status.
TS-1000 Loop Back Test Result	
Result	Display the TS-1000 Loop Back Test Result. Fail or Pass.
Result Counter	Display the value of Counter Result.

Table 3-14 Descriptions of the TS-1000 Loop Back Test Web Page Screen Objects

NOTE: Please use FS Managed Ethernet Media Converters as the Remote device.

3.7.4 802.3ah Setup

When enable 802.3ah OAM function, all 802.3ah OAM PDU packets will trap to embedded CPU.

Software will implement an auto discovery procedure. With hardware support, software controls the 802.3ah remote loop back procedure. Hardware can also detect dying gasp even and interrupt CPU to send dying gasp even notification OAMPDU. All other functions defined by 802.3ah are implemented using an embedded CPU.

When remote device is in loop back mode, hardware can support change looped test frame’s DA, SA or both as user defined. Hardware can also set to don't change looped test frame.

This function provides 802.3ah Setup of Managed Media Converter. Press the **“Apply”** button to save the current configuration of Managed Media Converter. The screen in **Figure 3-36** appears and **Table 3-15** describes the 802.3ah Setup object of Managed Media Converter.

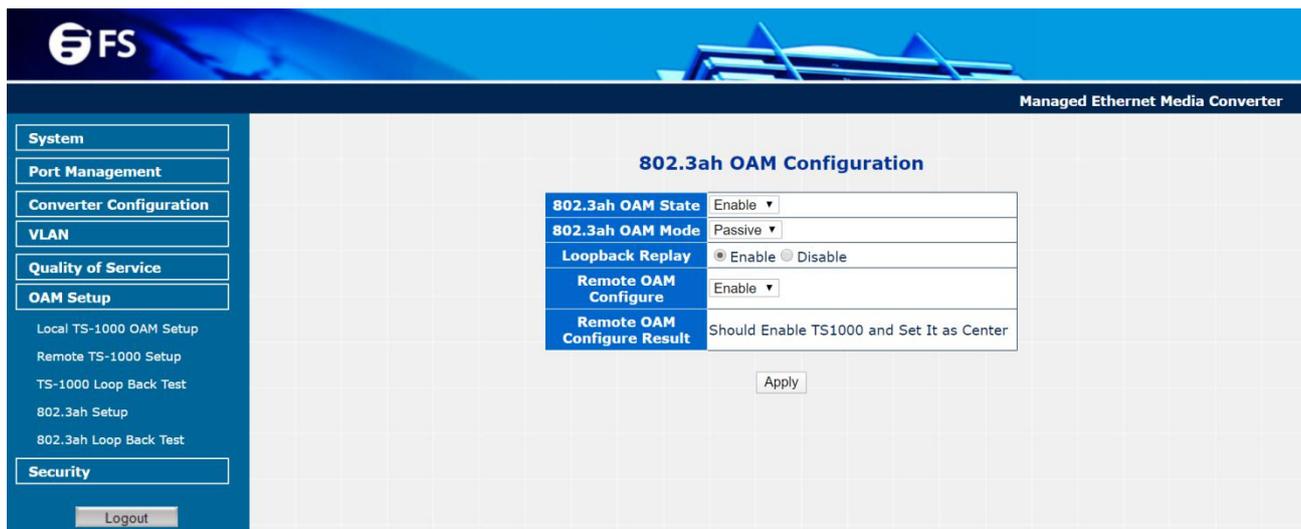


Figure 3-36 802.3ah Setup Web Page Screen

The 802.3ah Setup Web page includes the following configurable data:

Objects	Descriptions
802.3ah OAM State	Provide disable or enable the 802.3ah OAM State function. The default mode is Enable .
802.3ah OAM Mode	Allow to choose “Active” or “Passive” to 802.3ah OAM Mode. The default mode is Passive .
Loopback Reply	Provide disable or enable the Loopback Reply function. The default mode is Enable .
Remote OAM Configure	Provide disable or enable the Remote OAM Configure function. The default mode is Enable .
Remote OAM Configuration Result	Display the Remote OAM Configuration Result.
Apply Button	Press this button to save current configuration of Managed Media Converter.

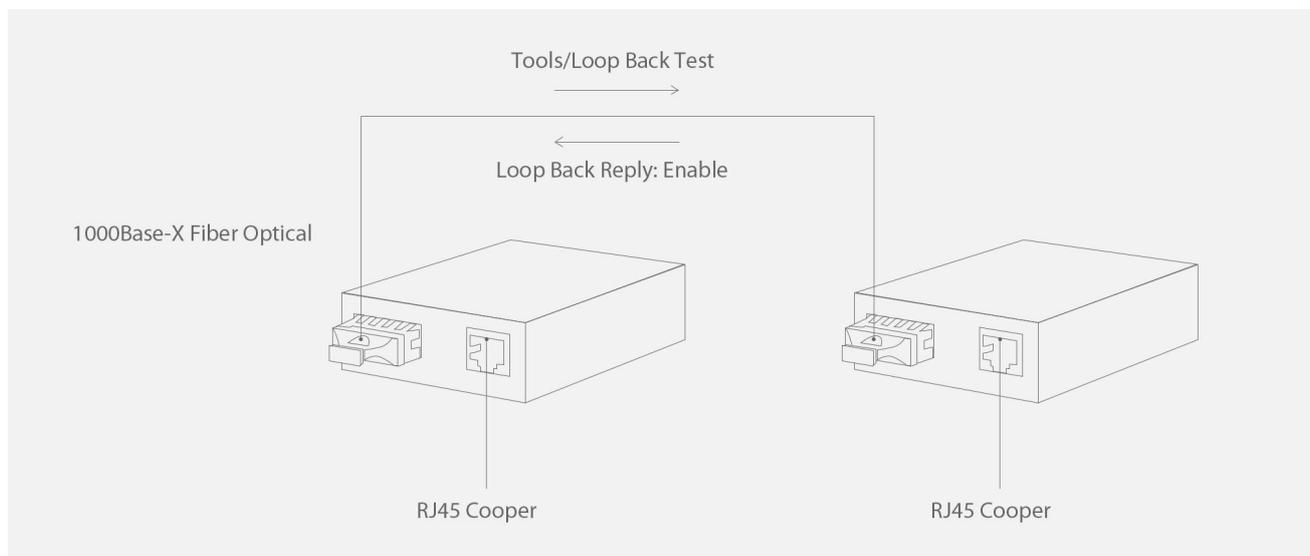
Table 3-15 Descriptions of the 802.3ah Setup Web Page Screen Objects

NOTE:

- (1) The 802.3ah function must work with manageable device that supports 802.3ah function.
- (2) Please use the FS Managed Ethernet Media Converters as the Remote device.

3.7.5 802.3ah Loop Back Test

The 802.3ah Loop Back Test allows manual run this loop back test to check the interconnection between two Media Converter devices. To assure the Remote 802.3ah function can work correctly.



This function provides 802.3ah Loop Back Test of Managed Media Converter. Press the **"Apply"** button to run 802.3ah Loop Back Test and see the 802.3ah Loop Back Test Result of Managed Media Converter, also press the **"Refresh"** button to renew the Web screen. The screen in **Figure 3-37** appears and **Table 3-16** describes the 802.3ah Loop Back Test object of Managed Media Converter.

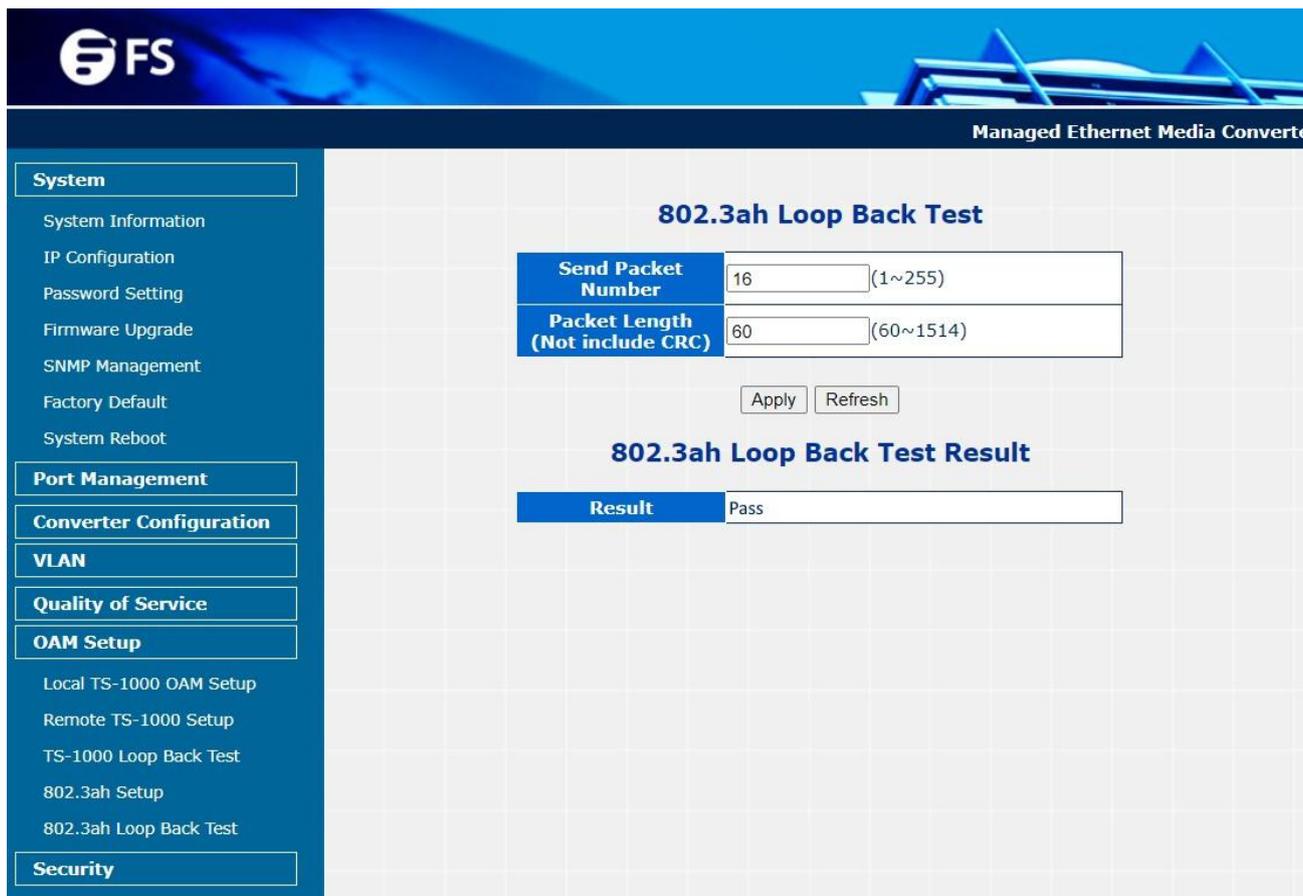


Figure 3-37 802.3ah Loop Back Test Web Page Screen

The 802.3ah Loop Back Test Web page includes the following configurable data:

802.3ah Loop Back Test	
Send Packet Number	Allow inputting the number for packet send and the available options is 1 to 255. Default is 16 .
Packet Length (Not include CRC)	Allow inputting the number for Packet Length and the available options is 60 to 1514. Default is 60 .
Apply Button	Press this button to save current configuration of Managed Media Converter.
Refresh Button	Press " Refresh " button to refresh current status.
802.3ah Loop Back Test Result	
Result	Display the 802.3ah Loop Back Test Result. Fail or Pass.

Table 3-16 Descriptions of the 802.3ah Loop Back Test Web Page Screen Objects

NOTE:

- (1) The 802.3ah function must work with manageable device that supports 802.3ah function.
- (2) Please use the FS Managed Ethernet Media Converters as the Remote device.

3.8 Security

This function provides TCP/UDP Filter setting of Managed Media Converter. Press the **“Apply”** button to save the current configuration of Managed Media Converter. The screen in **Figure 3-38** appears and **Table 3-17** describes the TCP/ UDP Filter setting object of Managed Media Converter.

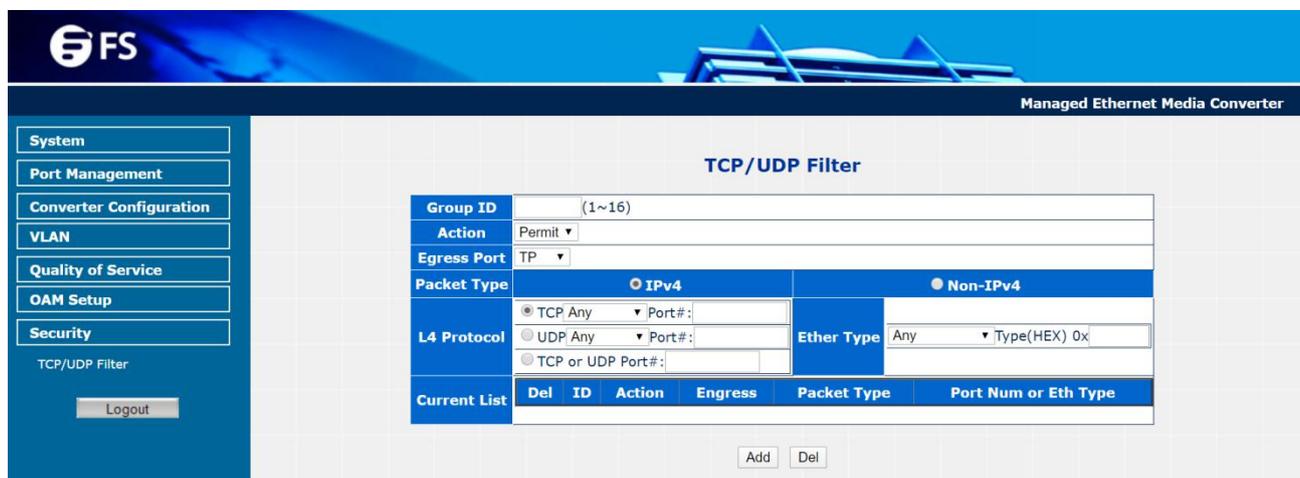


Figure 3-38 Security Setting Web Page Screen

The Quality of Service Web page includes the following configurable data:

Objects	Descriptions
Group ID	Provide input the group ID for TCP/UDP Filter and the available range is 1 to 16.
Action	Provide “Deny” or “Permit” options and the default mode is Permit .
Egress Port	Provide choose “TP” or “Fiber” as Egress Port. The default mode is TP .
Packet Type	Provide IPv4 and Non-IPv4 protocol for further setting.
L4 Protocol	Provide IPv4 and Non-IPv4 protocol for further setting. IPv4: TCP Any/FTP (21)/HTTP (80), UDP Any/TFTP (69) Non-IPv4: Any/ARP (0x0806)/IPX (0x8137)
Current List	Display current TCP/UDP Filter Groups.
Add button	Press this button to add new TCP/UDP Filter group into current list.
Del button	Press this button to delete existence TCP/UDP Filter group from current list.

Table 3-17 Descriptions of the Security setting Web Page Screen Objects

3.9 Logout

This function provides Logout function of Managed Media Converter, when the “Are you sure to logout” pop window appears; press the “OK” button to logout Web page of Managed Media Converter. The screen in **Figure 3-39 & 3-40** appears.

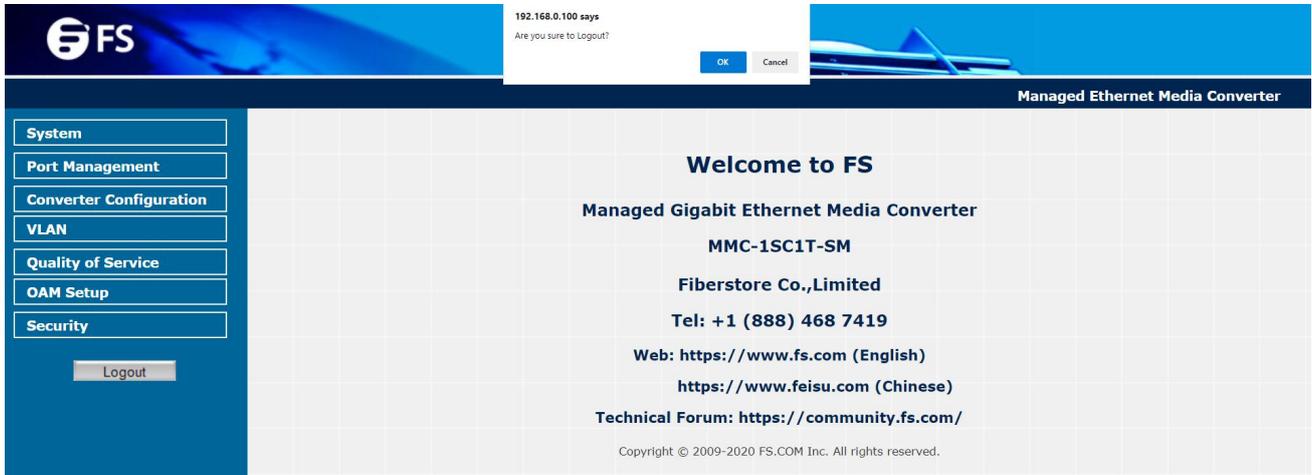


Figure 3-39 Logout Web Page Screen

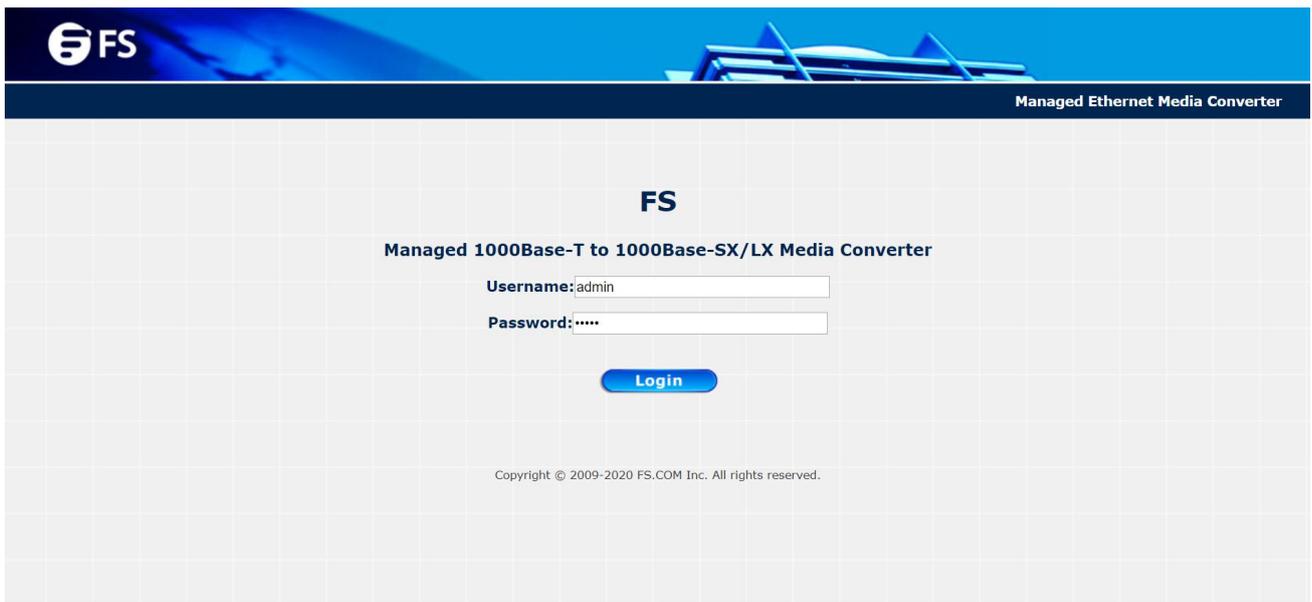


Figure 3-40 Login Web Page Screen



 <https://www.fs.com>



The information in this document is subject to change without notice. FS has made all efforts to ensure the accuracy of the information, but all information in this document does not constitute any kind of warranty.