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A UTC Fire & Security Company

IFS MCR205-1T/1S User Manual

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Version This document applies to IFS MCR205-1T/1S version 00.20.

Certification CE N4131

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

Canada This Class A digital apparatus complies with Canadian ICES-003.

Cet appareil numérique de la classe A est conforme à la norme NMB-003 du Canada.

ACMA compliance **Notice!** 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.

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Content

Overview

Package Contents

Thank you for purchasing the IFS MCR205-1T/1S Fast Ethernet to SFP (fiber) Media Converter.

Open the package containing the MCR205-1T/1S and carefully unpack it. The box should contain the following items:

- MCR205-1T/1S x1
- CD ROM User Manual CD x1
- Quick Installation Guide x1

If any of the items in the package are damaged or missing, please contact your distributor or IFS sales rep. If possible, retain the original carton and packaging material in case of need to return the product for repair/replacement.

About the MCR205-1T/1S

The IFS MCR205-1T/1S Managed Media Converter that provides conversion between a 10/100Base-TX and 100Base-FX network. The SFP slot utilizes various single-mode/multi-mode media 100Base-FX SFP transceiver modules with LC connectors. Based on the 100Base-FX transceiver selection; the MCR205-1T/1S is capable of handling the data from 2km to 20km with high reliability and flexibility.

The MCR205-1T/1S can be used as a stand-alone unit or as a slide-in module to the IFS 19-inch MCR-R15 media converter chassis. The media converter chassis can provide DC power to the MCR205-1T/1S to maintain the fiber optic network at the central location.

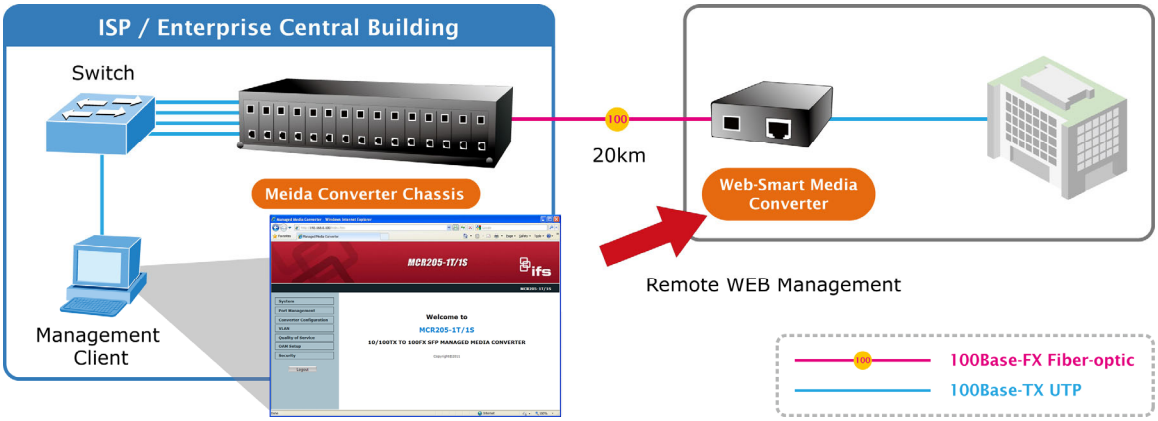
The MCR205-1T/1S is equipped with a remote Web/SNMP interface. With its built-in Web-based management, the MCR205-1T/1S offers an easy-to-use, platform-independent management and configuration facility and can be programmed for advanced management functions. Settings such as IP address Configuration/DHCP Client function, password setting/firmware upgrade, system reboot/factory default, port configuration that include TP/Fiber port speed duplex mode setting, flow control setting and Ingress/Egress bandwidth control setting, converter configuration that include 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.

To prevent compatibility issues, we recommend that you use IFS Fast Ethernet SFP transceiver modules.

Applications

Fiber optic networking for ISP, enterprise, and home

With high performance of data transmission and easy installation, the MCR205-1T/1S 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 environments for enterprises. The Web Management helps network administrators to monitor and setup the device settings through a web browser.



Product Features

- Complies with IEEE 802.3 10Base-T, IEEE 802.3u 100Base-TX, IEEE 802.3u 100Base-FX standard
- One-channel media conversion between 10/100Base-TX and 100Base-FX
- TP port supports 10/100Base-TX auto-negotiation and auto-MDI/MDI-X
- 1 SFP slot, provides flexibility with various compatible SFP modules.
- 10/100Base-TX: 2-pair Category 5 UTP cable, up to 100 meters
- Rack mountable (compatible with MCR-R15 chassis)
- Wall-mountable
- Built-in Web interface for remote management
- Layer 2 Management Features
- 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
- Firmware upgrade via remote Web interface
- Compact in size, easy installation
- LED indicators for easy network diagnosis
- Reset Button at the front panel for resetting to factory defaults

Hardware Description

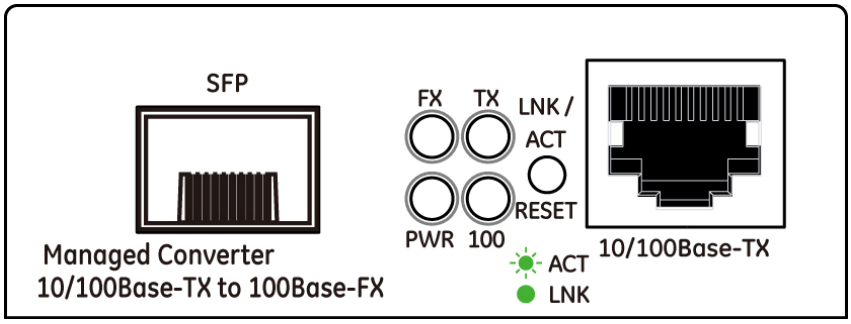
This product provides two different running speeds – 10Mbps/100Mbps in one device and automatically distinguishes the speed of incoming data.

This section describes the functionalities of the MCR205-1T/1S's components and explains how to install it on the desktop or shelf. Please read this chapter completely before installing.

MCR205-1T/1S Front Panel

The Front Panel of the MCR205-1T/1S consists of one 100Base-FX SFP port and one Auto-Sensing 10/100Mbps Ethernet RJ-45 Port. Figure 1 illustrates the front panel of the MCR205-1T/1S.

Figure 1: MCR205-1T/1S Front Panel



LED Indicators

LED	Color	Description
PWR	Green	Lit: When +5VDC power detected.
Fiber LNK/ACT	Green	Lit: Indicates that the link through that fiber port is successfully established. Blink: Indicates that the Fiber port is actively sending or receiving data over that port.
TP LNK/ACT	Green	Lit: Indicates that the link through that port is successfully established. Blink: Indicates that the port is actively sending or receiving data over that port.
TP 100	Green	Lit: Indicates port operation at 100Mbps Half/Full duplex mode. Off: Indicates port operation at 10Mbps Half/Full duplex mode.

Note: Pressing and releasing the RESET button will revert to the settings to the factory default mode. Be sure that you backup the current configuration of the MCR205-1T/1S; otherwise the entire configuration will be lost after the reset.

Press and release the RESET button shortly, the device will reboot.

Press and the RESET button for at least 10 seconds and release. The device will be set to the factory default settings.

Back Panel

The back panel of the MCR205-1T/1S indicates one DC jack, which accepts 5 VDC (2A) input power.

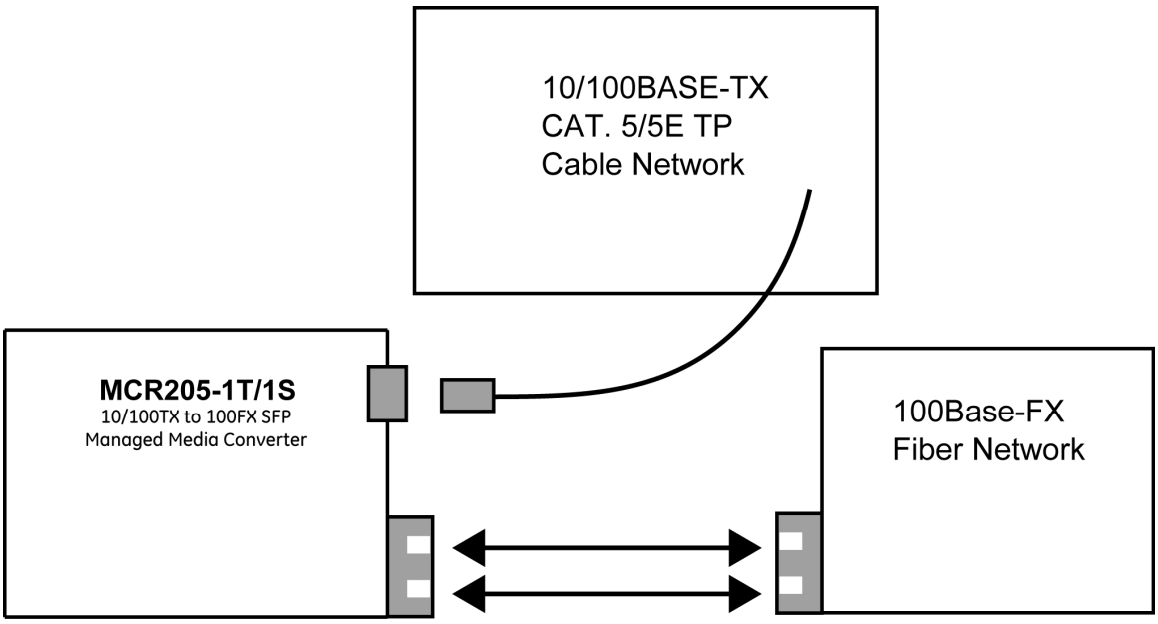
Figure 2: Back Panel

Power Notice:

1. To ensure network reliability and to reduce the possibility of data loss or network link loss, it is recommended that a UPS (Uninterrupted Power Supply) be installed as part of your installation.
2. For additional protection against unregulated voltage or current surges, you may also want to consider surge suppression as part of your installation.

Installing the MCR205-1T/1S

This section describes how to install your MCR205-1T/1S and make connections to it. Please read the following topics and perform the procedures in the order being presented. The hardware installation of the MCR205-1T/1S does not need software configuration. To install your MCR205-1T/1S on a desktop or shelf, simply complete the following steps.



MCR205-1T/1S Installation

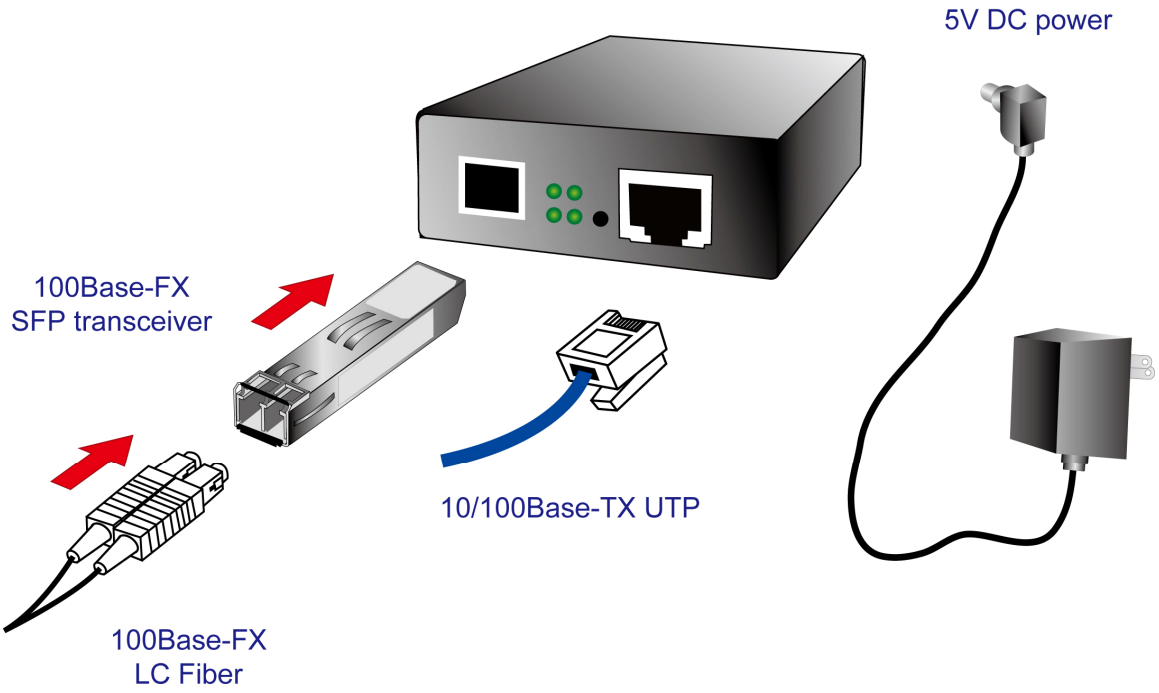
The MCR205-1T/1S is capable of transmitting data up to 20km with high reliability and flexibility, depending on the SFP module being used. The SFP transceivers are hot-swappable and can be plugged in or out when the media converter is powered on.

To install MCR205-1T/1S with 100Base-SFP, simply complete the following steps:

Step 1: Turn off the power of the device/station in a network to which the MCR205-1T/1S will be attached.

Step 2: Ensure that there is no activity in the network.

Step 3: Install the SFP transceiver module. Make sure that same SFP modules are used on both ends of the fiber cable.



Step 4: Connect the fiber cable. Attach the duplex LC connector on the network cable into the SFP transceiver.

Step 5: Attach fiber cable from the MCR205-1T/1S to the fiber network. TX, RX must be paired at both ends.

Note: Please refer to APPENDIX A for detailed wiring information of the MCR205-1T/1S.

To prevent optic acceptor malfunction, check the both wires/transmitter before powering on the converter.

To prevent compatibility issues, it is recommended to use IFS Fast Ethernet SFP transceiver modules.

Installation in an IFS MCR-R15 Chassis

To install the MCR205-1T/1S in an IFS MCR-R15 Chassis, follow the instructions described below.

Step 1: Place the MCR205-1T/1S on a hard flat surface, with the front panel positioned towards you.

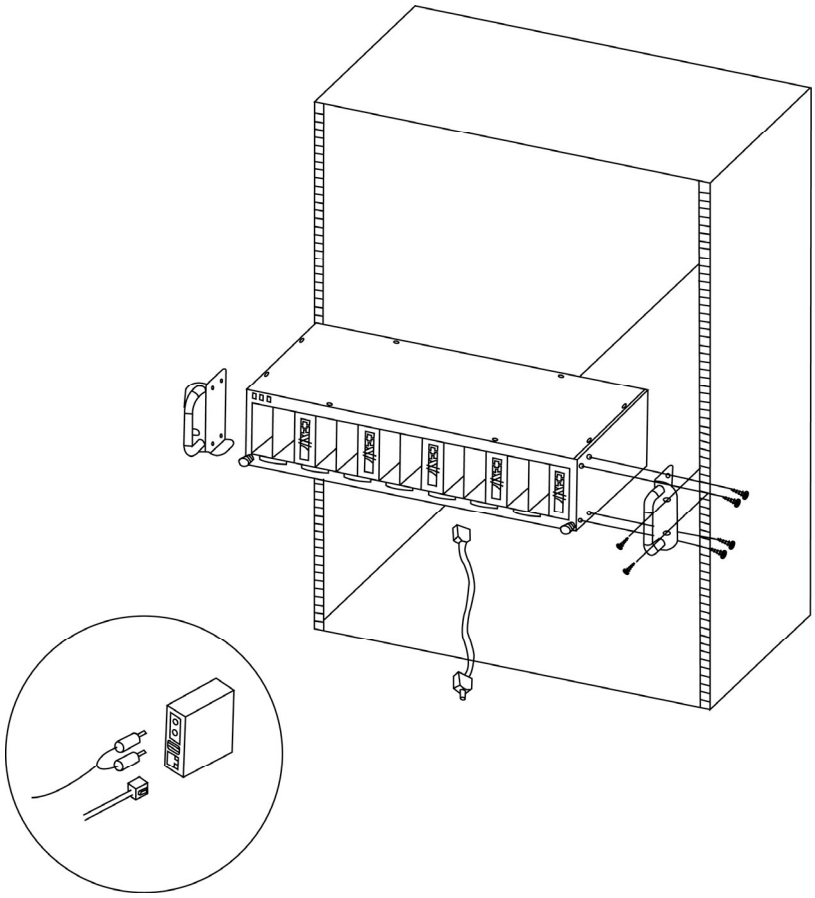
Step 2: Carefully slide in the module until it is fully and firmly fitted into the slot of the chassis.

Step 3: Attach a rack-mount bracket to each side of the MCR-R15 chassis with supplied screws included in the package.

Step 4: After the brackets are attached to the chassis, use matching screws to securely attach the brackets to the rack, as shown below.

Step 5: Proceed with steps 4 and 5 of the previous section to connect the network cabling.

WARNING: You must use the screws supplied with the mounting brackets. Damage caused to the parts by using incorrect screws would invalidate your warranty.



Converter Management

This chapter describes how to manage MCR205-1T/1S. Topics include:

- Overview
- Management methods
- Assigning an IP address to the MCR205-1T/1S
- Logging into the MCR205-1T/1S

Overview

This chapter gives an overview of MCR205-1T/1S management. The MCR205-1T/1S provides a simple WEB browser interface.

Using this interface, you can perform various MCR205-1T/1S configuration and management activities, including:

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

Management Methods

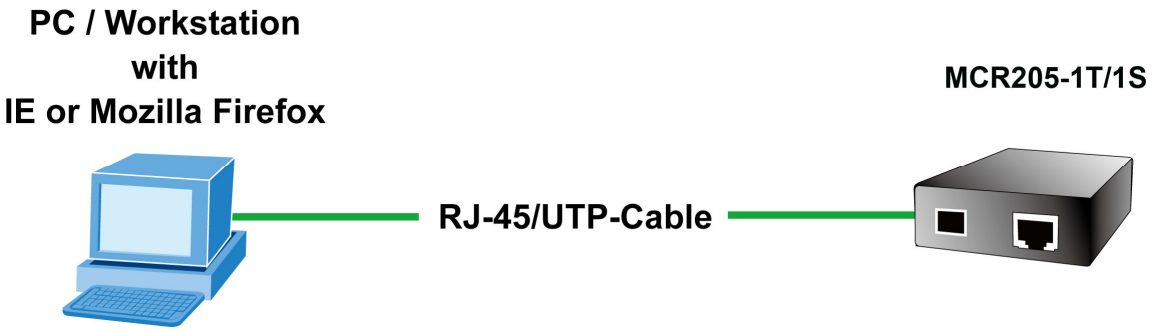
There are two ways to manage the MCR205-1T/1S:

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

Web Management

The MCR205-1T/1S provides a built-in browser interface. You can manage the MCR205-1T/1S remotely by having a remote host with a Web browser, such as Microsoft Internet Explorer, Mozilla Firefox, Google Chrome or Apple Safari.

Figure 3: Web Management over Ethernet



Logging into the MCR205-1T/1S

The following shows how to startup the Web Management of the MCR205-1T/1S. Please note that the device needs to be configured through an Ethernet connection, make sure the administrator PC is setup on the same IP subnet address.

For example, the default IP address of the MCR205-1T/1S is 192.168.0.100 (the factory-default IP address), then the administrator 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.

Enter the default IP address of http://192.168.0.100 to the address bar of the web browser.

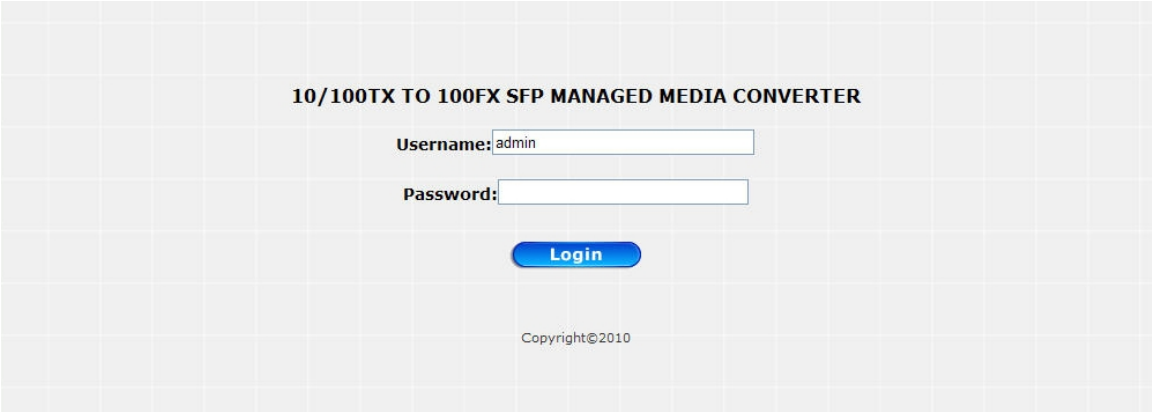
After entering the username and password (default user name and password is “admin”) in login screen, then the Web main screen will appear.

Default IP Address: 192.168.0.100

Default Account: admin

Default Password: admin

Figure 4: Login Web Page screen



Note: For security purposes, please change the default password and keep a record of the new one after the first login.

Only lowercase entries are accepted under the web interface.

SNMP Management

You can manage the MCR205-1T/1S across a LAN using an SNMP Network Management Station with a graphical user interface.

This management method lets you monitor statistical counters and set MCR205-1T/1S parameters from a remote Network.

Using this management method:

- The network must run the IP protocol.

- The MCR205-1T/1S must have an IP address.

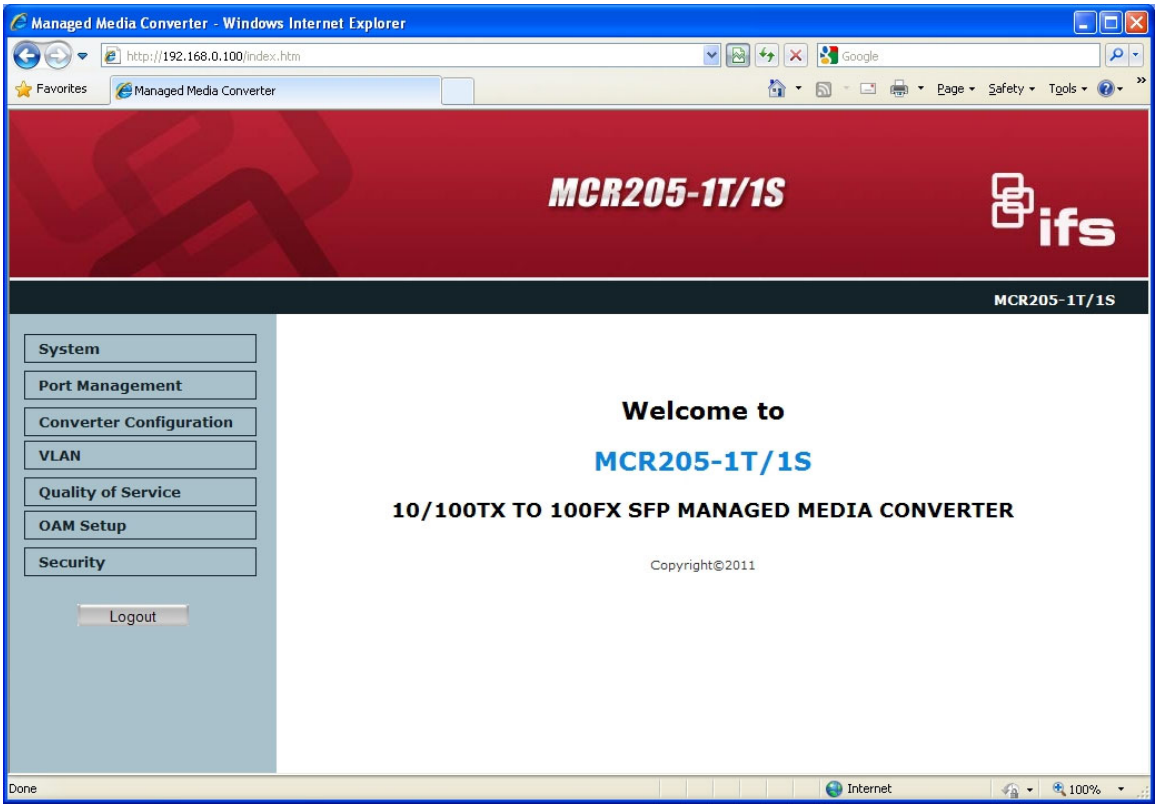
Web Management

The MCR205-1T/1S provides a remote Web interface for management function configuration and makes the MCR205-1T/1S operate more effectively. A network administrator can manage and monitor the MCR205-1T/1S from the local LAN. This section indicates how to configure the MCR205-1T/1S to enable its management function.

Main Menu

After a successful login, the main screen appears and displays the MCR205-1T/1S Welcome page.

Figure 5: Web Main screen



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

- System – Provides System configuration
- Port Management – Provides Port Management configuration
- Converter Configuration – Provides Converter configuration
- VLAN – Provides VLAN configuration

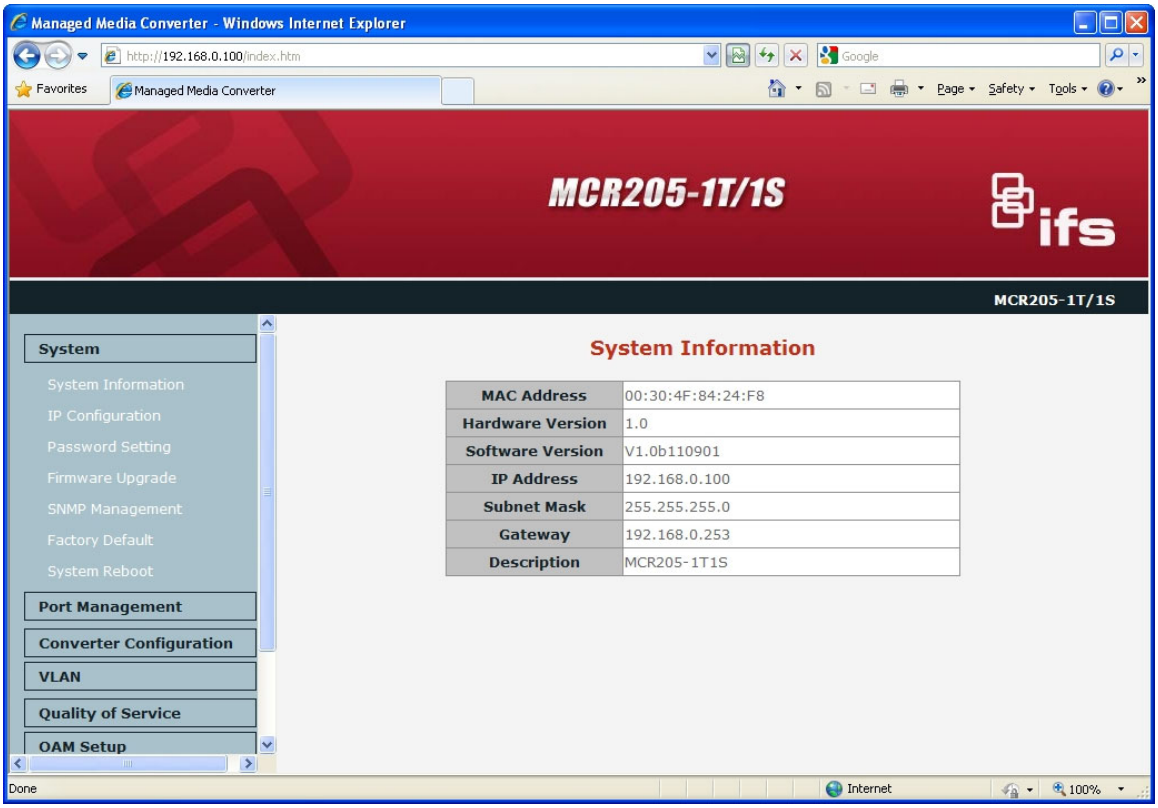
- Quality of Service – Provides Quality of Service (QoS) function
- OAM Setup – Provides OAM Setup function
- Security – Provides Security function
- Logout– Provides Logout function

System

System Information

The System Information Web page provides information for the current device. The System Information Web page helps network administrators to identify the firmware versions, IP Subnet Address, etc.

Figure 6: System Information Web page screen



The System Information Web page includes the following fields:

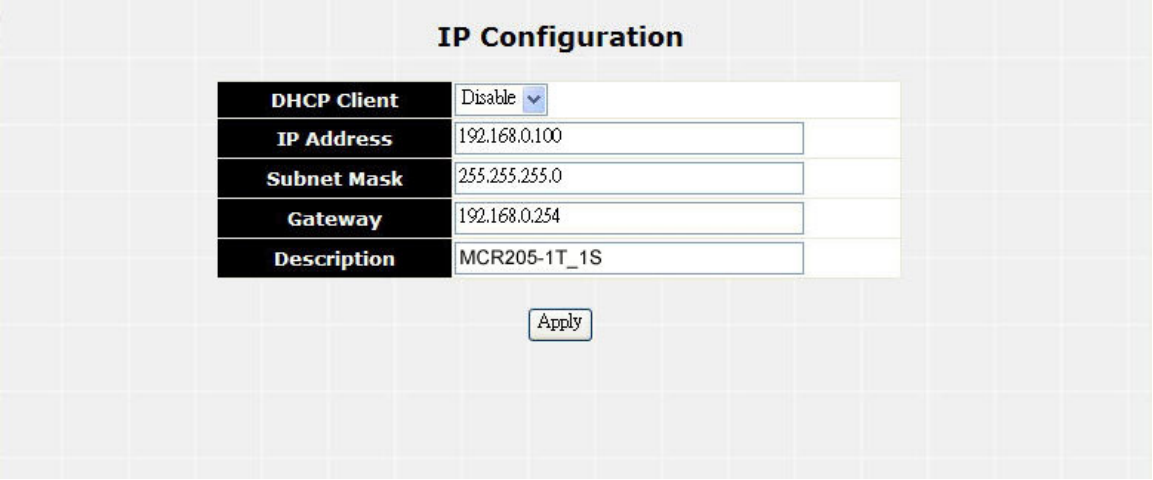
MAC Address	Specifies the MAC address of the MCR205-1T/1S.
Software Version	The current software version running on the MCR205-1T/1S.
IP Address	The current IP Address of the MCR205-1T/1S, the default IP Address is 192.168.0.100.

Subnet Mask	The current Subnet Mask of the MCR205-1T/1S, the default Subnet Mask is 255.255.255.0.
Gateway	The current gateway of the MCR205-1T/1S, the factory default gateway is 192.168.0.254.
Description	The current description of the MCR205-1T/1S, the factory default description is MCR205-1T/1S.
Temperature	Displays the current temperature of the MCR205-1T/1S in Celsius and Fahrenheit.
Power Status	Displays the current power supply status of the MCR205-1T/1S.
Refresh	Refreshes the current Web page screen of the MCR205-1T/1S.

IP Configuration

The IP Configuration includes the DHCP Client, IP Address, Subnet Mask, Gateway and Description. Figure 7 illustrates the IP Configuration screen and the following table describes the IP Configuration menu.

Figure 7: IP Configuration Web page screen



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

DHCP Client	Disable or enable the DHCP Client function of the MCR205-1T/1S, the factory default mode is Disable.
IP Address	Assigns a new IP address for the MCR205-1T/1S, the factory default IP address is 192.168.0.100.
Subnet Mask	Assigns a new subnet mask for the MCR205-1T/1S, the factory default subnet mask is 255.255.255.0.

Gateway	Assigns a new gateway for the MCR205-1T/1S, the factory default gateway is 192.168.0.254.
Description	Input a new description for the MCR205-1T/1S, up to maximum 32 characters allowed.
Apply Button	Press “Apply” button to save current configuration of MCR205-1T/1S.

Note: If you forget the IP subnet address after changing the default value, press the "Reset" button located at the front panel for at least 10 seconds to restore the device to the factory settings.

Password Setting

This function helps administrators to login securely into the Web management menu. Figures 8 & 9 illustrate the Password Setting screen.

Figure 8: Password Setting Web page screen

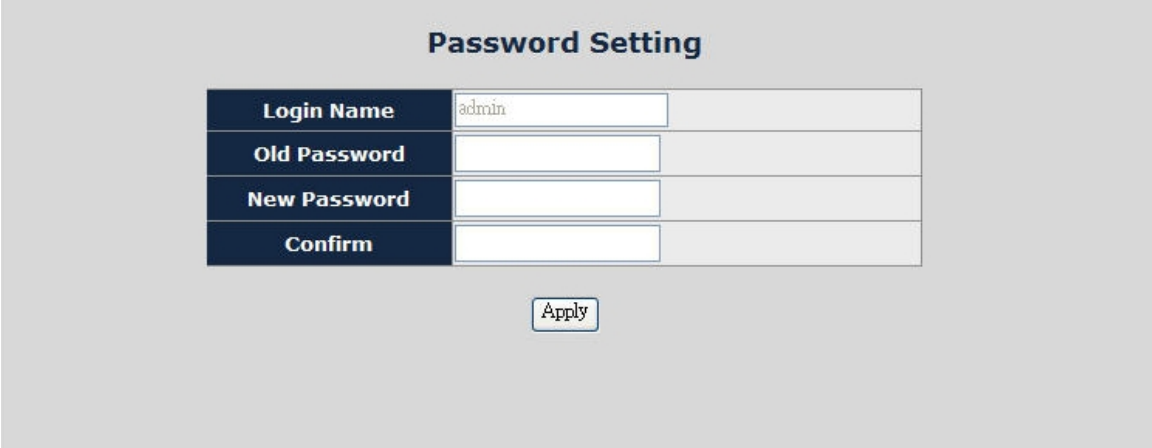
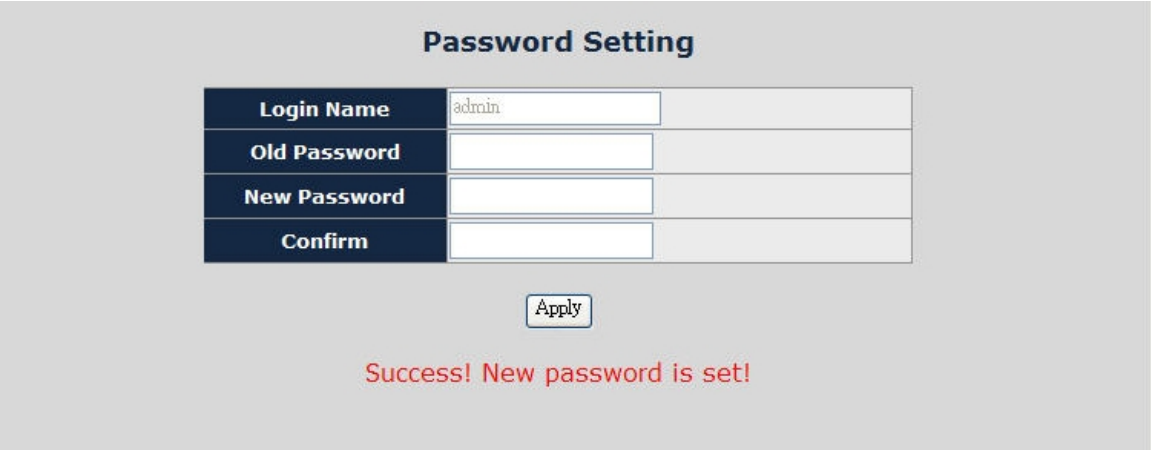


Figure 9: Password Setting Successful Web page screen



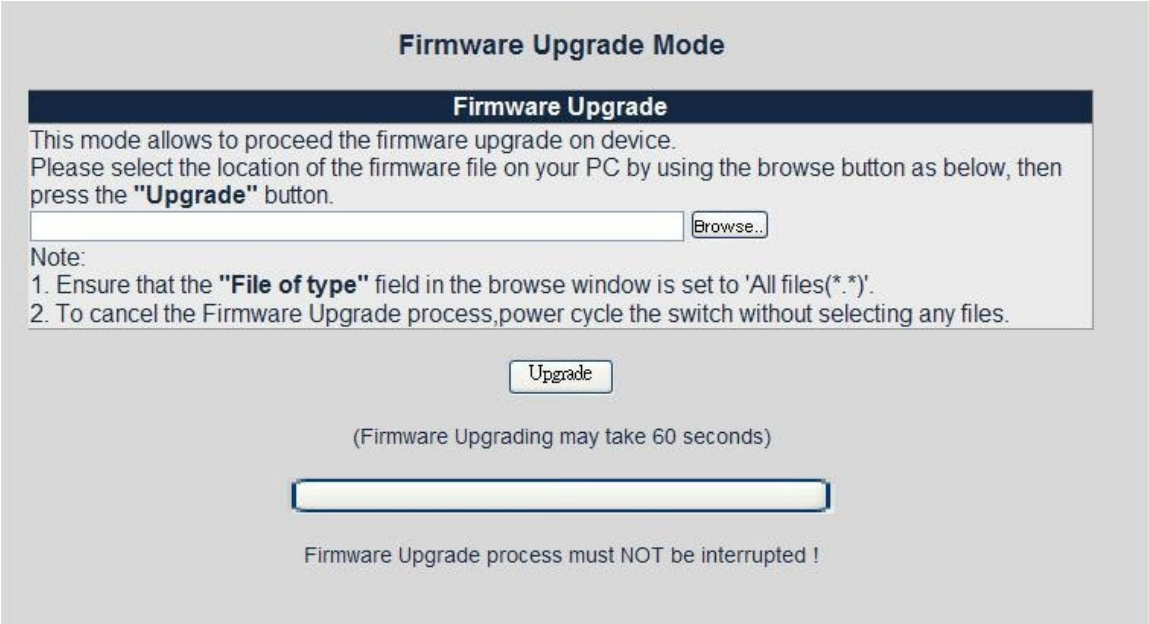
The Password Setting Web page includes the following configurable data:

Login Name	Displays the user name (admin).
Old Password	Old password needs to be entered before entering the new password.
New Password	Specifies the new password. The password characters are not displayed. (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 Password field.
Apply Button	Press the “Apply” button to save the current configuration.

Firmware Upgrade

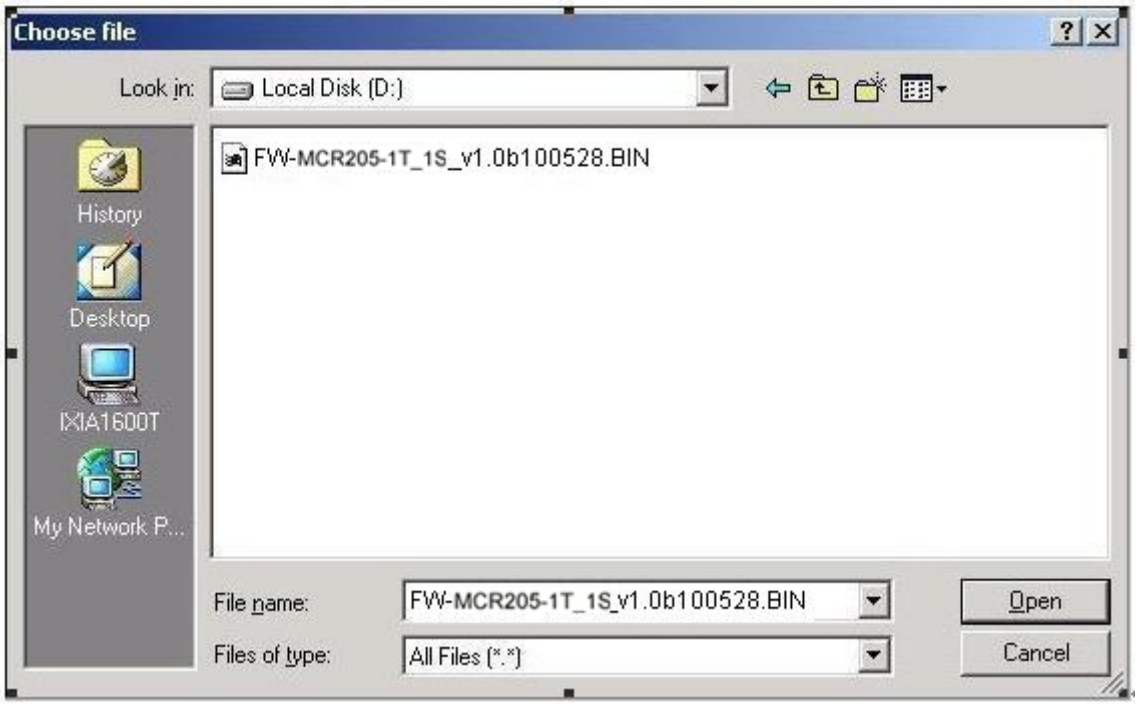
This function is used for the Firmware Upgrade of the MCR205-1T/1S and Figure 10 illustrates the Firmware Upgrade Mode screen.

Figure 10: Firmware Upgrade Web page screen



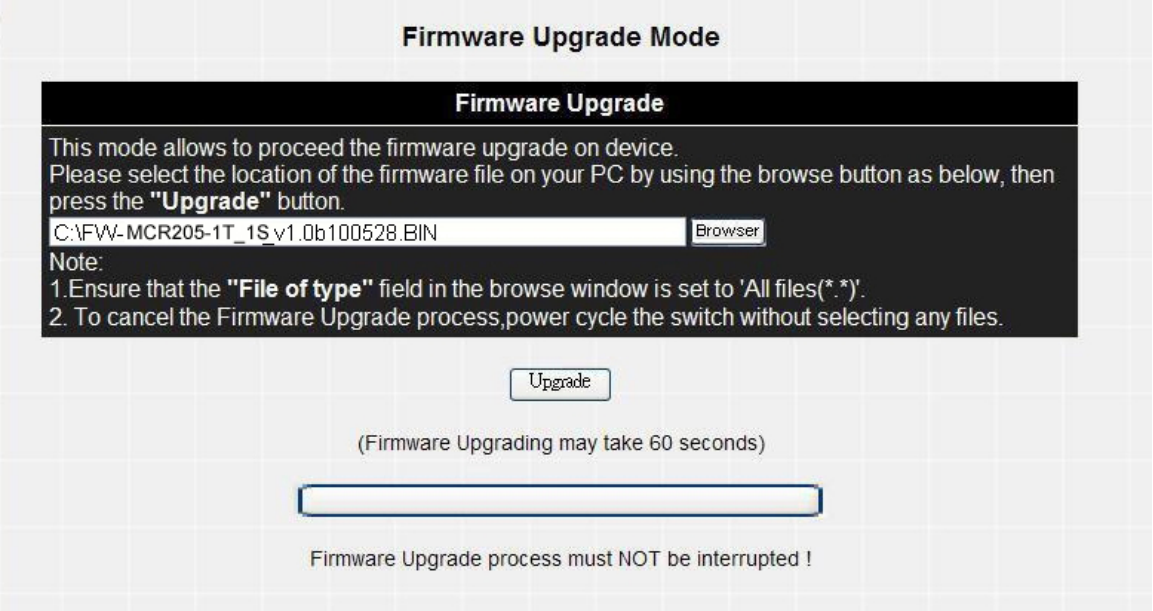
Press “Browse” button to find the firmware location on the administrator PC.

Figure 11: Firmware Upgrade Web page screen



After selecting the correct firmware file on the administrator PC, press the “Upgrade” button to start the firmware upgrade process.

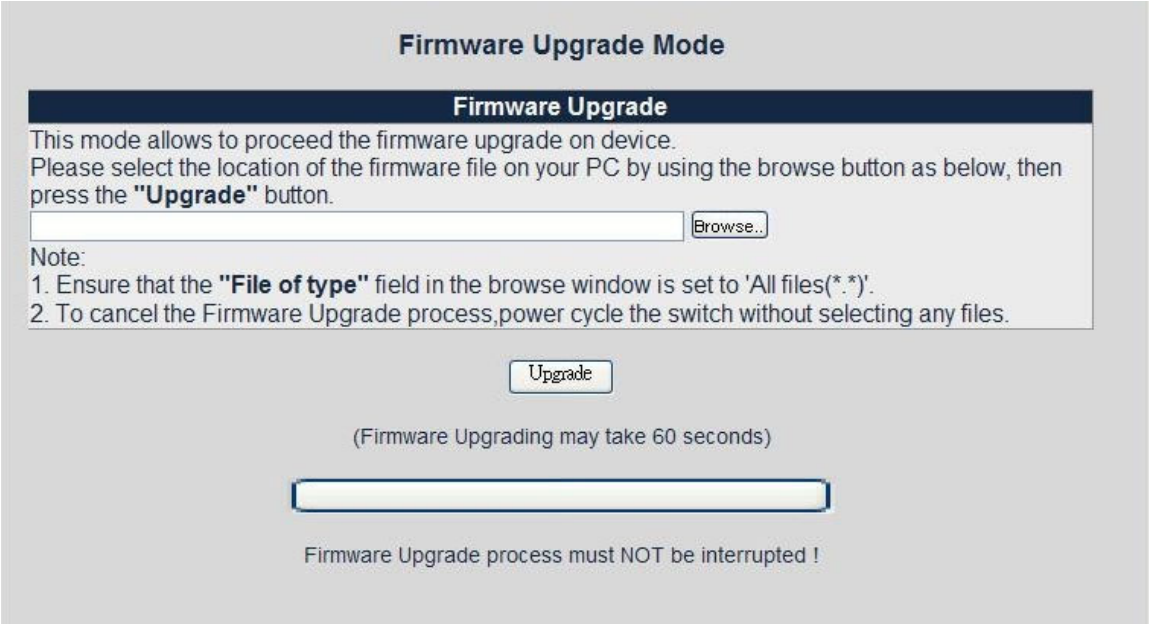
Figure 12: Firmware Upgrade Web page screen



WARNING: Do not power off the MCR205-1T/1S until the update progress is complete.

WARNING: Do not quit the Firmware Upgrade page without pressing the “Upgrade” button - after the image is loaded or the system won’t apply the new firmware. This will require the administrator to repeat the firmware upgrade processes again.

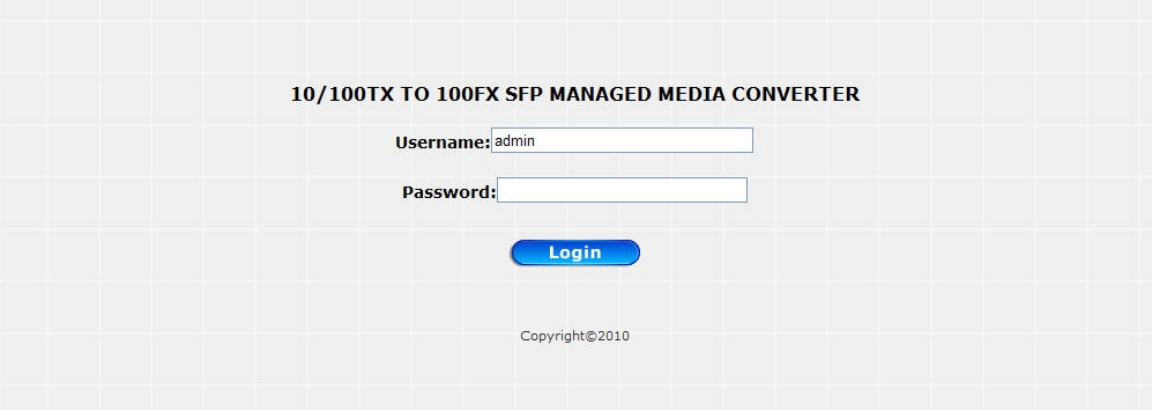
Figure 13: Firmware Upgrade Web page screen



When the firmware upgrade process is completed, a confirmation screen will appear as illustrated in Figure 14. To login to the MC205-1T/1S to load with the latest firmware, click on the "here" link. Figure 15 illustrates the following Login screen.

Figure 14: Firmware Upgrade Web page screen

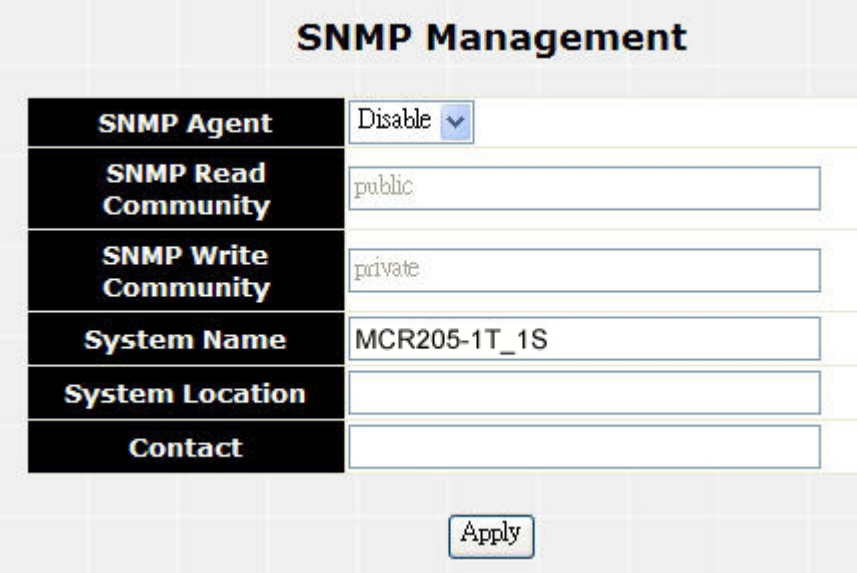
Figure 15: Login Web page screen



SNMP Management

This function provides SNMP Management and SNMP Trap Receiver Configuration function of the MCR205-1T/1S as illustrated in Figures 16 & 17.

Figure 16: SNMP Management Web page screen



The SNMP Management Web page includes the following configurable data:

SNMP Agent	Disable or enable the SNMP Agent function, the default mode is “Disable”.
SNMP Read Community	Input the characters for SNMP Read Community, up to maximum 16 characters.
SNMP Write Community	Input the characters for SNMP Write Community, up to maximum 16 characters.
System Name	Input the characters for System Name, up to maximum 16 characters.
System Location	Input the characters for System Location, up to a maximum 16 characters.
Contact	Input the characters for a Contact person, up to a maximum 16 characters.
Apply Button	Press the “Apply” button to save the latest configuration.

Note: The MCR205-1T/1S supports SNMP v1 / v2c protocols.

Figure 17: SNMP Trap Receiver Configuration Web page screen

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

SNMP Trap		Disable or enable the SNMP Trap function, the default mode is **"Disable".**
SNMP Trap Destination		Input the IP address of SNMP Trap Destination.
Trap Event	**Cold Start**	When MCR205-1T/1S executes Cold Start operation, the administrator PC (SNMP Trap Destination) will receive a Cold Start Trap.
	Warm Start	When MCR205-1T/1S 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 MCR205-1T/1S, 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.
Apply Button		Press **"Apply"** button for save current configuration of MCR205-1T/1S

Factory Default

This function is used to set the MCR205-1T/1S to its factory default settings.

Figure 18: Factory Default Web page screen

Figure 19: Factory Default Web page screen

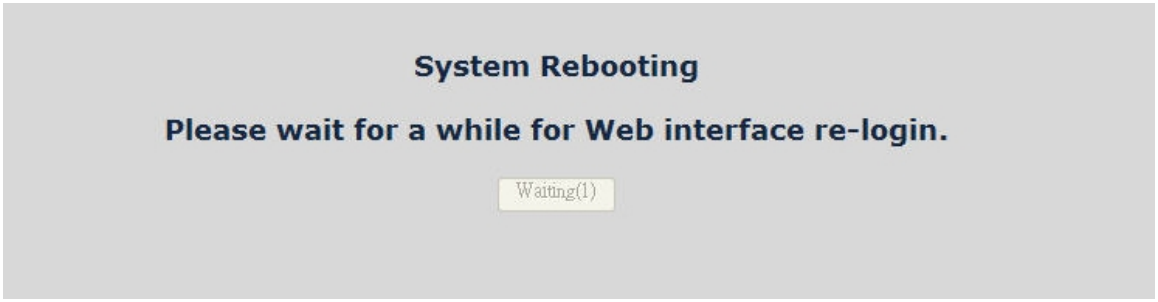
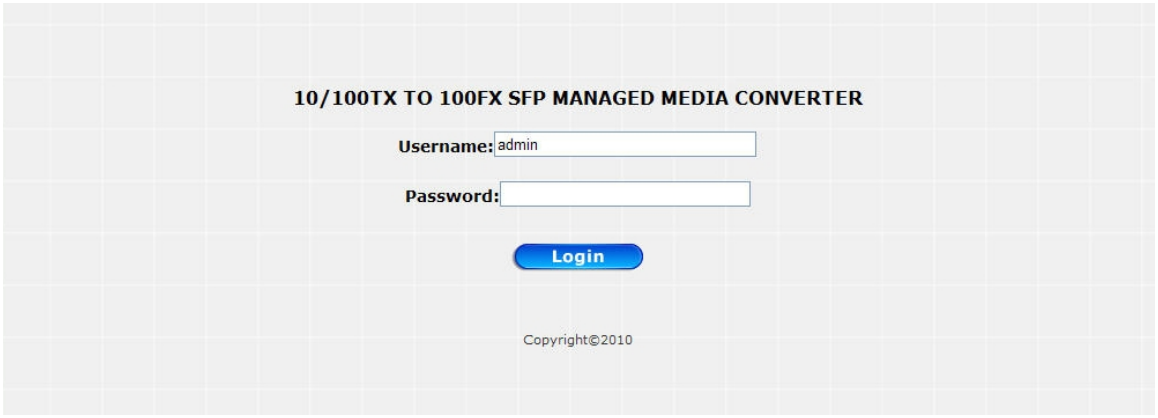


Figure 20: Login Web page screen



System Reboot

This function is used to reboot MCR205-1T/1S media converter.

Figure 21: System Reboot Web page screen

Figure 22: System Reboot Web page screen

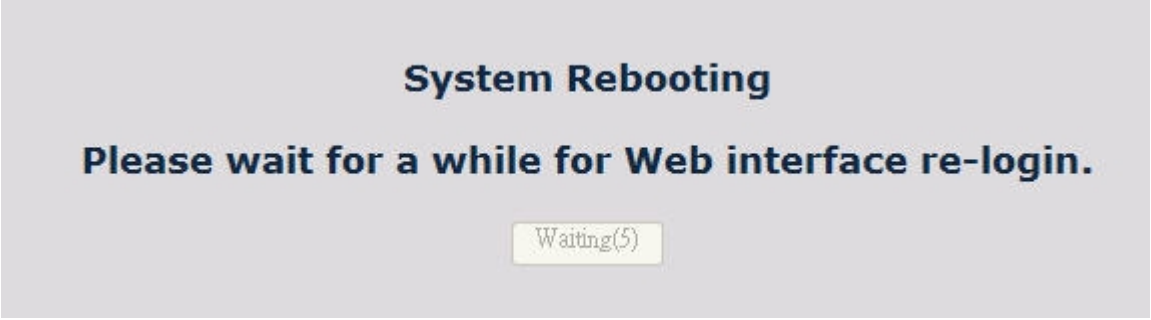
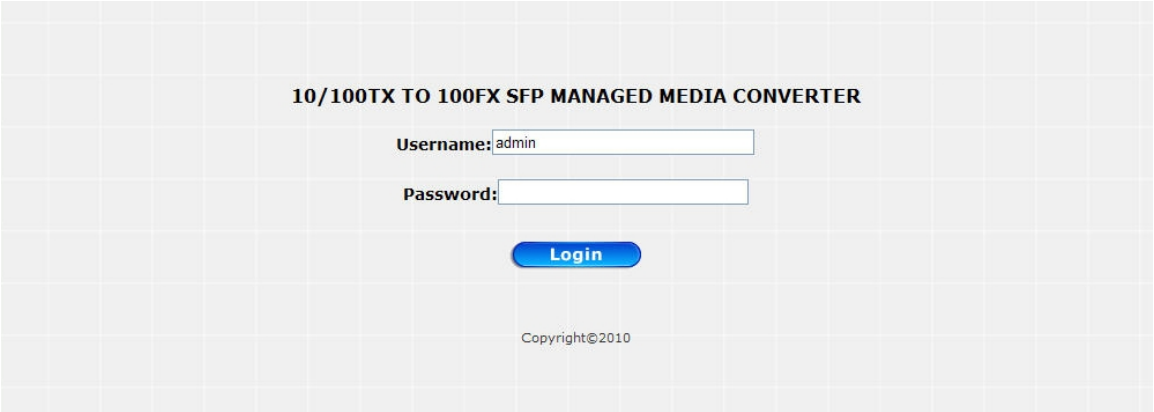


Figure 23: Login Web page screen

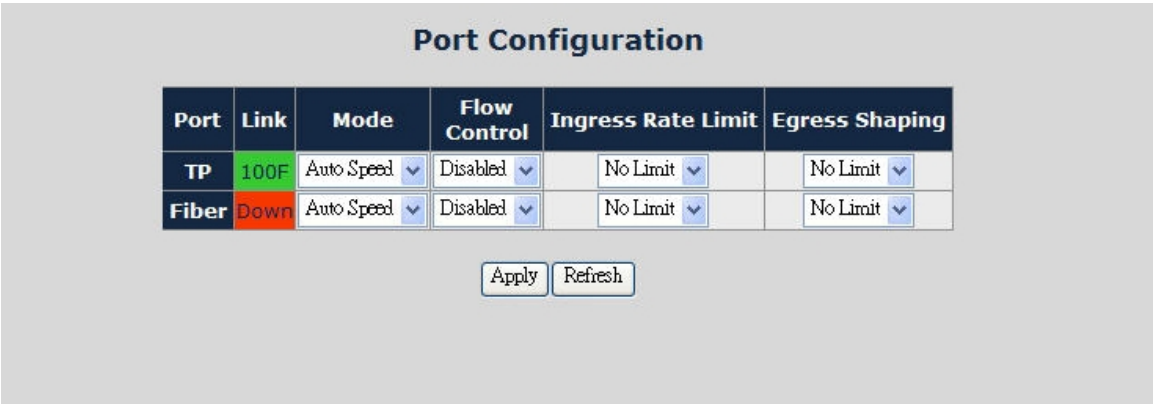


Port Management

Port Configuration

This function allows displaying TP / Fiber port status. The Link Status in the screen displays the current connection speed and duplex mode or, shows a connection issue with a "Down" status indicator highlighted in red. Press the “Refresh” button to renew the screen.

Figure 24: Port Configuration Web Page screen



<table>
<tr><td>Port</td><td>TP port and Fiber port.</td></tr>
<tr><td>Link</td><td>Displays the current connection speed and duplex mode of TP or Fiber port.</td></tr>
<tr><td>Mode</td><td>Allows configuring of the TP or Fiber port speed and operation mode. Use the menu bar to select the mode.

TP Port:
<table><tr><td>• Auto Speed</td><td>Setup Auto negotiation</td></tr><tr><td>• 1000 Full</td><td>Force sets 1000Mbps Full-Duplex mode</td></tr><tr><td>• 100 Full</td><td>Force sets 100Mbps Full-Duplex mode</td></tr><tr><td>• 100 Half</td><td>Force sets 100Mbps Half-Duplex mode</td></tr><tr><td>• 10 Full</td><td>Force sets 10Mbps Full-Duplex mode</td></tr><tr><td>• 10 Half</td><td>Force sets 10Mbps Half-Duplex mode</td></tr></table>Default mode: Auto Speed.

Fiber Port:
<table><tr><td>• Auto Speed</td><td>Setup Auto negotiation</td></tr><tr><td>• 1000 Full</td><td>Force sets 1000Mbps Full-Duplex mode</td></tr></table>Default mode: Auto Speed</td></tr>
<tr><td>Flow Control</td><td>Disable or Enable Flow Control of TP or Fiber port.
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 neither Full-Duplex nor Half-Duplex mode

Default mode: Disable</td></tr>
<tr><td>Ingress Rate Limit</td><td>The value of inbound traffic limitation in kilobit-per-second (kbps). The available options are :
•No Limit
•512K
•1M
•2M
•4M
•8M
•10M
•50M
•100M
•500M
Default mode: No Limit</td></tr>
<tr><td>Egress Shaping</td><td>The value of outbound traffic limitation in kilobit-per-second (kbps). The available options are :
•No Limit
•512K
•1M
•2M
•4M
•8M
•10M
•50M
•100M
•500M
Default mode: No Limit</td></tr>
<tr><td>Apply Button</td><td>Press this button to save current configuration of MCR205-1T/1S.</td></tr>
<tr><td>Refresh Button</td><td>Press “Refresh” button to refresh current status.</td></tr>
</table>

Figure 25: Port Configuration-Ingress Rate Limit Web Page screen

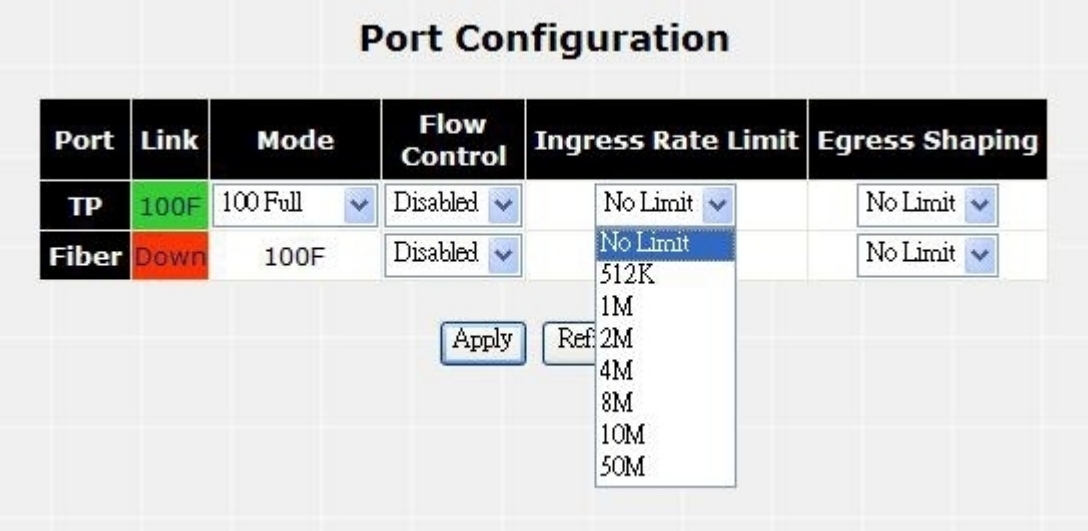
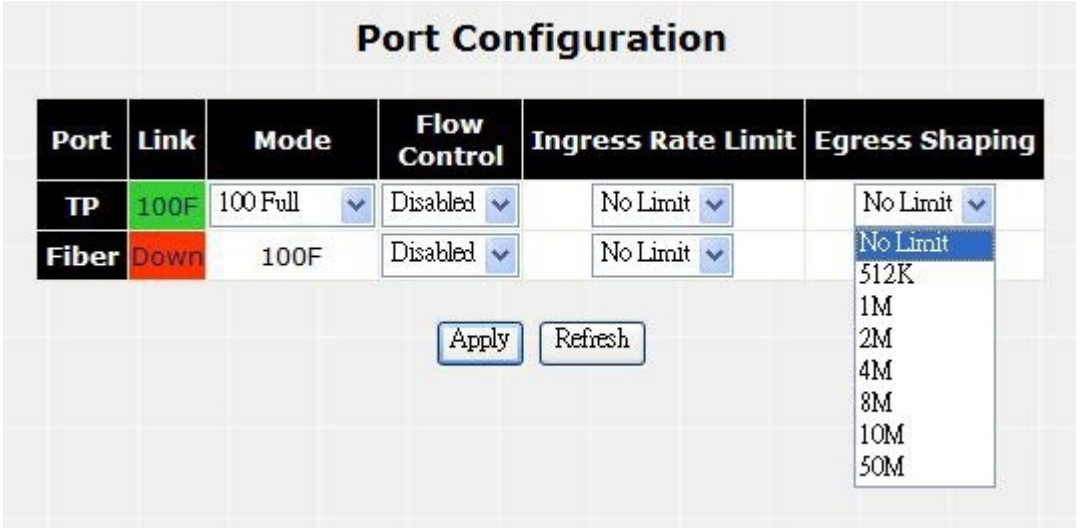


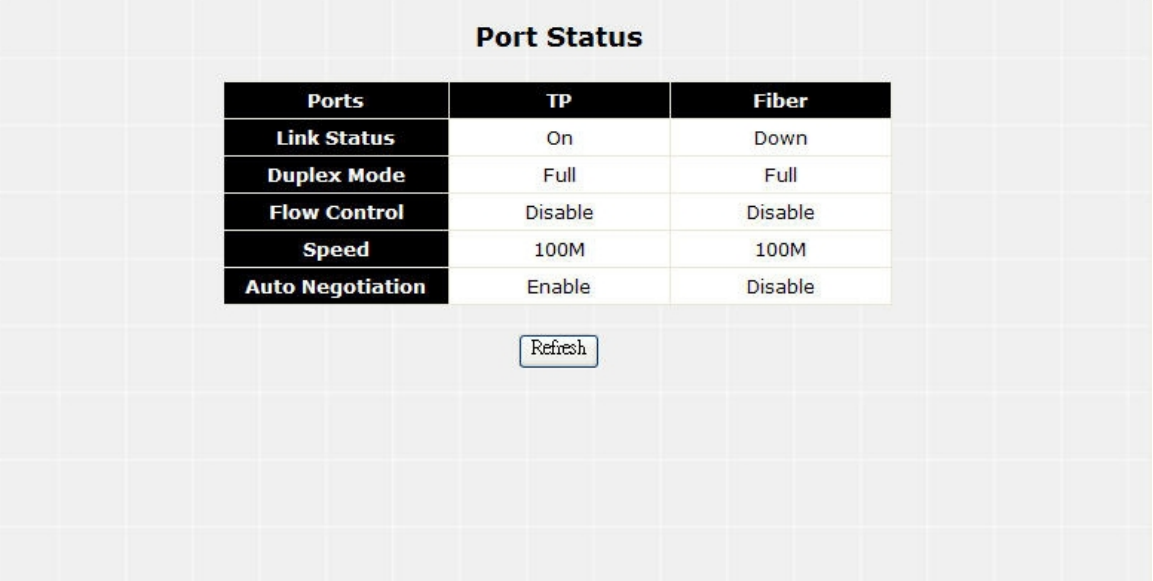
Figure 26: Port Configuration-Egress Shaping Web Page screen



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 information.

Figure 27: Port Status Web Page screen



The Port Status Web page includes the following configurable data:

Port	Indicates 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.

Port Statistics

This function allows displaying TP / Fiber port detail statistics. Press the “Clear” button to clear current counter information, and press the “Refresh” button to renew the screen.

Figure 28: Port Statistics Web Page screen

Port Statistics

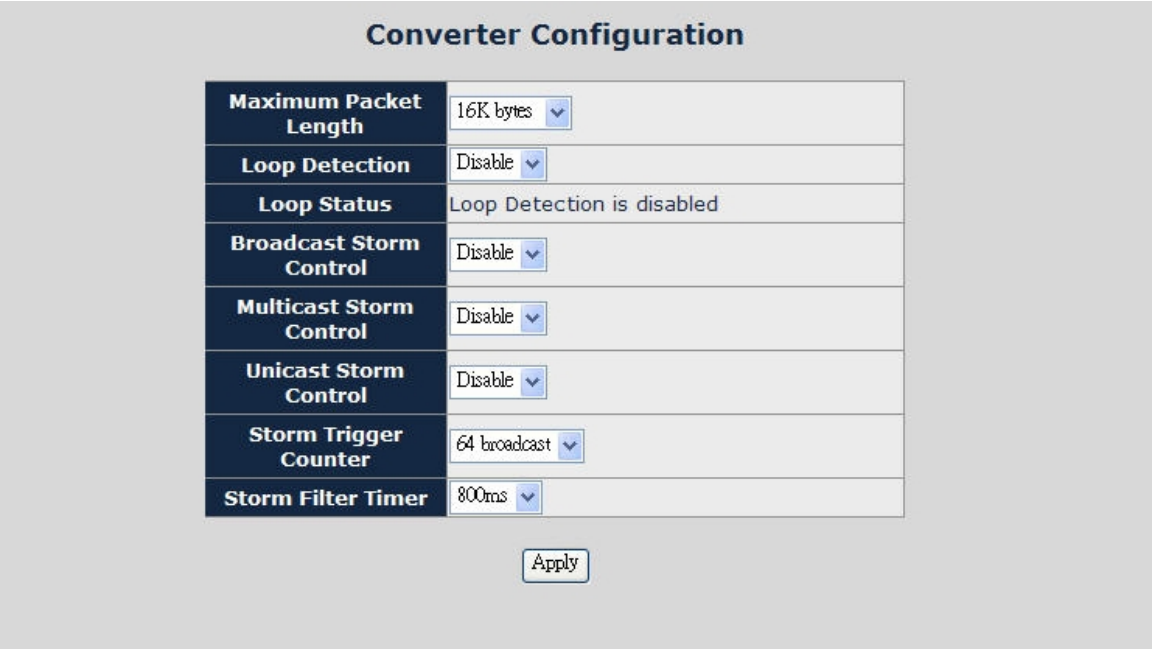
Port	TP	Fiber
ifInUcastPkts	1147	0
UndersizePkts	0	0
Fragments	0	0
Pkts64	63	0
Pkts65to127	1069	0
Pkts128to255	8	0
Pkts256to511	15	0
Pkts512to1023	1	0
Pkts1024to1518	0	0
OversizePkts	0	0
Jabbers	0	0
MulticastPkts	0	0
BroadcastPkts	9	0
DropEvents	0	0
PortInDiscards	0	0
FCSErrors	0	0
SymbolErrors	0	0
DropEvents	0	0
PortInDiscards	0	0
FCSErrors	0	0
SymbolErrors	0	0
UnkownOpcodes	0	0
InPauseFrames	0	0
ifOutUcast	76	0
ifOutMulticast	0	0
ifOutBroadcast	5	0
SingleColli	0	0
MultiColli	0	0
DeferTrans	0	0
LateColli	0	0
ExcessColli	0	0
OutPauseFrames	0	0
StatusColli	0	0

Clear Refresh

MCR205-1T/1S Configuration

This function provides various settings for the MCR205-1T/1S including Maximum Packet length, Loop detection, storm control, etc.

Figure 29: Converter Configuration Web Page screen



The Converter Configuration Web page includes the following configurable data:

Maximum Packet Length	Provides maximum packet length setting for the MCR205-1T/1S, the available options are 1518 bytes, 2048 bytes and 16K bytes. Default mode is 16K bytes.
Loop Detection	Disable or enable the Loop detection function. Default mode is Disable.
Loop Status	Displays the Loop Detection status.
Broadcast Storm Control	Disable or enable the Broadcast Storm Control function. Default mode is Disable.
Multicast Storm Control	Disable or enable the Multicast Storm Control function. Default mode is Disable.
Unicast Storm Control	Disable or enable the Unicast Storm Control function. Default mode is Disable.

Storm Trigger Counter	Storm Trigger Counter setting and the available options are: 64 broadcast 32 broadcast 16 broadcast 8 broadcast Default mode is 64 broadcast.
Storm Filter Timer	Storm Filter Timer setting and the available options are: 800ms 400ms 200ms 100ms Default mode is 800ms.
Apply Button	Press this button to save current configuration.

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 of reconnecting a group of network devices to another Layer 2 switch. However, all the network devices are still plugged into the same switch physically.

The MCR205-1T/1S 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) VLAN are implemented on the MCR205-1T/1S. 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.

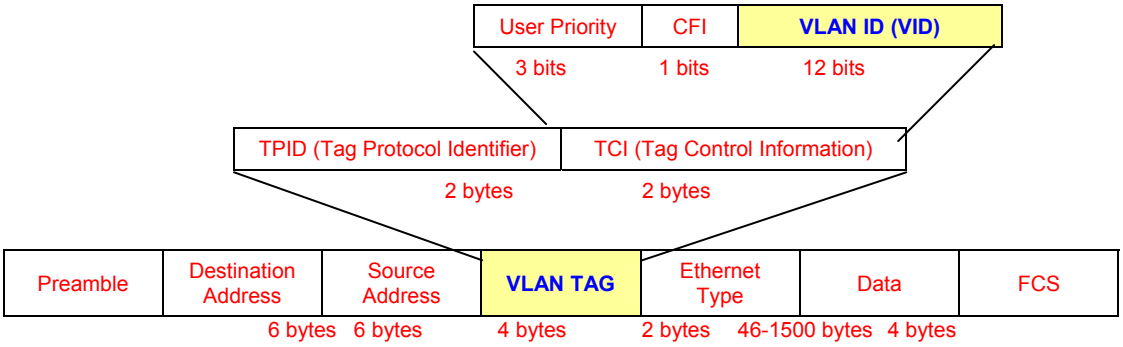
Untag - The act of stripping 802.1Q VLAN information out of the packet header.

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.

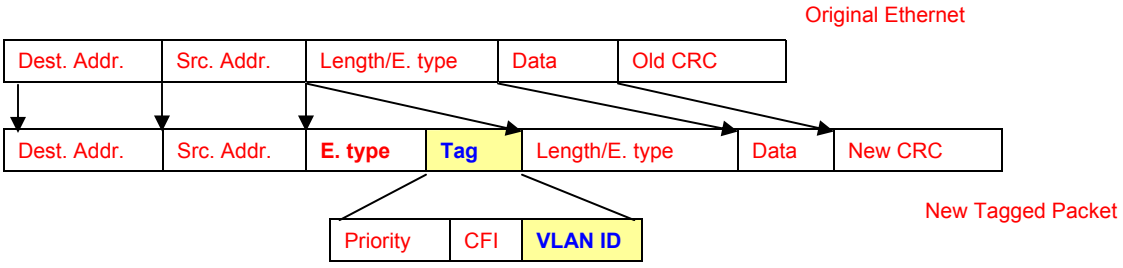
The tag is inserted into the packet header making the entire packet longer by 4 octets. All of the information originally contained in the packet is retained.

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 use within the switch. If no VLAN are 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 are 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.

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 are 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

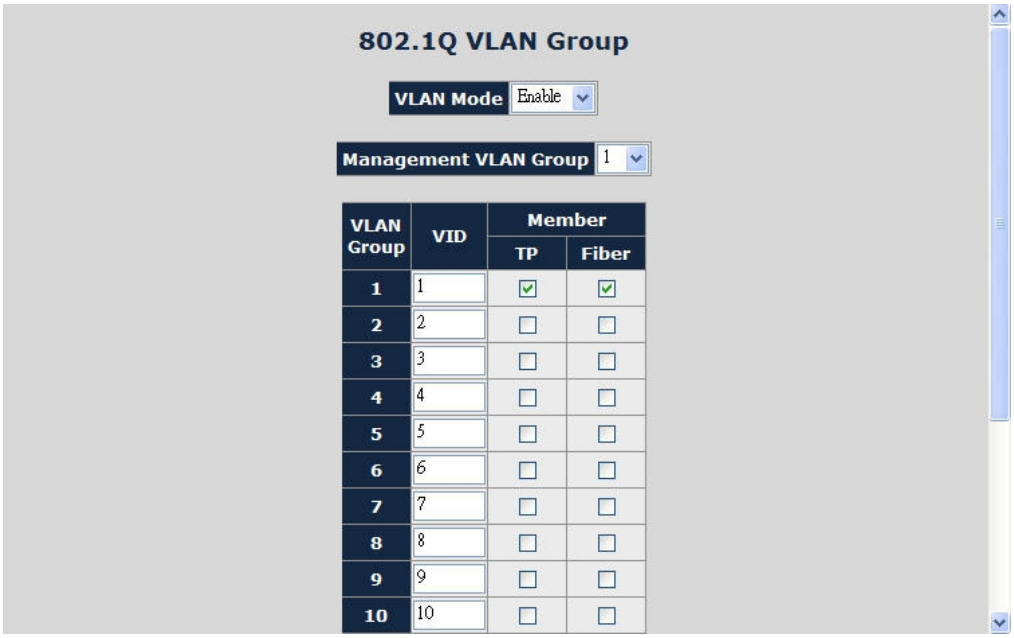
The MCR205-1T/1S initially configures one VLAN, VID = 1, called "default." The factory default setting assigns all ports on the MCR205-1T/1S to the "default". As new VLAN are configured in Port-based mode, their respective member ports are removed from the "default."

VLAN Group

This function disables or enables the IEEE 802.1Q VLAN operation mode. Press the “Apply” button to save the latest configuration of MCR205-1T/1S.

Figure 30: VLAN Group Web Page screen

Figure 31: VLAN Group Web Page screen



The VLAN Group Web page includes the following configurable data:

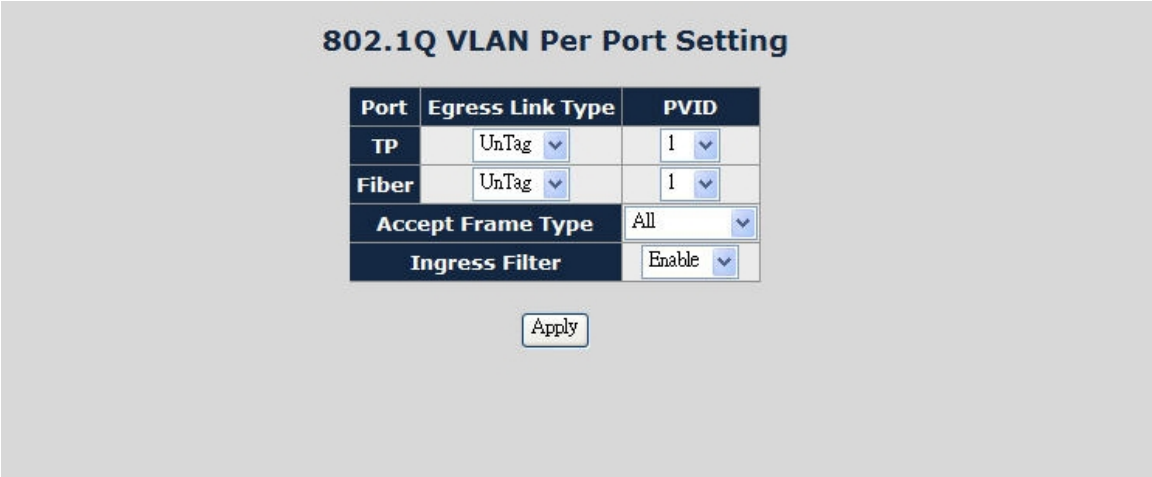
VLAN Mode		Disable or enable the IEEE 802.1Q VLAN operation mode. Default mode is **Disable**.
Management VLAN Group		Define the Management VLAN group. Default mode is **VLAN1**.
VLAN Group		Indicates the VLAN Group from 1 to 16.
VID		Define the VLAN Group ID and the available options are **1 to 4094**.
Member	**TP**	Assign TP port into VLAN Groups.
	Fiber	Assign Fiber port into VLAN Groups.
Apply Button		Press this button to save current configuration of MCR205-1T/1S.

Note: When changing the Management VLAN Group settings, please make sure that the TP or fiber port that connects to the administrator PC is in the same VLAN Group, otherwise, connection will be lost making the further management impossible until the unit is reset to factory defaults by pressing the reset button for 10 seconds.

VLAN Per Port Setting

This function provides IEEE 802.1Q VLAN per port setting for TP and Fiber port of MCR205-1T/1S. Press the “Apply” button to save the current configuration of MCR205-1T/1S.

Figure 32: VLAN Per Port Setting Web Page screen



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

Port	TP port and Fiber port.
Egress Link Type	Egress Link Type options for TP port and Fiber port, the available options are: • **UnTag** • **Tag** • **ByPass** Default mode is **UnTag**.
PVID	PVID assignment for TP port and Fiber port, the available options are 1 to 4094. Default mode is **1 to 16**.
Accept Frame Type	Define the Accept Frame Type and the available options are • **All** • **Tagged Only** Default mode is **All**.

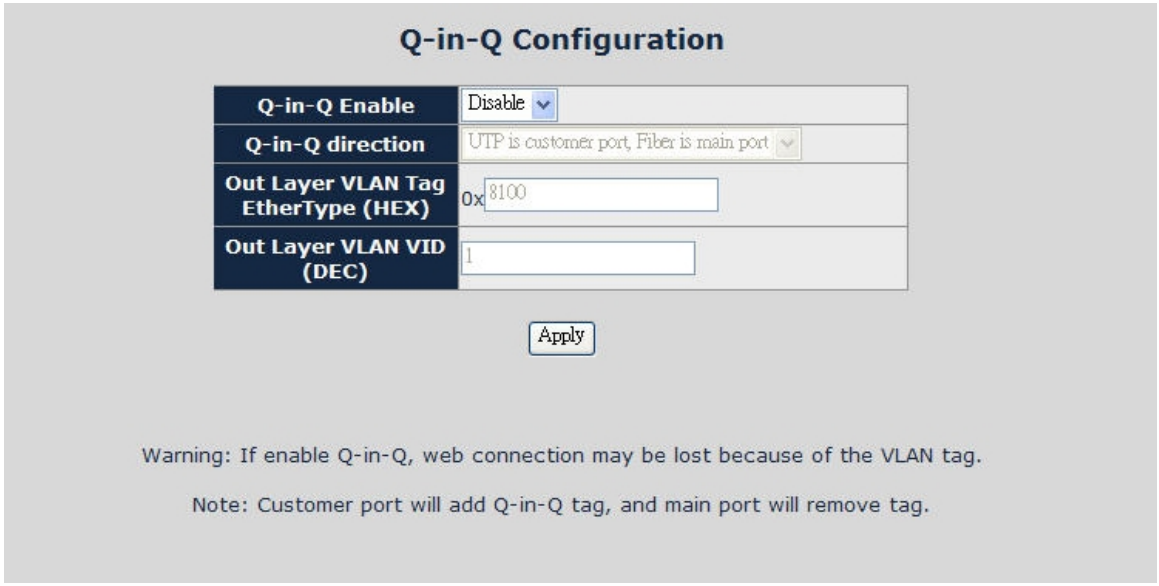
Ingress Filter	Disable or enable the Ingress Filter function. Default mode is **Enable**.
Apply Button	Press this button to save current configuration of MCR205-1T/1S.

Q-in-Q VLAN Setting

When enabling Q-in-Q function, MCR205-1T/1S can insert or remove 4-bytes Q-in-Q tag in the received 802.3 frames after SA. Q-in-Q tag is a user defined value. And as the default condition, Q-in-Q tag format is same as VLAN tag. On a regular application, enable two port's Q-in-Q function. UTP Port set to insert Q-in-Q tag and Fiber port set to remove Q-in-Q Tag. For an aggregation layer switch, it will check Q-in-Q tag only, and ignore 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 MCR205-1T/1S. Press the "Apply" button to save the latest configuration.

Figure 33: Q-in-Q VLAN setting Web Page screen



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

Q-in-Q Enable	Disable or enable the Q-in-Q VLAN function. Default mode is **Disable**.
Q-in-Q Direction	Provides 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** Default mode is **UTP is customer port, Fiber is main port**.
Out Layer VLAN Tag EtherType (HEX)	Defines the Out Layer VLAN Tag Ether Type and default mode is **0x8100**.
Out Layer VLAN VID (DEC)	Defines the Out Layer VLAN VID and default mode is **1**.
Apply Button	Press this button to save current configuration of MCR205-1T/1S.

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.

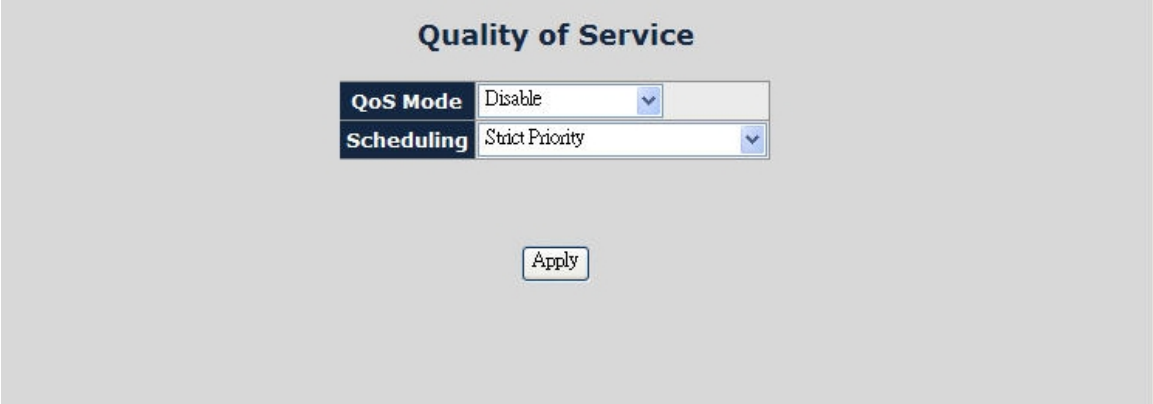
QoS reduces bandwidth limitations, delay, loss, and jitter. It also provides increased reliability for delivery of data and allows you prioritization of certain applications across the network. You can define exactly how you want the switch to treat selected applications and types of traffic.

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 MCR205-1T/1S. Press the “Apply” button to save the current configuration.

Figure 34: Quality of Service Web Page screen



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

QoS Mode	Provides 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 35. **IP Address Priority** The IP Address Priority field as show in Figure 36. **IP DSCP Priority** The IP DSCP Priority field as show in Figure 37. Default mode is **Disable**.
Scheduling	Provides two scheduling methods for Quality of Service, the available options are: **Strict Priority** **Weighted Round Robin (16:8:4:1)** Default mode is **Strict Priority**.
Apply Button	Press this button to save current configuration of MCR205-1T/1S.

Figure 35: 802.1p Tag Priority Web Page screen

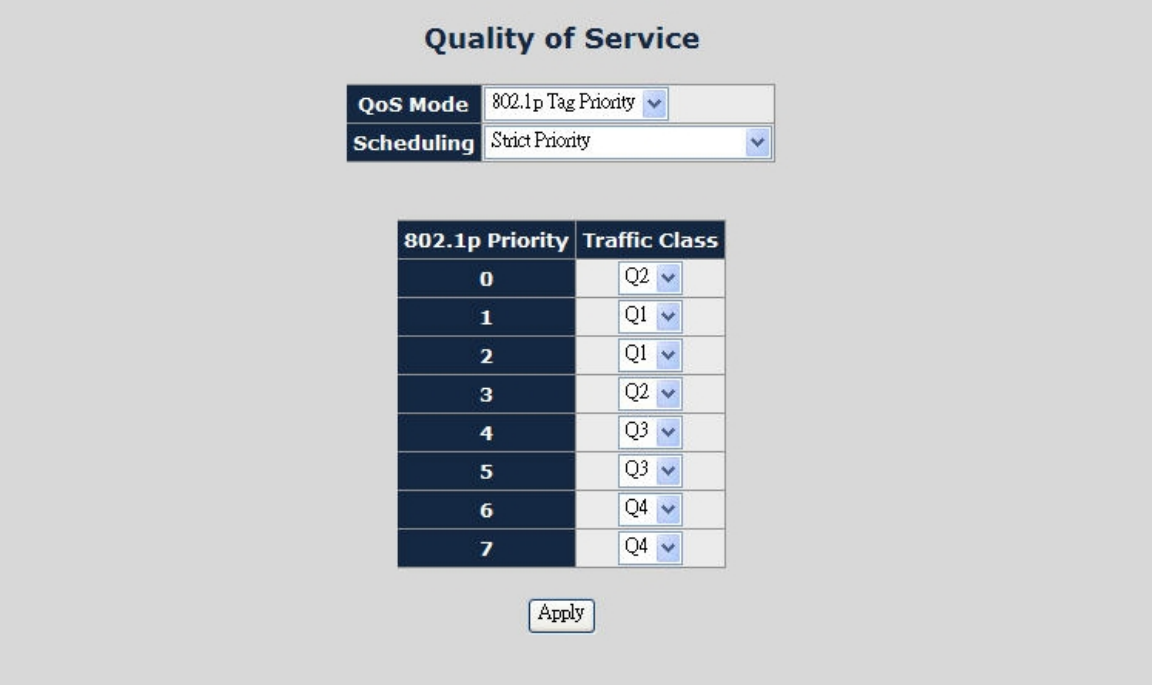


Figure 36: IP Address Priority Web Page screen

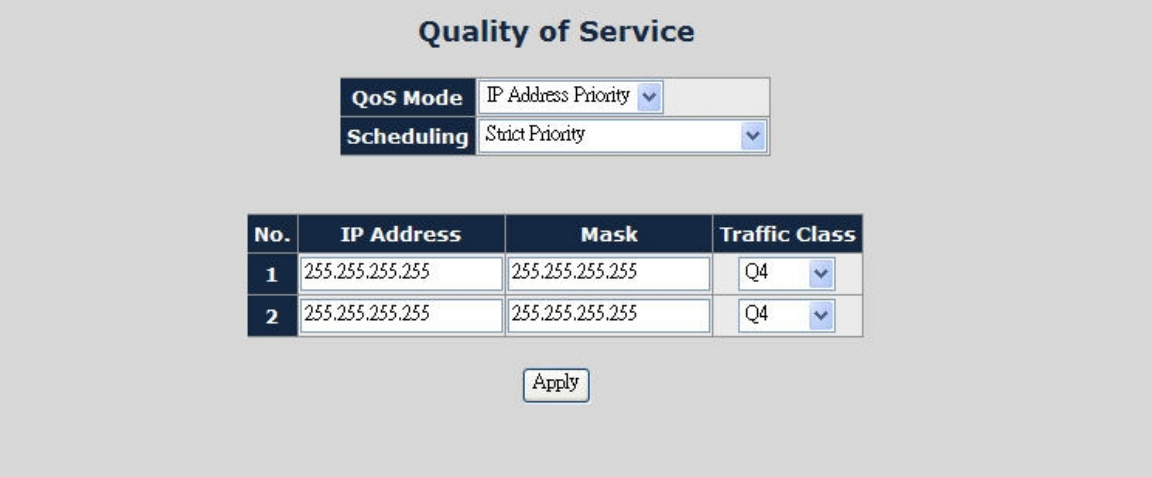
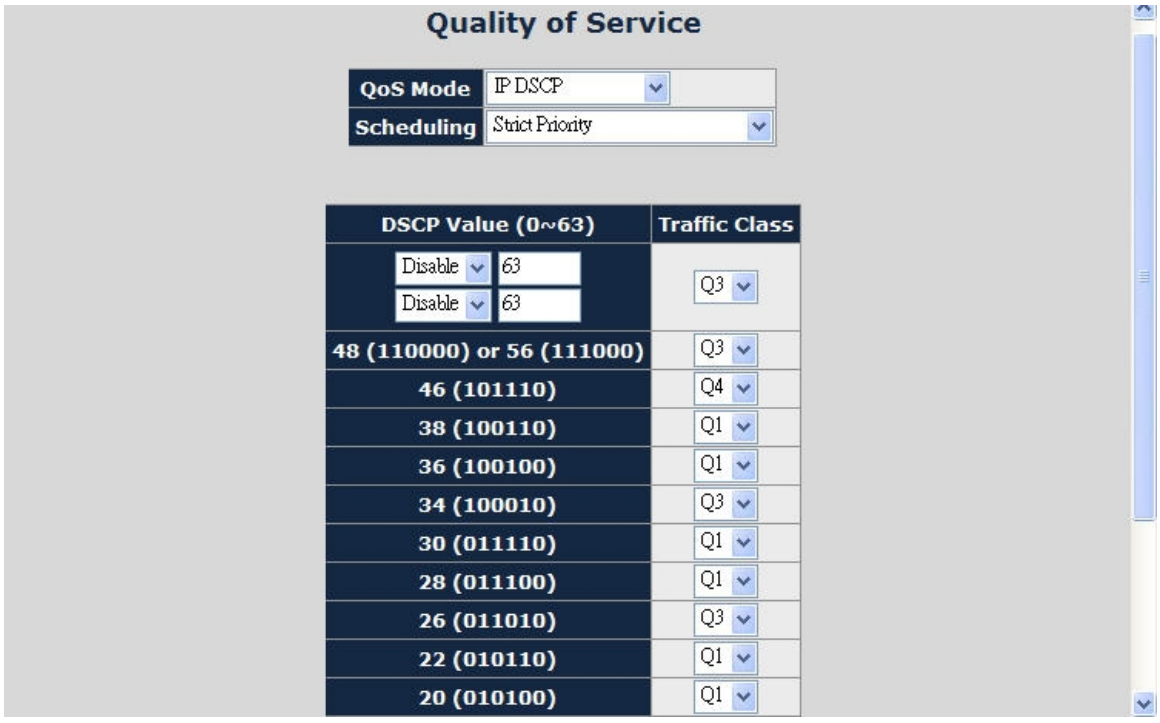


Figure 37: IP DSCP Priority Web Page screen



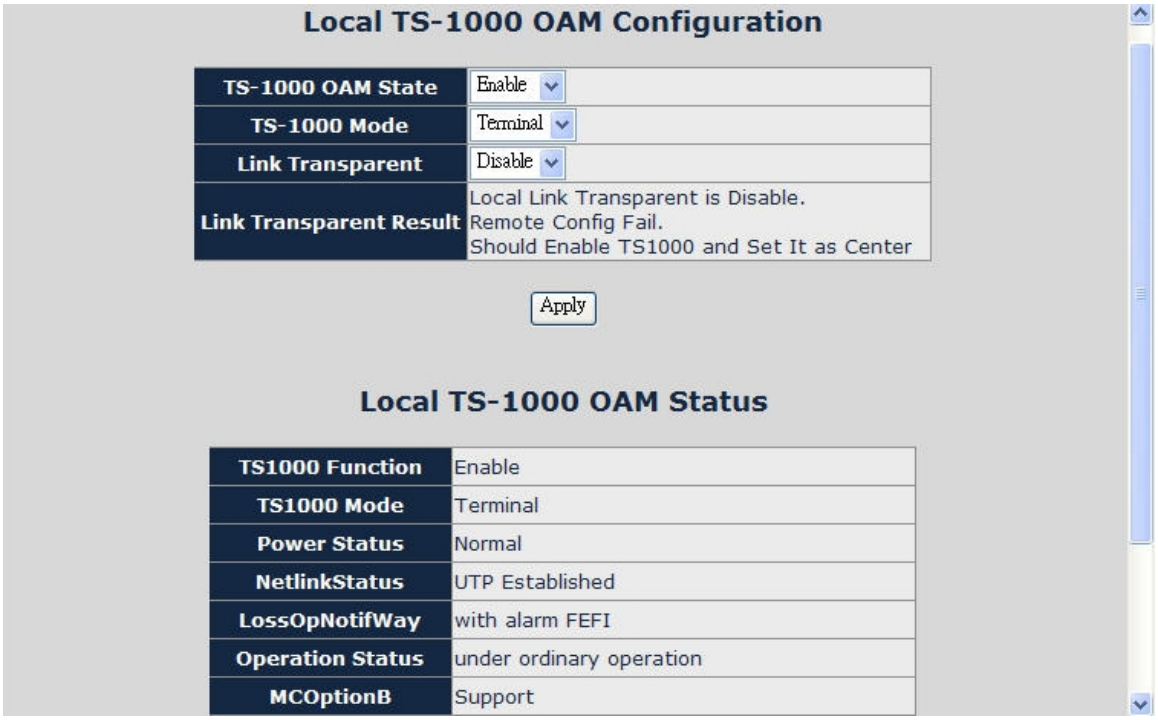
Note: DSCP Value has two input settings areas. The default DSCP value is 63, and these fields are both for the customized DSCP value.

OAM Setup

Local TS-1000 OAM Setup

This function provides Local TS-1000 OAM Setup of MCR205-1T/1S. Press the “Apply” button to save the latest configuration of MCR205-1T/1S.

Figure 38: Local TS-1000 OAM Setup Web Page screen



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

TS-1000 OAM State	Disable or enable the TS-1000 OAM operation mode. Default mode is **Disable**.
TS-1000 Mode	Provides two TS-1000 modes for operation, the available options are: **Terminal** **Center** Default mode is **Terminal**.
Link Transparent	Disable or enable the Link Transparent function. Default mode is **Disable**.
Link Transparent Result	Displays the link transparent result.
Apply Button	Press this button to save current configuration of MCR205-1T/1S.

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 automatic 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 the terminal Media Converter.

2. Terminal Media Converter receives the status notification request frame and sends out status response frame, which carries its current status.

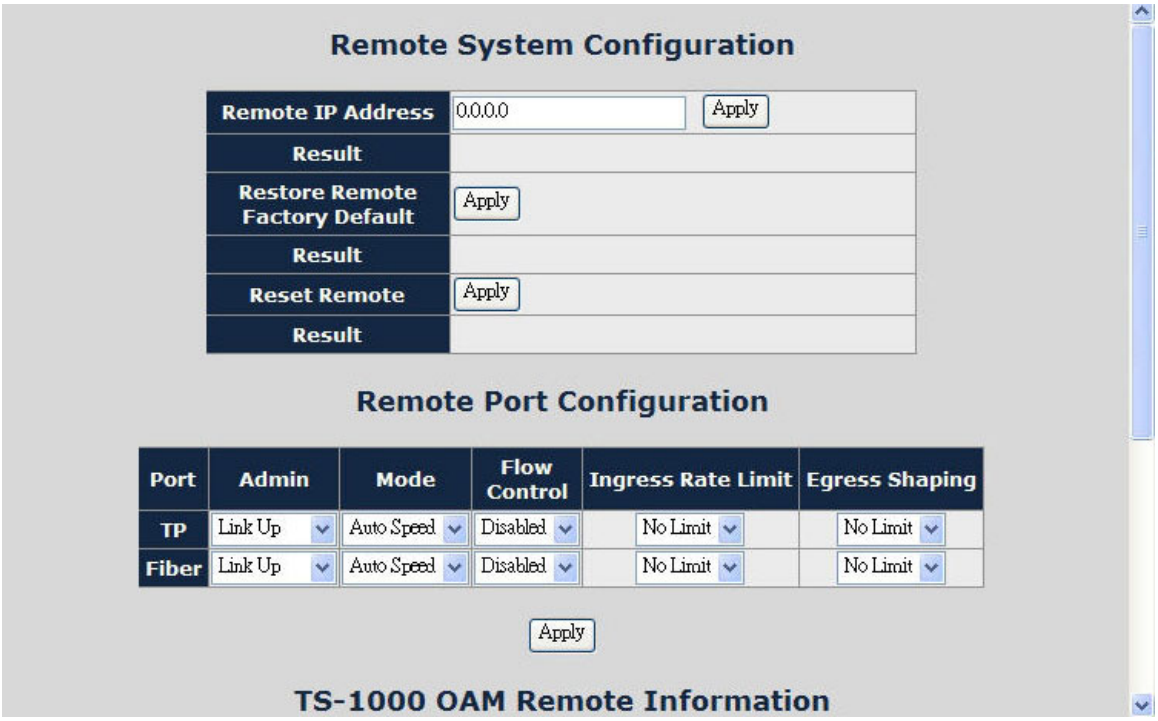
Autonomous notification

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 supporting 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 theMCR205-1T/1S. Press the “Apply” button to save the latest configuration of MCR205-1T/1S.

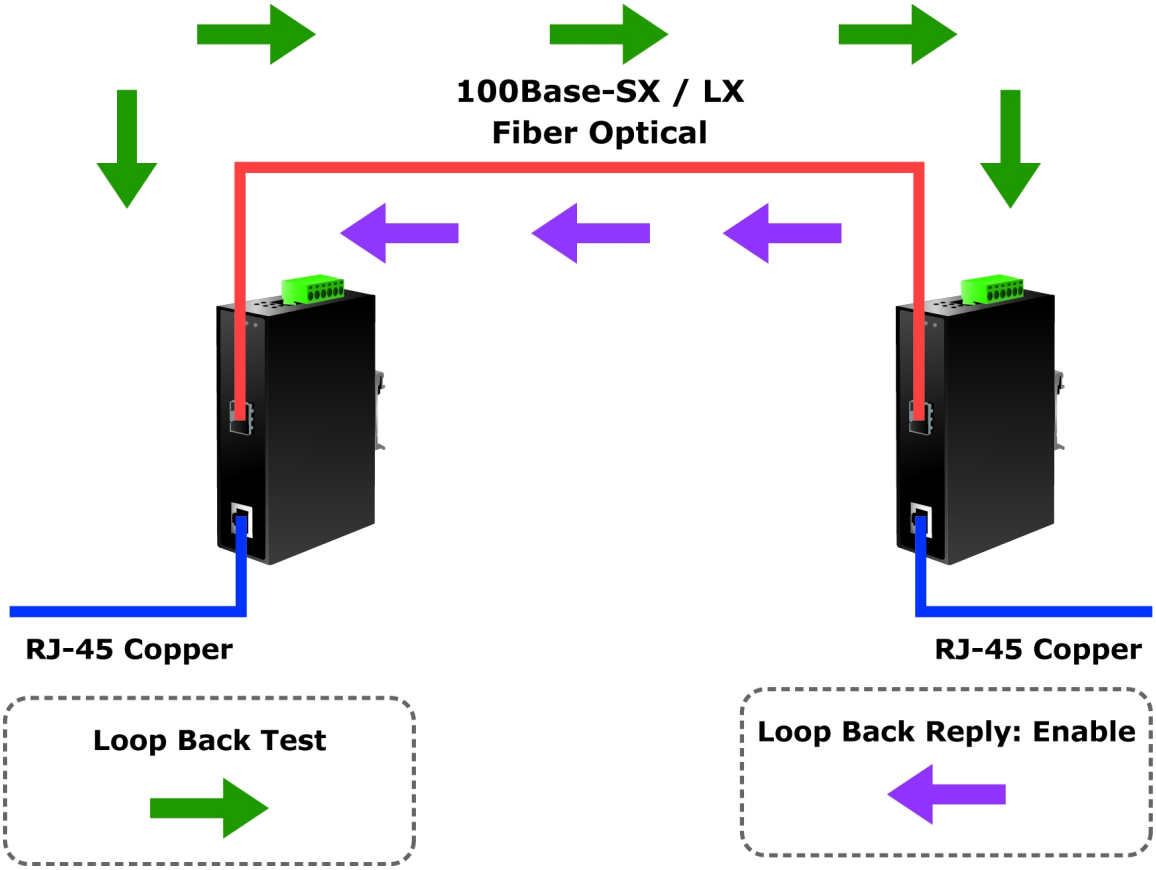
Figure 39: MCR205-1T/1S Remote TS-1000 OAM Setup Web Page screen



Note: Please use the MCR205-1T/1S as the Remote device.

TS-1000 Loop Back Test

The TS-1000 Loop Back Test allows to run this loop back test manually to check the interconnection between two MCR205-1T/1S devices.



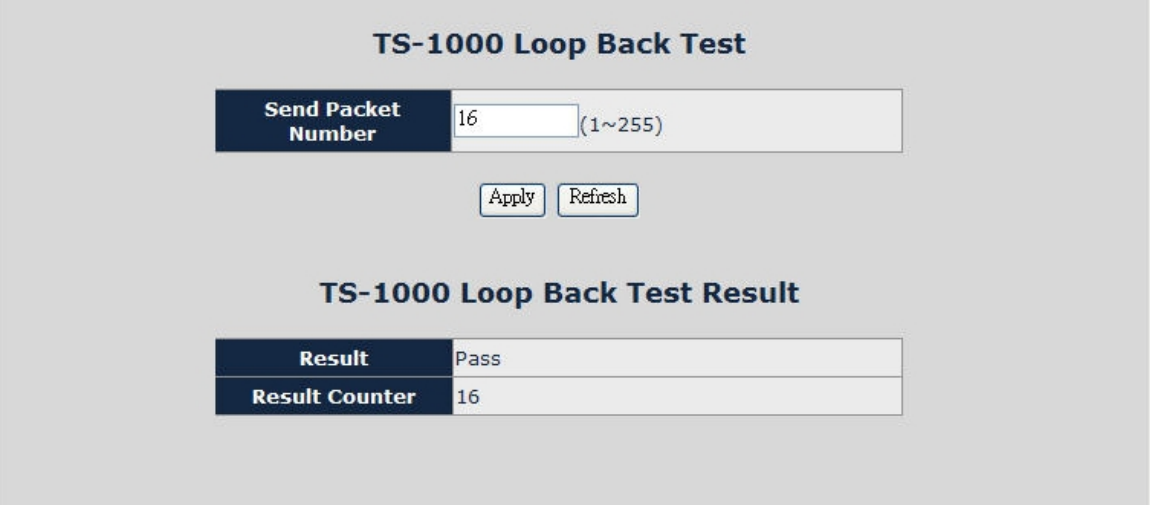
In-band and out-band Loop back

1. Notifies center Media Converter to issue an OAM frame to request a loop back test. Terminal begins returning OAM frames as response to the Media Converter.
2. Terminal Media Converter runs at loop back mode.
3. Central Media Converter sends test frame and terminal Media Converter loop back the frames. Test frames can be generated from central MCR205-1T/1S's UTP port (Out-Band) or from central MCR205-1T/1S (In-Band) automatically.
4. Center the MCR205-1T/1S to check the loop back test result after sending all the test frames.
5. Instruct the central MCR205-1T/1S to end loop back test.

This function provides TS-1000 Loop Back Test of MCR205-1T/1S. Press the "Apply" button to run Loop Back Test and see the TS-1000 Loop Back Test

Result of MCR205-1T/1S, also press the “Refresh” button to renew the Web screen.

Figure 40: 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	Input the number for packet send and the available options is 1 to 255. Default is 16.
Apply Button	Press this button to save the latest configuration of the MCR205-1T/1S.
Refresh Button	Press “Refresh” button to refresh current status.
TS-1000 Loop Back Test Result	
Result	Displays the TS-1000 Loop Back Test Result. Fail or Pass.
Result counter	Displays the value of Counter Result.

Note: Please use the IFS MCR205-1T/1S as the Remote device.

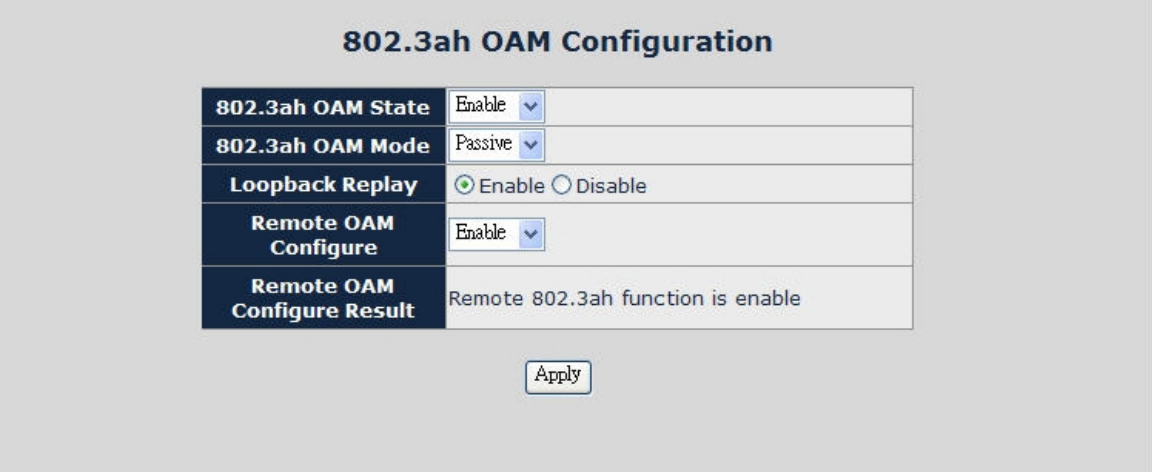
802.3ah Setup

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

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

This function provides 802.3ah Setup of the MCR205-1T/1S. Press the "Apply" button to save the current configuration of the MCR205-1T/1S.

Figure 41: 802.3ah Setup Web Page screen



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

802.3ah OAM State	Disable or enable the 802.3ah OAM State function. Default mode is Enable.
802.3ah OAM Mode	Choose "Active" or "Passive" for 802.3ah OAM Mode. Default mode is Passive.
Loopback Reply	Disable or enable the Loopback Reply function. Default mode is Enable.
Remote OAM Configure	Disable or enable the Remote OAM Configure function. Default mode is Enable.

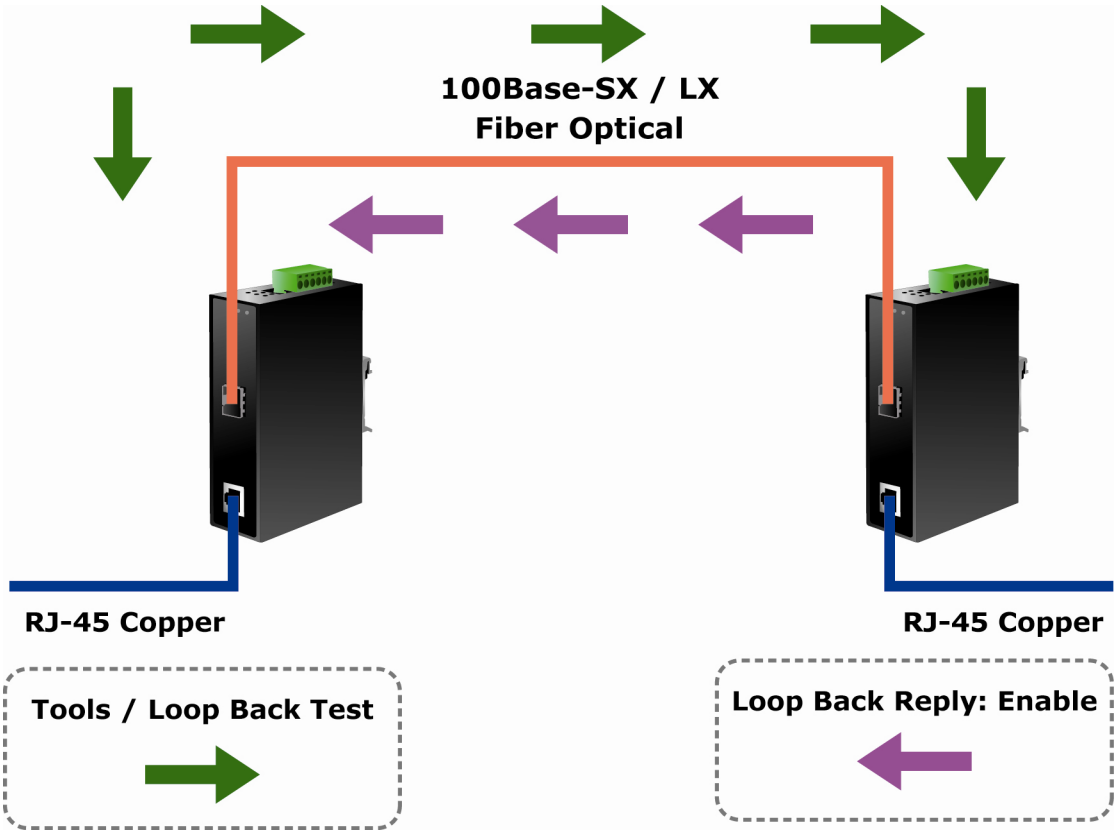
Remote OAM Configuration Result	Displays the Remote OAM Configuration Result.
Apply Button	Press this button to save the latest configuration of MCR205-1T/1S.

Note: The 802.3ah function requires a managed device that also supports 802.3ah function.

Please use the MCR205-1T/1S as the Remote device.

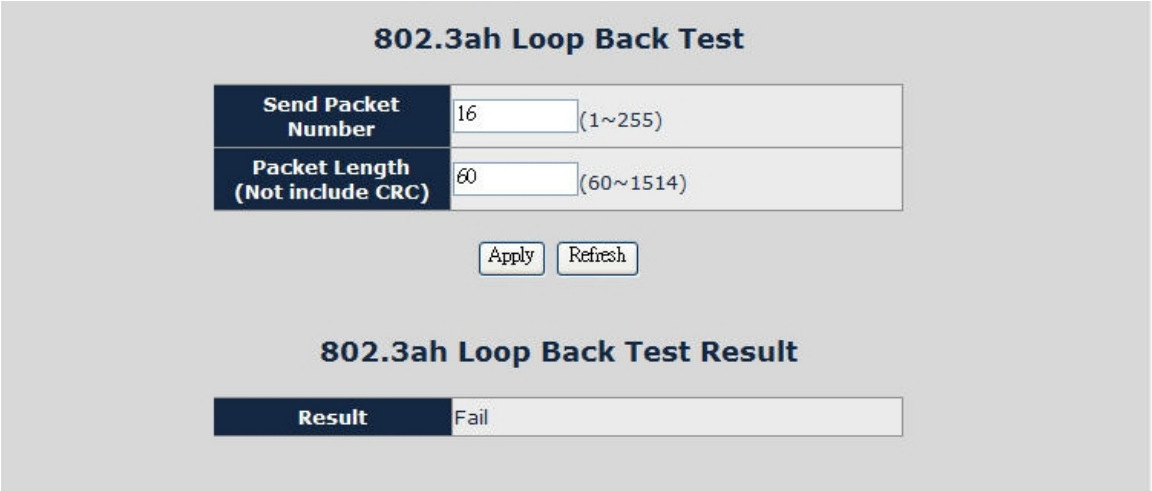
802.3ah Loop Back Test

The 802.3ah Loop Back Test allows to manually run this loop back test to check the interconnection between two MCR205-1T/1S devices. To assure the Remote 802.3ah function can work correctly.



This function provides 802.3ah Loop Back Test of the MCR205-1T/1S. To run the 802.3ah Loop Back Test, press the "Apply" button and then "Refresh" button to renew the screen.

Figure 42: 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	Input the number for packet send and the available options is 1 to 255. Default is 16.
Packet Length (Not include CRC)	Input the number for Packet Length and the available options is 60 to 1514. Default is 60.
Apply Button	Press this button for save current configuration of MCR205-1T/1S.
Refresh Button	Press “Refresh” button to refresh current status.
802.3ah Loop Back Test Result	
Result	Displays the 802.3ah Loop Back Test Result. Fail or Pass.

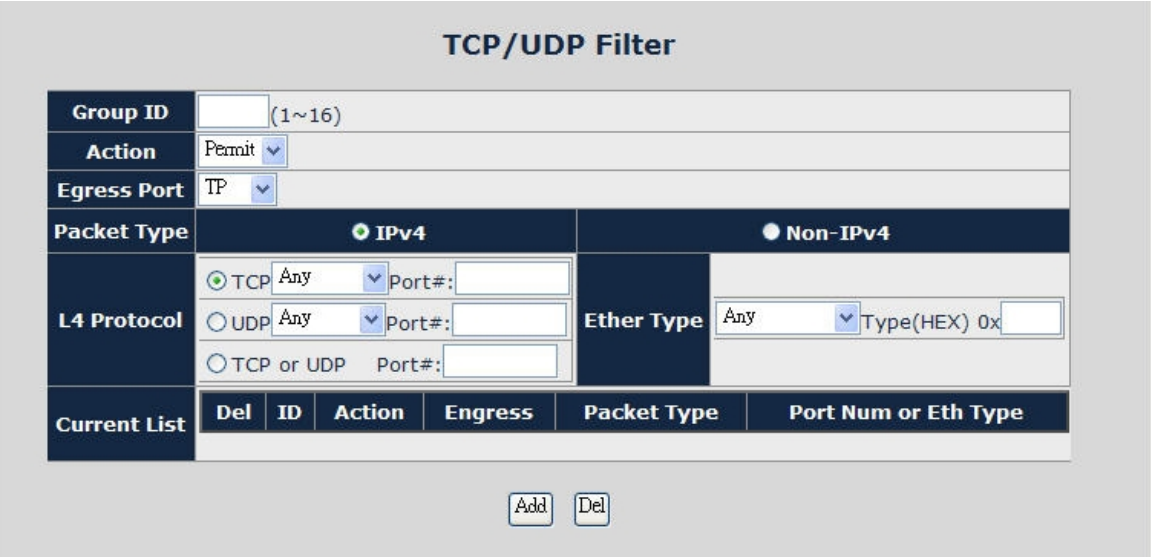
Note: The 802.3ah function requires a managed device that supports 802.3ah function.

Please use the IFS MCR205-1T/1S as the Remote device.

Security

This function provides TCP / UDP Filter setting of the MCR205-1T/1S. Press the “Apply” button to save the latest configuration of MCR205-1T/1S.

Figure 43: Security setting Web Page screen



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

Group ID	Input the group ID for TCP / UDP Filter and the available range is 1 to 16.
Action	“Deny” or “Permit” options and default mode is Permit.
Egress Port	Choose “TP” or “Fiber” as Egress Port. Default mode is TP.
Packet Type	Provides IPv4 and Non-IPv4 protocol for further setting.
L4 Protocol	Provides 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	Displays current TCP/UDP Filter Groups.
Add Button	Press this button for add new TCP/UDP Filter group into current list.
Del Button	Press this button to delete existing TCP/UDP Filter group from current list.

Logout

This function allows logout from the MCR205-1T/1S Media Converter web admin menu. To logout, press the "OK" button on the popup confirmation window as it is illustrated in Figures 44 & 45.

Figure 44: Logout Web Page screen

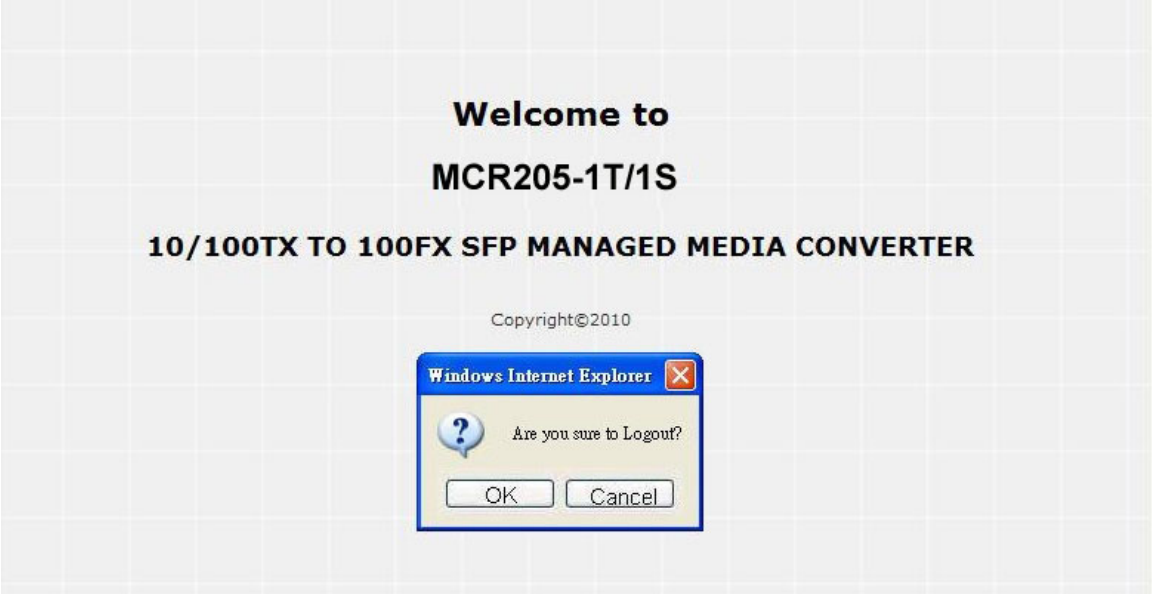
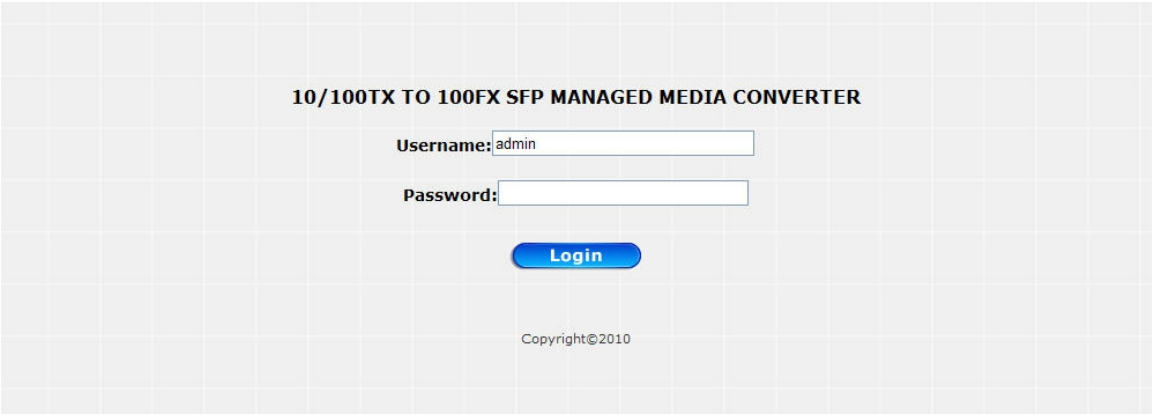


Figure 45: Login Web Page screen



Troubleshooting

This chapter contains information to help you solve problems. If the Media Converter is not functioning properly, make sure the MCR205-1T/1S was set up according to instructions in this manual.

The Link LED is not lit

Solution:

1. Check the cable connection and remove duplex mode of the MCR205-1T/1S.

2. Check the port configuration of the link partner; and make sure both devices on each end are set with the same configurations.

Performance is bad

Solution:

Check the full duplex status of the devices. If one of the devices are set to full duplex, and the other to half duplex, transmission performance will be affected negatively.

10/100Base-T port link LED is lit, but the traffic is irregular

Solution:

Check that the attached device is not set to dedicate to full duplex. Some devices use a physical switch to set the duplex mode, while some use software based settings. A physically set full duplex setting may prevent Auto negotiation feature to recognize it.

Why the device doesn't connect to the network

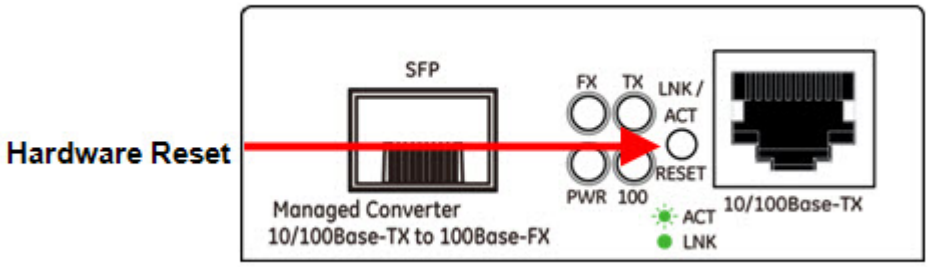
Solution:

1. Check the LNK/ACT LED on the MCR205-1T/1S.
2. Try another port on the connected device.
3. Make sure the cable is installed properly.
4. Make sure one of the supported type of cables was used. Turn off the power. After waiting briefly, turn on the power again.

How to resolve a forgotten password?

Solution:

The MCR205-1T/1S is equipped with a “Reset” button. Press and hold the button for 10 seconds to reset the device to factory settings. After the device is booted then login the Web Management page with default user name and password (admin).



Specifications

Ethernet

Data Rate	10/100Base-TX port
Throughput (packet per second)	148810pps@64Bytes
Switch Architecture	Store-and-Forward
Flow Control	Half-Full-Duplex mode (IEEE 802.3x)
Connector	RJ-45 with Auto-MDI/MDI-X
Cable Type and Distance	10Base-T (Cat 3, 4, 5e) or 100Base-T (Cat 5e) – 328ft (100m)

Fiber

Data Rate	100 Base-FX
Connector	SFP (MiniGIBIC) port
Fiber Type	Varies by SFP module

LED Indicators

Power Status	On - Green - power detected (+5VDC)
10/100Base-T Link	Green/On – link established Green/blinking – active port (TX/RX)
100Base-FX Link	Green/On – 100Mbps half/full duplex mode operation Green/Off – 10Mbps half/full duplex mode operation
SFP (Mini-GIBIC) port link	Green/On – link established Green/blinking – active port (TX/RX)
Reset Button	Reset to factory default settings

Electrical and Mechanical

Input Power	5VDC @ 2A (3.3 watts)
Enclosure	Metal
Dimensions (H x W x D)	3.82 x 2.76 x 1.02 in. (9.7 x 7.0 x 2.6 cm)
Weight	0.41 lbs. / 190g

Environmental

Operating Temperature	0ºC~50ºC
Storage Temperature	-20ºC~70ºC
Relative Humidity	0%–90% (non-condensing)

Contacting Technical Support

Contact technical support if you encounter any difficulties during this installation. Please make sure you have the requested diagnostic or log files ready before you contact us by phone or go to www.interlogix.com/customer-support.

Technical Support

Europe, Middle East and Africa	
W	Select *Contact Us* at www.utcfssecurityproducts.eu
North America	
T	+1 855.286.8889
E	techsupport@interlogix.com
Australia	
E	techsupport@interlogix.au

Appendix A Networking Connection

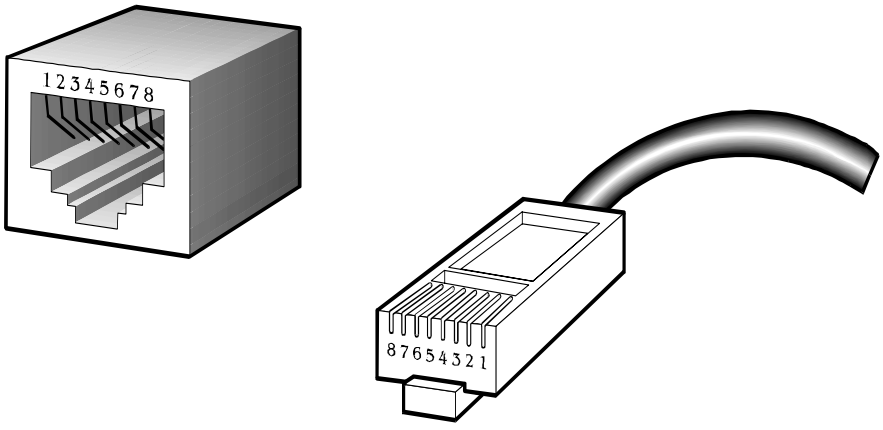
RJ-45 Pin Assignments

The wiring details are as below:

10/100Mbps, 10/100Base-TX

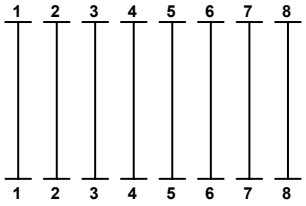
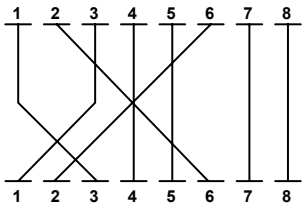
RJ-45 Connector pin assignment		
Contact	MDI Media Dependant Interface	MDI-X Media Dependant Interface -Cross
1	Tx + (transmit)	Rx + (receive)
2	Tx - (transmit)	Rx - (receive)
3	Rx + (receive)	Tx + (transmit)
4, 5	Not used	
6	Rx - (receive)	Tx - (transmit)
7, 8	Not used	

RJ-45 Cable Pin Assignments



The standard RJ-45 receptacle/connector

There are 8 wires on a standard UTP/STP cable and each wire is color-coded. The following shows the pin allocation and color of straight cable, and crossover cable connection:

Straight Cable		SIDE 1	SIDE2
	**SIDE 1** **SIDE 2**	1 = White / Orange 2 = Orange 3 = White / Green 4 = Blue 5 = White / Blue 6 = Green 7 = White / Brown 8 = Brown	1 = White / Orange 2 = Orange 3 = White / Green 4 = Blue 5 = White / Blue 6 = Green 7 = White / Brown 8 = Brown
Crossover Cable		**SIDE 1**	**SIDE2**
	**SIDE 1** **SIDE 2**	1 = White / Orange 2 = Orange 3 = White / Green 4 = Blue 5 = White / Blue 6 = Green 7 = White / Brown 8 = Brown	1 = White / Green 2 = Green 3 = White / Orange 4 = Blue 5 = White / Blue 6 = Orange 7 = White / Brown 8 = Brown

Please make sure your connected cables are with same pin assignment and color as above picture before deploying the cables into your network.

Fiber Opitc Cable Connection Parameters

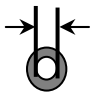
The optical details are as follows:

Fiber Optical Patch Cables

Standard	Fiber	Diameter (micron)	Modal Bandwidth (MHz * km)	Max. Distance (meters)
1000Base-SX	Multi-mode	62.5 62.5 50 50	100 200 400 500	220 275 500 550
1000Base-LX	Multi-mode	62.5 50 50	5 4 5	550
	Single-mode	9	N/A	5000*

Power Information

The power jack of the MCR205-1T/1S is with 2.5mm in the central post and required +5VDC power input. It is compatible with the MCR-R15. Should you have a problem with the the power connection, please contact your local sales representative.



The DC receptacle is 2.5mm wide that conforms to and matches the 2.5mm DC jack's central post. Do not install any incompatible unit into the MCR-R15 Chassis.