User Manual

FMC-1800

Managed GbE Media Converter Rack

CTC UNION TECHNOLOGIES CO., LTD.

CTC Union Technologies Co., Ltd.
Far Eastern Vienna Technology Center (Neihu Technology Park)
8F, No. 60 Zhouzi St.
Neihu District
Taipei 114
Taiwan
Tel: +886-2-26591021
Fax: +886-2-27991355
Email: sales@ctcu.com
techsupport@ctcu.com
URL: https://www.ctcu.com

FMC-1800 User Manual

Managed Gigabit Ethernet Media Converter Concentrator Rack, 18 channels, 1U

Version 1.00 Feb 20, 2023 (First Release)
Version 1.01 Feb 21, 2023 (correction)

This user manual covers the following model:

FMC-1800/AC (single AC) - FMC-1800/AA (Dual AC)
FMC-1800/DC (single DC) - FMC-1800/DD (Dual DC)
FMC-1800/AD (Dual, AC plus DC)

All specifications are subject to change without prior notice.

Legal

The information in this publication has been carefully checked and is believed to be entirely accurate at the time of publication. CTC Union Technologies assumes no responsibility, however, for possible errors or omissions, or for any consequences resulting from the use of the information contained herein. CTC Union Technologies reserves the right to make changes in its products or product specifications with the intent to improve function or design at any time and without notice and is not required to update this documentation to reflect such changes.

CTC Union Technologies makes no warranty, representation, or guarantee regarding the suitability of its products for any particular purpose, nor does CTC Union assume any liability arising out of the application or use of any product and specifically disclaims any and all liability, including without limitation any consequential or incidental damages.

CTC Union products are not designed, intended, or authorized for use in systems or applications intended to support or sustain life, or for any other application in which the failure of the product could create a situation where personal injury or death may occur. Should the Buyer purchase or use a CTC Union product for any such unintended or unauthorized application, the Buyer shall indemnify and hold CTC Union Technologies and its officers, employees, subsidiaries, affiliates, and distributors harmless against all claims, costs, damages, expenses, and reasonable attorney fees arising out of, either directly or indirectly, any claim of personal injury or death that may be associated with such unintended or unauthorized use, even if such claim alleges that CTC Union Technologies was negligent regarding the design or manufacture of said product.

TRADEMARKS

Microsoft is a registered trademark of Microsoft Corp.
HyperTerminal™ is a registered trademark of Hilgraeve Inc.

WARNING:

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 in which case the user will be required to correct the interference at his own expense. NOTICE: (1) The changes or modifications not expressively approved by the party responsible for compliance could void the user's authority to operate the equipment. (2) Shielded interface cables and AC power cord, if any, must be used in order to comply with the emission limits.

CISPR PUB.22 Class A COMPLIANCE:

This device complies with EMC directive of the European Community and meets or exceeds the following technical standard. EN 55022 - Limits and Methods of Measurement of Radio Interference Characteristics of Information Technology Equipment. This device complies with CISPR Class A.

CE NOTICE

Marking by the symbol CE indicates compliance of this equipment to the EMC and LVD directives of the European Community. Such marking is indicative that this equipment meets or exceeds the following technical standards: EN 55022:2006+A1:2007, Class A, EN55024:2010, and EN60950-1:2006

Chapter 1 Introduction

1.1 Introduction

Thank you for choosing ***FMC-1800*** Gigabit Ethernet Fiber Media Converter Rack. If you would like to skip right to the installation of the Converter Chassis, proceed to Chapter 2.

This manual is used to explain the hardware installation and provisioning procedures for ***FMC-1800***, and present its capabilities and specifications. This manual is divided into 4 chapters, the Introduction, Installation, Provisioning, and SNMP Management.

The divisions in that manual are intended for use by personnel to answer questions in general areas. Installers should carefully read the Chapters 2&3, Installation and Provisioning. Planners and potential purchasers may read Chapter 1 Introduction to determine the suitability of the product to its intended use; Operating personnel should use Chapter 3 Provisioning, to become familiar with the unit settings. Network Administrators should read the chapters on Provisioning, and SNMP (Chapter 3 & 4) to become familiar with the diagnostic capabilities, network settings and management strategies for the SNMP managed chassis.

1.2 Functional Description

FMC-1800 is a 1U high 19" rack mountable device that features 18 completely independent and isolated Gigabit Ethernet fiber media converters concentrated into a single 1RU 'pizza box' unit. ***FMC-1800*** provides a fixed, high density solution by placing 18 media converters in one manageable platform. A feature of ***FMC-1800*** allows it to detect the working or failing status either of two power supplies or the fan in the unit.

All settings of the media converters may be managed through any of the available management interfaces. A local serial COM port (via a convenient USB-C® connector) allows management from terminal emulation and an easy-to-use menu system. With TCP/IP based network management, the ***FMC-1800*** may be managed via Telnet (menu system), HTTP Web GUI, or SNMP.

The optical ports of ***FMC-1800*** support industry standard SFP modules. Both fast Ethernet and gigabit Ethernet data rates are supported (100/1000 dual rate). SFP may be typical duplex fiber modules, WDM (BiDi) single fiber types or CWDM/DWDM types. The ***FMC-1800*** supports reading the DDOM of any inserted SFP. There is no lock-out feature, so any third party SFP module may be freely used.

FMC-1800 copper twisted pair ports utilized shielded RJ-45 connectors. These Ethernet ports support 10M/100M/1G auto negotiation per IEEE802.3u as well as forced speed and duplex configurations.

FMC-1800 may incorporate redundant power supplies in any combination of AC and DC. When the unit is ordered with two supplies, they provide power redundancy. The supplies, depending on the model, derive power from either an AC power source (100 ~ 240VAC) and/or DC power source (36-60VDC). The copper Ethernet and fiber SFP cages are all located on the front face, along with status indicator LEDs. The status LED indicators provide for quick indications of both copper and fiber link statuses and fault detection.

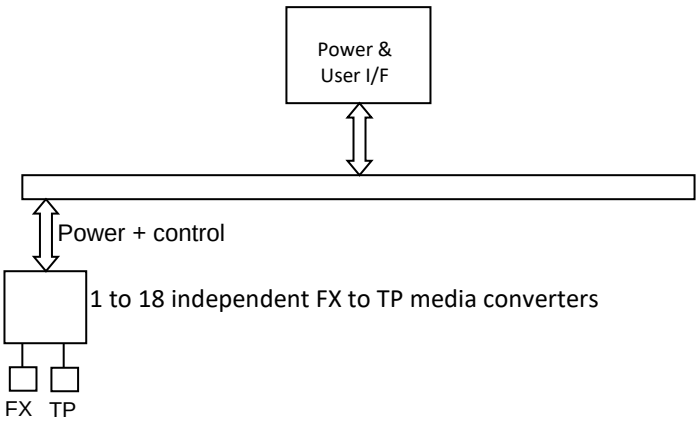


Figure 1.1 FMC-1800 Simple Block Diagram

1.3 Chassis Front Description

The front of ***FMC-1800*** has the SFP cages and RJ-45 pairs for each of the independent fiber media converters. Status LEDs provide real time state of fiber and UTP links. The USB-C® console port provides an RS-232 DCE host for direct connection to PC USB port with USB cable. Running any terminal emulation software (we recommend TeraTerm Pro) will provide an easy-to-use 'menu system' for local configuration, operation and monitoring of the ***FMC-1800***. No complex CLI (command line interface) must be learned.

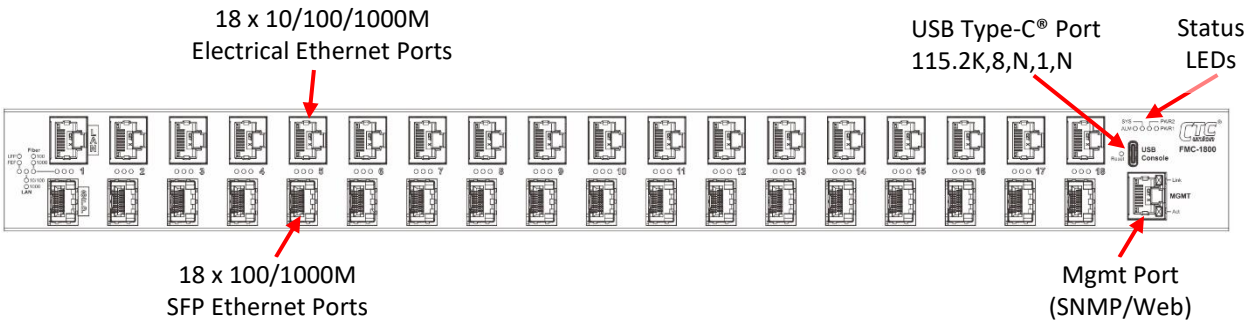


Figure 1.2 Chassis Front View

1.3.1 LED Indicators

1.3.1.1 RJ-45 LAN and SFP Port

Each port has three LED indicators. The left hand LED is a dual color LED that indicates either an LFP (Link Fault Pass-thru with green) or FEF (Far-End-Fault with amber). The middle LED is a dual color LED that indicates the LAN speed on the UTP port. When the LED is green, the speed indicated is either 10M (10Base-T) or 100M (100Base-TX). When the LED is amber colored, the speed indicated is 1000M (1000Base-T). The right hand LED is also a dual color LED. When green, the LED indicates the fiber connection speed is 100M and when amber, indicates the fiber connection speed is 1000M (1G).

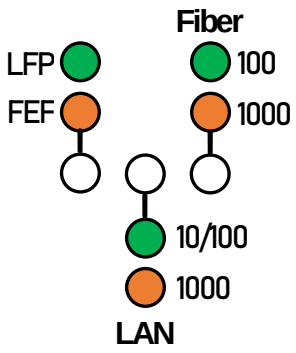


Figure 1.3 Port LEDs

Error	State	
LFP	Green	
FEF	Amber	
LAN Speed	State	
10M	GREEN	Active
100M	GREEN	Flash
1000M	AMBER	
FX Speed	State	
100M	Green	
1000M	Amber	

Table 1.1 Port LEDs

1.3.1.2 MGMT LAN Port

The management LAN port of ***FMC-1800***, is a 10/100M port with two integrated LEDs. The upper LED is an amber colored LED that indicates the link state on the management port. When the LED is off, it indicates there is no link on the port, when on it indicates the port has a link. The lower LED is an 'activity' indicator. The LED is green and when flashing (blinking) there is active traffic on the port's interface.

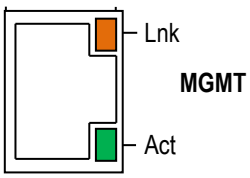


Figure 1.4 MGMT Port

Lnk	State	
10/100M	Amber	Link
	Off	No Link
ACT	State	
Activity	Green Flash	
Inactivity	Green Steady	

Table 1.2 MGMT Port LEDs

1.3.1.3 Chassis Status

There are 4 functional LEDs in this group. Please find a description for each of these LEDs below.

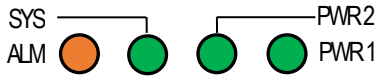


Figure 1.5 Chassis LEDs

LED	Color	State	Description
PWR1	Green	ON	Supply is working normally
		OFF	No power, powered off or no supply
PWR2	Green	ON	Supply is working normally
		OFF	No power, powered off or no supply
SYS	Green	ON	The system's CPU is running normally
	Amber	ON	The system is abnormal
ALM	Amber	OFF	No alarm or not programmed
		ON	A programmable alarm condition is active

Note : PWR1 is located on the right hand side of the chassis when viewed from the back of the chassis. PWR2 is located to the left of PWR1, when viewed from the back of the chassis.

1.3.1.5 CONSOLE Port

This USB Type-C® connector provides an RS-232 DCE (data communication equipment) asynchronous serial connection for local management using a simple text based terminal emulator. When plugged into a Windows based computer, no extra drivers are required. The interface will be discovered and shown as an addition serial COM port.

1.4 Chassis Rear Description

The rear panel provides the power input connections (AC+DC chassis shown). The cooling fan exhausts out the rear and an additional chassis ground point is provided for safety.

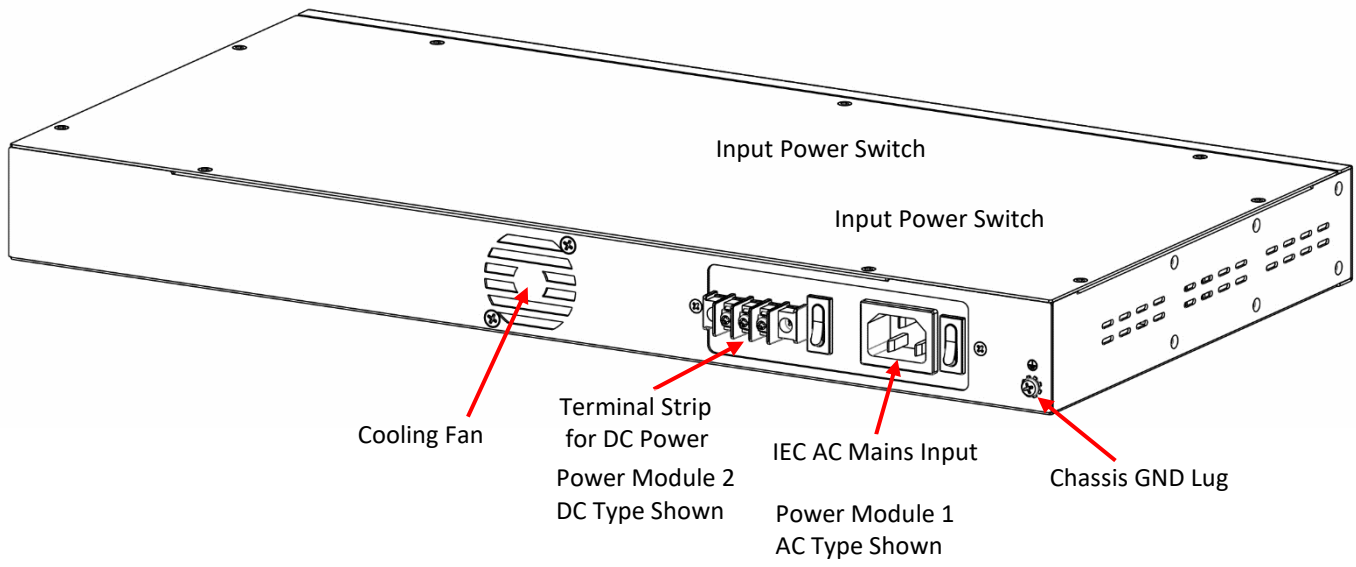
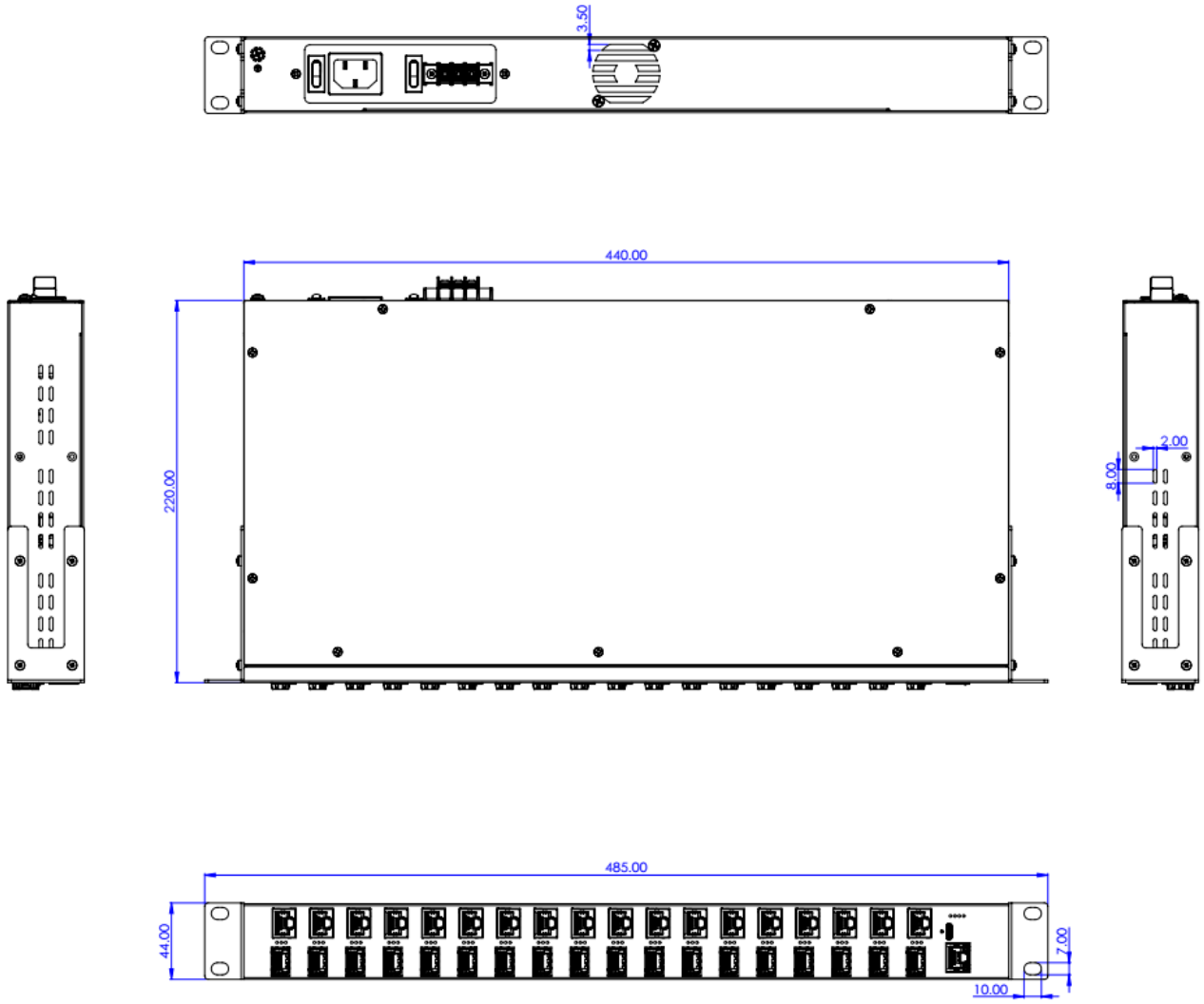


Figure 1.6 Chassis Rear View

1.5 Chassis Physical Dimensions

The following drawing shows the physical dimensions of the ***FMC-1800***.



All dimensions are shown in millimeters.

Figure 1.7 Chassis Dimensions, in millimeters

1.6 Chassis Specifications

Environment

Temperature 0 - 50°C (32-122°F)
Humidity 5-95% non condensing

Power Supply Specifications

AC Power

Input : Universal, 100~240VAC ±10% (90~264VAC absolute) at ambient temperature
Frequency : 47~63 Hz
Output :DC 12V, 60W maximum rating (Green power rated, 89% power efficiency)

DC Power Module

Input : -36~60 VDC (option 1)
Input : -18~-36VDC (option 2)
Output :DC 12V, 60W maximum rating

Power Consumption

45 watts (max)

Heat Generation

154 BTU/hr

Compliance

European Union : EN55022:2010, Class A, EN55024:2010, EN60950-1:2006, CISPR 24:2010
FCC : part 15, subpart B, class A

Reliability

MTTB : >65,000 hours (25°C)

Physical Specifications

Dimensions : 438mm (Width) x 220mm (Depth) x 44mm (Height)
(US: 17 1/4" wide x 8 11/16" deep x 1 3/4" high)
Net Weight : 3.01 Kg (US: 6 lbs 8 oz.)

This page is blank intentionally.

Chapter 2 Installation

2.1 Introduction

The Installation chapter will cover the physical installation of ***FMC-1800***, the electrical connections, interface connections and cabling requirements. A brief overview of the functional components such as main unit and management options will also be outlined in this chapter.

Required Tools

You will need these tools to install ***FMC-1800***:

Number 2 Phillips screwdriver for the 3.5mm ground and the 12-24 rack installation screws.

Wrist strap or other personal grounding device to prevent ESD occurrences.

Antistatic mat or antistatic foam to set the equipment on.

2.2 Site Preparation

Install ***FMC-1800*** within reach of an easily accessible grounded AC outlet or three wire (-48VDC, Power return, Earth Ground) central office power. The AC outlet should be capable of furnishing 100 to 240 VAC. Refer to 2.4 Electrical Installation. Allow at least 10cm (4 inch) clearance at the front of ***FMC-1800*** for the Fiber and other copper cables.

2.3 Mechanical Assembly

FMC-1800 is designed for rackmount installation and will require 1U space in a standard EIA 19" rack. ***FMC-1800*** chassis is delivered completely assembled. The rack mount adapters may be placed along the front or centrally located on the chassis. Without rack mount adapters, the unit may also be placed on a desktop.

2.3.1 Rack mounting

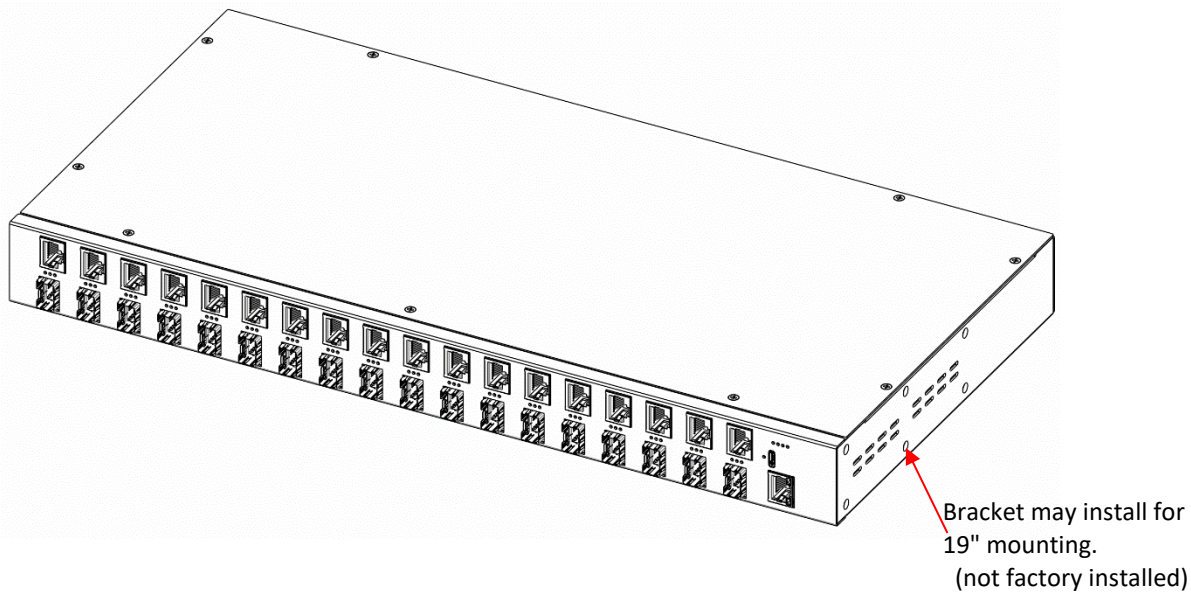
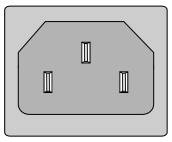


Figure 2.1 Standard 19" Rackmount Installation of ***FMC-1800*** Unit requires 1RU space

2.4 Electrical Installation

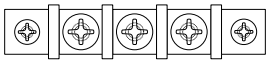
With an AC power supply, AC power is supplied to ***FMC-1800*** through a standard IEC C14 3-prong receptacle, located on the rear of the unit. Any national power cord with IEC C13 line plug may be used to connect AC power to the power supply. With a DC supply, DC -48V is connected to the terminal block located on the rear of the unit, observing the proper polarity. ***FMC-1800*** should always be grounded through the protective earth lead of the power cable in AC installations, or via the frame ground connection for DC installations.



Left: Live line
Right: Neutral line
Middle: Ground

IEC C13 line plug

DC IN
-V FG +V



36~60VDC
18~36 VDC

Left: -V (-48V)
Right: +V (0V)
Middle: Frame Ground

Note: DC Power connections are isolated from Frame Ground.

Figure 2.2 IEC (AC) & terminal block (DC) power connector pin assignment

Chapter 3 Provisioning

3.1 Introduction

The information provided here is a detailed description of the management interfaces and methodologies for managing ***FMC-1800***. For details on operation of the SNMP features, please refer to Chapter 4.

3.2 Management Methods

The basic management method for ***FMC-1800*** is via a local serial console connection. This connection is accomplished by connecting the USB Type-C® connector to a Window's PC or laptop. The Plug 'n Play USB will emulate a serial COM port without any extra drivers. The ***FMC-1800*** may also be management from IP based textual console (Telnet), web-based GUI (http) management through any standard web browser, SNMP management through proprietary MIB and via CTC Union's Element Management System (SmartView EMS) or any third-party SNMP manager.

3.3 Local Console Management

The ***FMC-1800*** has a USB Type-C® "Console" port located on the front panel, right hand side of the unit. The Plug 'n Play USB port will emulate a serial COM port, without any extra drivers. The connected Windows PC/Laptop will use terminal emulation software, such as TeraTerm Pro or PuTTY (both are free).

3.3.1 Terminal Preparation

There are a number of common programs which can be used as terminal emulators for Microsoft ® Windows™ based computers. Windows computers, such a Windows Vista®, Windows 7®, Windows 8®, Windows 10® and Windows 11®, have no "built-in" terminal emulation program. In these cases, we highly recommend the free emulation program "TeraTerm Pro", from the Tera Term Open Source Project. This program can be found freely on the Internet by doing a simple search.

For the remainder of this chapter, "TeraTerm Pro" will be used as our terminal emulator under Windows™.

[TeraTerm Example]

Power on the ***FMC-1800*** and let it boot (about 30 seconds). Connect the USB Type-C® port to your Laptop/PC using the appropriate USB adapter cable (not included). Find the COM port by opening the Windows "Device Manager". (Hint: In Win10/11, press *Windows* Key + x, select Device Manager.)

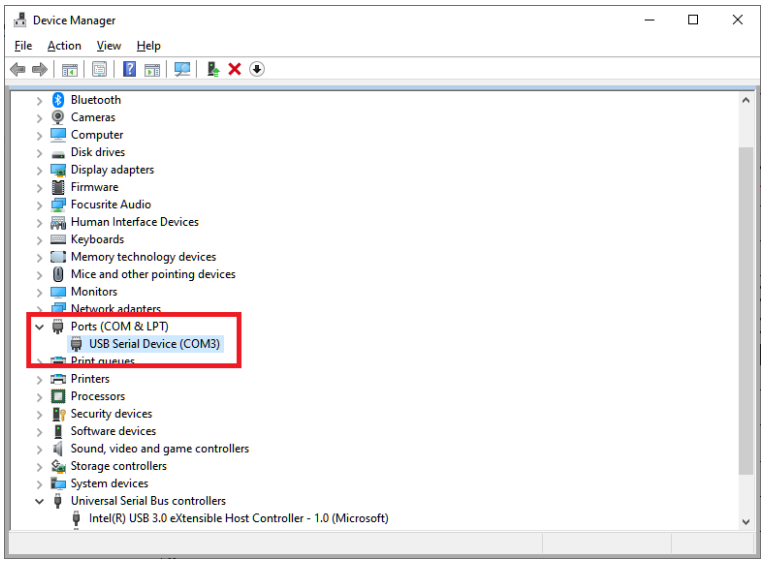


Figure 3.1 Windows Device Manager

In this example, the USB was found as COM3 under the "Ports(COM & LPT)".

Start the TeraTerm application. Configure the serial port communication parameters. To do this, select the 'Setup' pull-down menu and from that menu, select 'Serial port...'.

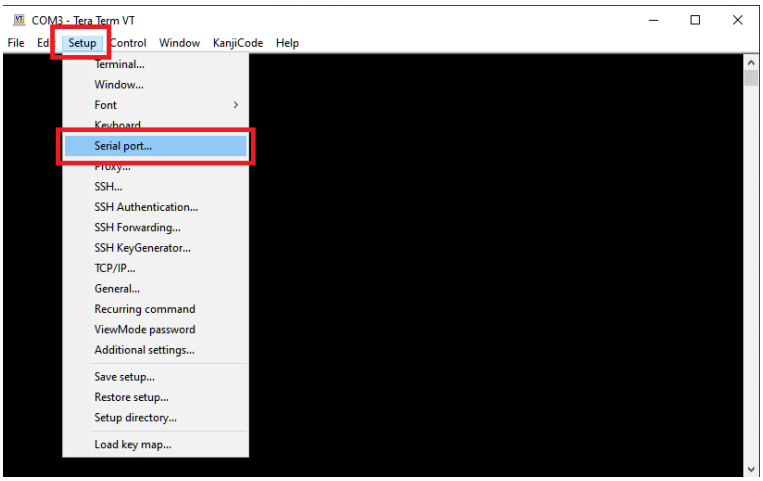


Figure 3.2 TeraTerm Setup

The next step is to modify the serial port parameters so that we can establish working communication with the ***FMC-1800***. The communication parameters must be set as follows:

Baud rate: 115200

Data: 8 bit

Parity: none

Stop: 1 bit

Flow control: none

Now, click the 'New setting' button and the application will be ready to establish communication with the ***FMC-1800***.

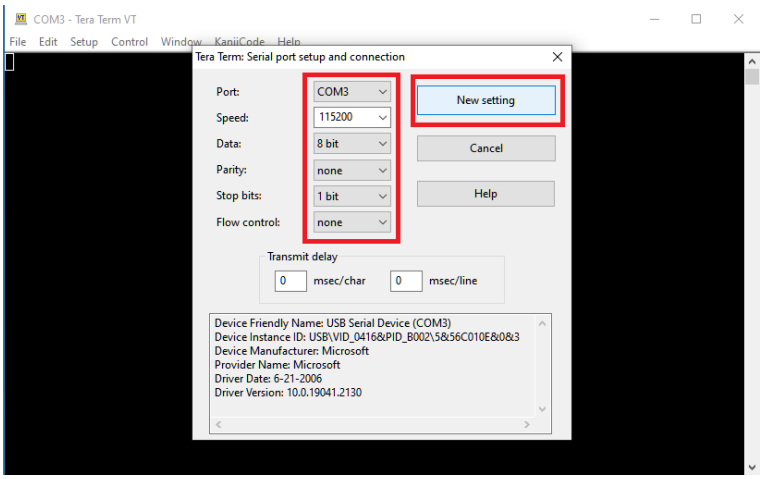


Figure 3.3 Serial Port Setup

The following login screen will be displayed.

```
*****************************************
***  CTC UNION TECHNOLOGIES CO.,LTD   ***
***  FMC1800                          ***
*****************************************
[1.100-1.001-0.000-0.000]

Username: admin
Password:
```

Figure 3.4 Login Screen

3.3.2 Console Login

The factory default username for the ***FMC-1800*** is 'admin', with no password. After successfully logging in, the main status screen of the ***FMC-1800*** will be displayed. (If password has been set and forgotten, the factory backdoor password is '1021'.)

```
                    ****************************************
                    ***  CTC UNION TECHNOLOGIES CO.,LTD  ***
                    ***  FMC-1800                        ***
                    ****************************************
                    [1.100-1.001-0.000-0.000]

PWR1 [AC][O]      PWR2 [DC][X]       FAN1 [     0]  FAN2 [     0]     ALM [X]
                   SFP     LAN     ERR                   SFP     LAN     ERR
<1> Port 01 [1Gfdx][1Gfdx][   ]     <A> Port 10 [Down ][Down ][   ]
<2> Port 02 [1Gfdx][100Mf][   ]     <B> Port 11 [Down ][Down ][   ]
<3> Port 03 [Down ][Down ][   ]     <C> Port 12 [Down ][Down ][   ]
<4> Port 04 [Down ][Down ][   ]     <D> Port 13 [Down ][Down ][   ]
<5> Port 05 [Down ][Down ][   ]     <E> Port 14 [Down ][Down ][   ]
<6> Port 06 [Down ][Down ][   ]     <F> Port 15 [Down ][Down ][   ]
<7> Port 07 [Down ][Down ][   ]     <G> Port 16 [Down ][Down ][   ]
<8> Port 08 [Down ][Down ][   ]     <H> Port 17 [Down ][Down ][   ]
<9> Port 09 [Down ][Down ][   ]     <I> Port 18 [Down ][Down ][   ]
<L> System
<S> SNMP            <P> Login Configuration
<M> Maintenance     <U> Upgrade
<Z> Logout
```

Figure 3.5 Main Menu

3.3.3 Main Menu

The main menu is displayed in 5 sections, product header, version, alarm status, per port status and function group.

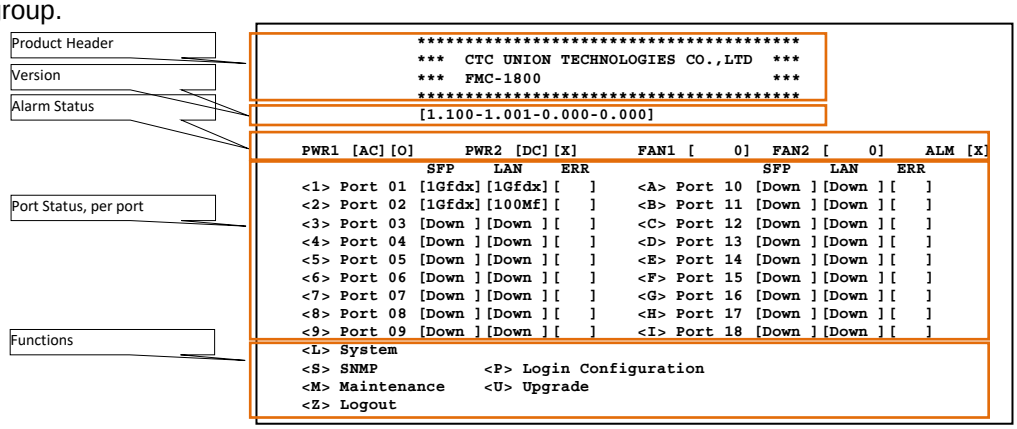


Figure 3.6 Main Menu Details

3.3.4 Converter Channel Configuration

To directly manage any of the 18 individual media converters, simply key the port using the numbers 1~9 and letters a~i. This will display the configuration screen just for that specific media converter.

```
                    ****************************************
                    ***  CTC UNION TECHNOLOGIES CO.,LTD  ***
                    ***  FMC-1800                        ***
                    ****************************************
                    [1.100-1.001-0.000-0.000]

Port [01] Side [Local]  Ver [1.001]

 SFP  DD   FEF  Loop     TP Link Status [1Gfdx ]
[Yes][Yes][No ][No  ]    FX Link Status [1Gfdx ]

<1> TP Speed   [Auto   ]        <2> TP FlowCtrl     [Enable ]
<3> FX Speed   [1Gfdx  ]        <4> FX FlowCtrl     [Enable ]
<5> Mode       [Switch   ]      <6> LFP             [Disable]
<7> ALS        [Enable ]        <8> Jumbo Frame     [Enable ]
<9> Loop Block [Disable]        <A> Broadcast Storm [Disable]
<B> SFP Information
<X> Port Restart
<Y> Set to default

[ESC] Go to previous menu. Please select an item.
```

Figure 3.7 Port Configuration

The individual channel configuration screens will again show the header, model name, the version, and the current state of the converters UTP Information and SFP Information. The following pages are descriptions for each of these status indications and configuration items.

Port

Port number (1~18), local or remote (if in-band capable) and Ver (firmware version of port module)

SFP

Yes: An SFP module has been detected in the slot

No: No SFP was detected in the slot

DD

Yes: The SFP module found supports the full feature set of Digital Diagnostic Optical Monitoring

No: The SFP, if found, does not support DDOM.

FEF

Yes: There is a Far End Fault indication

No: No Far End Fault is indicated

Loop

Yes: A loop condition has been detected

No: There is no loop condition (normal)

TP Link Status

Down: There is no link on the RJ45 LAN port

[Speed Duplex]: 1G=Gigabit, 10M – 100M=10 or 100 Megabit, fdx=Full Duplex, hdx=Half Duplex

FX Link Status

Down: There is no link on the SFP optical port

[Speed Duplex]: 1G=Gigabit, 100M=100 Megabit, fdx=Full Duplex

Settings

<1> **TP Speed**: Disabled port, Auto* or Forced (10/100/1000M, Full or Half Duplex).

<2> **TP Flow Ctrl**: Disable or Enable* the 802.3x Ethernet Flow Control protocol on TP port.

<3> **FX Speed**: Disable, Auto* or Forced (100Mfdx or 1Gfdx).

<4> **FX Flow Ctrl**: Disable or Enable* the 802.3x Ethernet Flow Control protocol on FX port.

<5> **Mode**: Set between Switch mode* or Converter mode. (Warning: In Converter mode, the TP and FX speed and duplex MUST match.)

There are two modes for this media converter, Switch (store & forward) or Converter (pass through) mode. The default mode is switch. In this mode the entire packet is buffered in the switch before it is sent out. This mode must be used when the UTP and Fiber ports are different speed and/or different Duplex. In Converter mode, the switch is bypassed, allowing the packet to be transparently sent without buffering. No MAC filtering is done. However, in Converter mode the UTP and Fiber speed and Duplex MUST be exactly the same. Converter mode provides the lowest latency transmission and supports any jumbo frame to pass transparently.

<6> **LFP**: Disable* or Enable the Link Fault Pass-thru or Link Fault Forwarding function.

This 'Link Fault Pass-through' mechanism makes the fiber media converter appear to be 'transparent' for a link state, either from electrical or optical side. A fault on either side is immediately reflected on the opposite side of the converter. This LFP mechanism must be enabled manually as it is disabled by default.

<7> **ALS**: Disable or Enable* the Auto Laser Shutdown function.

This safety feature, when enabled, will disable the transmit laser if there is no received signal. It is also referred to as 'Auto Laser Shutdown'.

<8> **Jumbo Frame**: Disable or Enable* jumbo frame transmissions.

According to IEEE802.3, any Ethernet frame larger than 1518 bytes, or larger than 1522 bytes with VLAN tag is a non-standard frame. Being non-standard, these "jumbo frames" are not compatible with many networks. Currently the defacto definition for a jumbo frame is one of up to 9600 bytes in size. Many switches, routers, DSL, computers and WiFi devices do not support these non-standard packet sizes. However, due to marketing pressures, most new Ethernet chips have support for jumbo frames and therefore all newer equipment will support them. If you are on an education network backbone or run a data center, then you may possibly have use for jumbo frame support. Here, it can be specifically enabled.

<9> Loop Block: Disable* or enable the loop detection/protection mechanism.

<A> Broadcast Storm: Disable* or set packet per second storm threshold protection mechanism.

<B> SFP Information: Selecting this will open another display, showing the SFP information.

The DDI for SFP is described in SFF-8472 Multi-Source Agreement (MSA). The ***FMC-1800*** is ability to read and display this information from any vendor SFP that follows SFF-8472.

Display example:

```
                ****************************************
                ***  CTC UNION TECHNOLOGIES CO.,LTD  ***
                ***  FMC1800                         ***
                ****************************************
                [1.100-1.001-0.000-0.000]

    VendorName   [CTC UNION       ]
    VendorPN     [SFS-7010-L31-DD ]
    VendorSN     [FC1601040557    ]
    FiberType    [Single-Mode     ]
    WaveLength1  [1310            ]
    WaveLength2  [1310            ]
    LinkLength   [0010 km         ]
    Tx Power     [-4.5  dBm       ]
    Rx Power     [-4.8  dBm       ]
    Sensitivity  [-20   dBm       ]
    Tx Bias      [28.9 mA         ]
    Voltage      [3.28 V          ]
    Temperature  [63.0 C          ]

        [ESC] Go to previous menu.
```

Figure 3.8 SFP Digital Diagnostics Optical Monitor

Tx Power, Rx Power, Rx Sensitivity and Temperature are all extended information available from SFP that support DDOM.

3.3.5 Device Functions

From the main menu page, all settings for the ***FMC-1800*** device itself can be performed.

Functions

```
<L> System
<S> SNMP            <P> Login Configuration
<M> Maintenance     <U> Upgrade
<Z> Logout
```

Figure 3.9 Function Menu Items

3.3.5.1 System

<L> System :

This sub-menu contains *system information* of the ***FMC-1800***. The ***FMC-1800*** supports a fan with tachometer signal (supports monitoring of RPM (revolutions per minute)).

<1> System Information

This screen will display detailed information about the ***FMC-1800*** unit.

MAC Address
Serial Number
Date/Time
Software Version and Date

```
{ System > Information }

    MAC Address        [00:02:AB:14:A3:C4]
    Serial Number      [    A000000000000]
    System Date        [2023-02-17 T11:19:07+08:00]
    Software Version   [1.001]
    Software Date      [2023-02-16 T13:10:06+08:00]

    [ESC] Go to previous menu. Please select an item.
```

Figure 3.10 System Information

<2> IP

Setup the IP address for the ***FMC-1800***. Supported are dynamic or fixed IP for IPv4 and IPv6. Configure these parameters based on the information from your network administrator.

```
{ System > IP }

    MAC Address        [00:02:AB:14:A3:C4]
    IPv6               [FE80::202:ABFF:FE14:A3C4]

    <1> IPv4 DHCP      [Disable        ]
    <2> IPv4           [10.1.1.1       ]
    <3> Netmask        [255.255.255.0  ]
    <4> Gateway        [10.1.1.254     ]
    <5> IPv6 DHCP      [Disable        ]
    <6> IPv6           [               ]

    [ESC] Go to previous menu. Please select an item.
```

Figure 3.11 System IP

<3> SNTP

The real-time clock in the ***FMC-1800*** is set through NTPv4 (Network Time Protocol). Two IPs for time servers may be set, providing some redundancy in the event one of the servers cannot be reached. Having real-time is important for logging and for SNMP traps.

```
{ System > SNTP }

    <1> Active   [Enable ]
    <2> Server 1 [10.1.1.254     ]
    <3> Server 2 [               ]

    [ESC] Go to previous menu. Please select an item.
```

Figure 3.12 System SNTP

<4> Time Zone

As the Time Server protocol synchronizes to UTC (Universal Time Coordinates), it is important for the local time zone to be set, so that the date and time are shown for the local geographical location. The time zone hours can be set + or – (0~11). The minutes setting allows for half-hour configuration for those time zones, such as in India.

```
{ System > Time Zone }

    <1> Hours   [8    ]
    <2> Minutes [0    ]

    [ESC] Go to previous menu. Please select an item.
```

Figure 3.13 Time Zone

3.3.5.2 SNMP

<M> SNMP :

```
{ SNMP }

    SNMP System Configuration
    <1> [public                          ] [0.0.0.0        ] [Read Only ]
    <2> [private                         ] [0.0.0.0        ] [Read/Write]
    <3> [                                ] [               ] [Read Only ]
    <4> [                                ] [               ] [Read Only ]

    SNMP Trap Configuration
    <5> [                                ] [               ]
    <6> [                                ] [               ]
    <7> [                                ] [               ]
    <8> [                                ] [               ]

    [ESC] Go to previous menu. Please select an item.
```

Figure 3.14 SNMP

<1~4> SNMP System Configuration

The ***FMC-1800*** allows up to four (4) SNMP managers to manage the device. Each entry must set a 'community string', the IP address of the manager and the permission of either read/write (get/set) or read only (get).

<5~8> SNMP Trap Configuration

Up to four (4) trap destinations can be set. Each entry must contain a 'community string' and an IP address destination. Chapter 4 will have more details for SNMP operation.

3.3.5.3 Login Configuration (Password)

<P> Login Configuration:

```
{ Login Configuration }

    < > Username          [admin          ]
    <2> Password          [               ]
    <3> Password (again)  [               ]

    [ESC] Go to previous menu. Please select an item.
```

Figure 3.15 Login Configuration (Password)

< > Username

The username if fixed as 'admin'. There is only this one user and that user has full control over the ***FMC-1800***.

<2> Password

The password for admin must include alphanumeric characters only, up to 12 characters.

<3> Password (again)

The password must be entered again and match the first password in order to become active. If the password is forgotten, login the device with the backdoor password '1021', then make sure to clear or reset the password through this menu.

3.3.5.4 Maintenance

```
{ Maintenance }

    <1> Restart Device
    <2> Factory Default
    <3> Save Config

    [ESC] Go to previous menu. Please select an item.
```

Figure 3.16 Maintenance

<1> Restart Device:

When selected, the restart prompt "Restart Device" is displayed. Answering N or n will return to the main screen. Answering Y or y will cause the device to do a cold reboot.

CAUTION: Rebooting the unit will block traffic on all channels for about 12~15 seconds as the unit re-initializes.

<2> Factory Default

When selected, the "Factory Default" is displayed. There are two options: <1> Set to Default or <2> Set to Default (Keep-IP). To avoid losing TCP/IP access to the device, choose item "2" to reset everything except the IP address.

<3> Save Config

When selected, the "Save Config" is displayed. Answering N or n will exit this menu. Answering Y or y will copy the current "running configuration" from RAM to non-volatile storage so that the configuration will be available on successive reboots or power cycling of the device.

Important Notice: This action MUST be executed after making any changes to the device through the menu system, or the changes will be lost.

3.3.5.5 Upgrade

Occasionally there may be new firmware for the ***FMC-1800*** which could add new features or correct bugs found in the field. The ***FMC-1800*** supports field upgrade through the serial console port using Xmodem file transfer protocol.

CAUTION: There will be no confirmation prompt!! Pressing "Y" here will immediately erase the flash and put the device into a "waiting for code" indicated by CCCC being displayed.

```
{ Upgrade }

    <Y> Upgrade with X-Modem

    [ESC] Go to previous menu. Please select an item.
```

Figure 3.17 Upgrade

<Y> Upgrade with X-Modem

Simple procedure:

1. Select item 'Y' to start the 'Firmware Upgrade'.

The flash memory will be erased, and the unit will be standing by for Xmodem image file transfer. This is indicated by the 'CC' characters being displayed.

(The image must be transferred rather quickly or the upgrade function will timeout. No problem, just start again.)

```
{ Upgrade }

    <Y> Upgrade with X-Modem

    [ESC] Go to previous menu. Please select an item.


Erase code
begin.....................................................................
.........................................................................
.........................................................................
.........................................................................
.........................................................................
.........................................................................
.................................................
Erase code finished
Please import file
```

Figure 3.18 Code Erased

2. Use the TeraTerm Pro application to transfer the image file to the ***FMC-1800*** for writing.

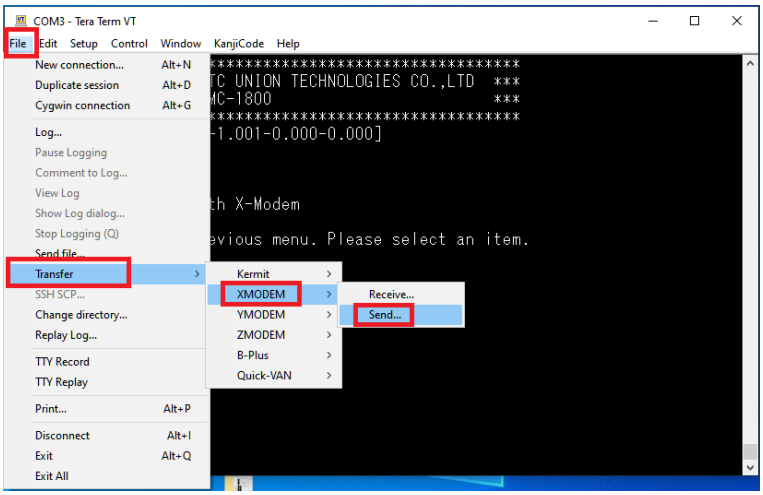


Figure 3.19 TeraTerm Pro Send File

3. Follow the 'File' menu pull-down, File > Transfer > XMODEM > Send.
(Be very careful to use only the Xmodem protocol)

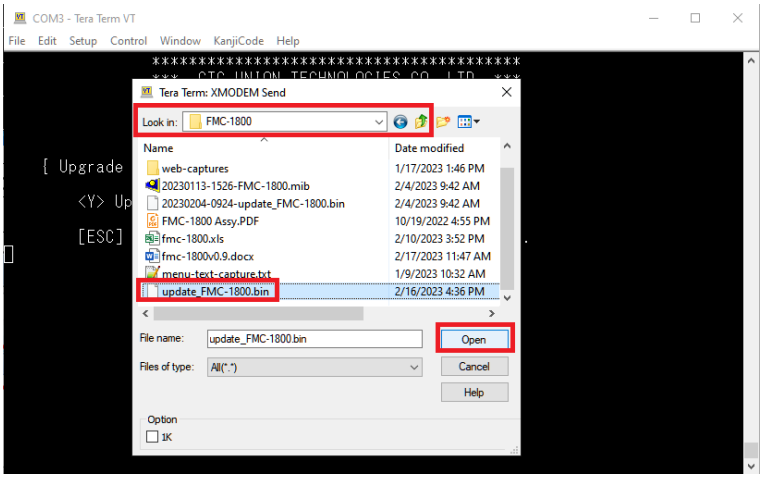


Figure 3.20 Browse for Image

a. The firmware image should be located just one directory "up" from the TeraTerm application in the upgrade package.
b. Select the image binary file
c. Click the 'Open' button.

4. If all is right, TeraTerm Pro should start to transfer to the ***FMC-1800*** over the serial interface. The progress will be shown on the progress bar. If for some reason transfer does not start (maybe too much time has elapsed), try backing out of the menu and selecting upgrade again and repeat sending the image file.

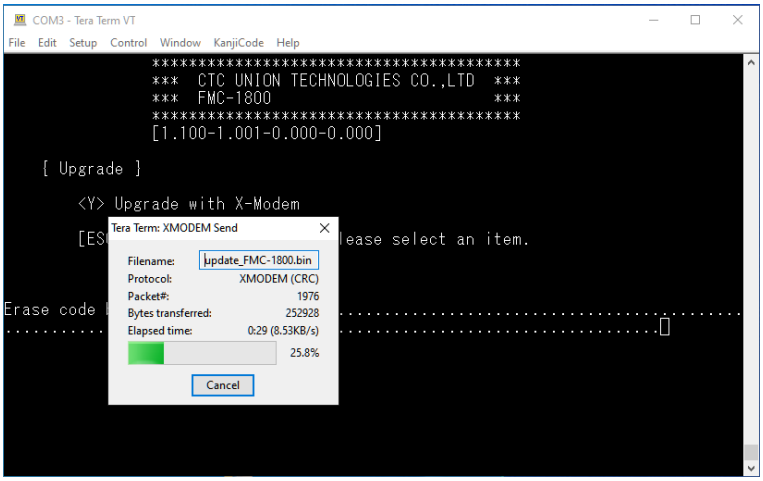


Figure 3.21 Xmodem Transfer of Image

Wait: After the image is transferred, the 'Programming …' message is displayed while the flash is written, followed by a cold reboot and login prompt. This would indicated the upgrade has completed successfully. Note: If the port cards also require being upgrade by this version, the programming may take up to 15 minutes. DO NOT POWER OFF!!

5. After the image transfer is completed and the image is written in the device, the ***FMC-1800*** will automatically reboot. The login prompt will again be displayed.

```
*****************************************
***  CTC UNION TECHNOLOGIES CO.,LTD  ***
***  FMC1800                         ***
*****************************************
[1.100-1.001-0.000-0.000]

Username: admin
Password:
```

Figure 3.22 Login Prompt after Upgrade

Check the firmware version.

Version explanation:
a.aaa-b.bbb-c.ccc-d.ddd where;
a.aaa is the H/W (hardware) version, in this example version 1.100
b.bbb is the S/W (software) version of the device, in this example version 1.001
c.ccc is not used and should be 0.000
d.ddd is not used and should be 0.000

3.3.5.6 Logout

<Z> Logout:

When selected, the terminal will be logged out within a second or two.

3.4 IP Based Management

The ***FMC-1800*** has embedded Web and SNMP management capability. This provides user interfaces for Telnet (text menu), Web graphical user interface, and for SNMP protocol using enterprise MIB.

3.4.1 Telnet Console Management

The Telnet implementation in the ***FMC-1800*** provides a remote terminal interface. The operation of this interface is identical to the local serial console interface but is available remotely via TCP/IP Ethernet connection. Please refer to **Section 3.3** for the operation of this text-based menu system.

3.4.2 Web Based Management

The HTTP implementation in the ***FMC-1800*** is provided by an embedded Web server for remote management. The IP based Web management, with any standard Web browser, provides the ability to control all aspects of management in the ***FMC-1800***.

3.4.2.1 Default IP settings

The Ethernet RJ-45 port (labeled MGMT) can connect to a manager PC by IP. Use a serial console first to setup the IP address for the ***FMC-1800***. Refer to section 3.3.

If using the default IP settings, follow these communication parameters:
IP address: 10.1.1.1
Subnet mask 255.255.255.0
Default Gateway 10.1.1.254 (don't care, but required if SNTP is used and the Time Server is not on local subnet)

Username: admin
Password: (none)

3.4.2.2 View IP information from local console

The TCP/IP parameters may be viewed from the local console so that the manager (PC or laptop) settings can match the network environment. Follow the console connection procedure, terminal settings, and login in Chapter 3. Select the<L> "System" from the main menu and then select item <2> IP and set the IP address, subnet and gateway.

```
                ****************************************
                ***  CTC UNION TECHNOLOGIES CO.,LTD   ***
                ***  FMC1800                          ***
                ****************************************
                [1100-1.000-0.000-0.000]

  { System > IP }

      MAC Address          [00:02:AB:14:A3:C4]
      IPv6                 [FE80::202:ABFF:FE14:A3C4]

      <1> IPv4 DHCP        [Disable          ]
      <2> IPv4             [192.168.0.250    ]
      <3> Netmask          [255.255.255.0    ]
      <4> Gateway          [192.168.0.10     ]
      <5> IPv6 DHCP        [Disable          ]
      <6> IPv6             [                 ]

      [ESC] Go to previous menu. Please select an item.
```

Figure 3.23 System IP Information screen

Configure your laptop or manager PC to the same subnet as the ***FMC-1800*** and connect with Telnet or Web. In this example, the IP address is set for 10.1.1.2 to access the ***FMC-1800***'s default IP of 10.1.1.1.

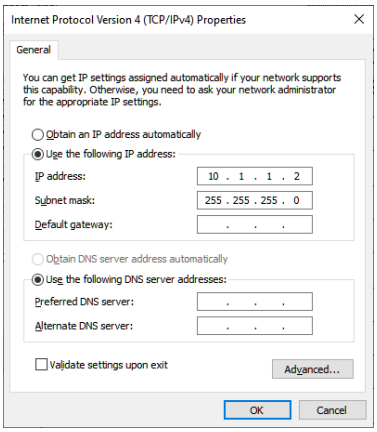


Figure 3.24 TCP/IPv4 Configuration example (Windows™ 10)

3.4.3 Telnet Login

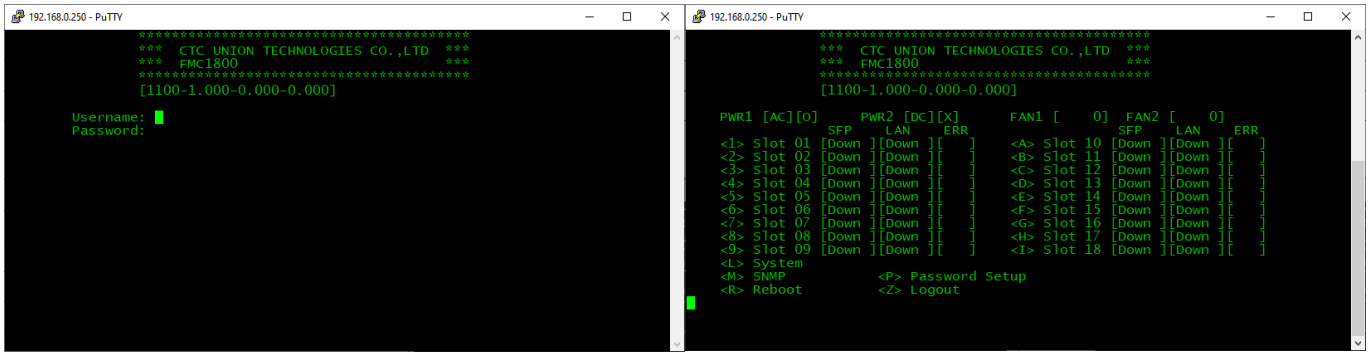


Figure 3.25 Example of Telnet Login using PuTTY

The configuration procedure when using Telnet is the same as using a local serial terminal. Follow the procedures outlined starting in 3.3.

3.4.4 Web Manager Operation

FMC-1800 supports web-based management. Use your favorite browser (Chrome, Firefox, Edge or Safari) and connect to ***FMC-1800*** by using the device IP address.

3.4.4.1 Login

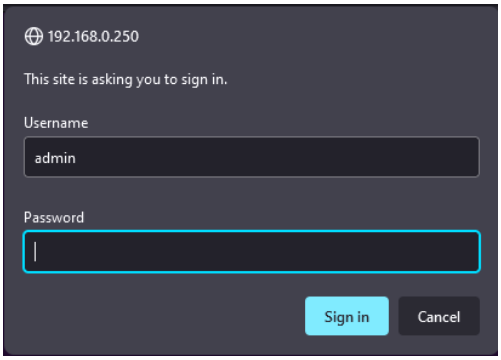


Figure 3.26 Web Login Screen

Use the default username/password combination of admin with no password.

3.4.4.2 Home Page, Agent Tab

Following a successful login, the "Port State Overview" will be shown as the default home page. This "Port State Overview" will give a graphical overview of each of the link statuses for the 18 media converters, the system LED states and the status of power supplies.

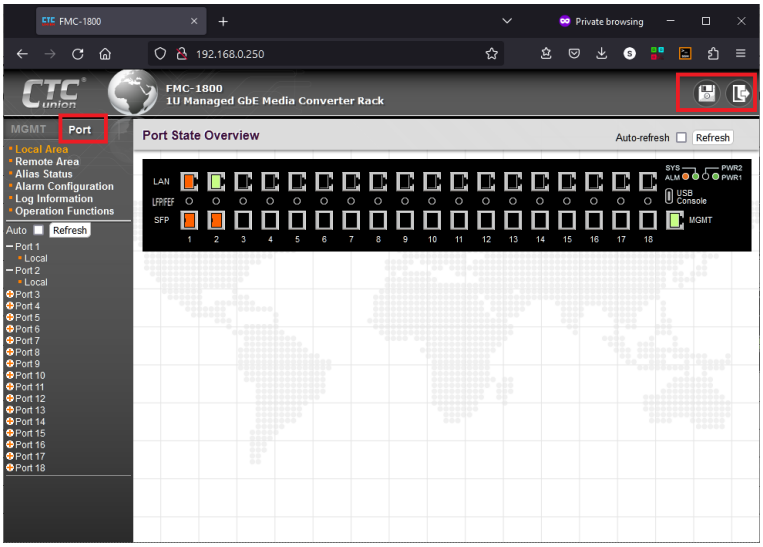


Figure 3.27 Web Home Page

The Left Frame is divided into two tabs, MGMT and Port. The Port tab is shown by default. Under this tab are the "local area", "remote area", "Alias Status", "Alarm Configuration", "Log Information" and the "Operation Functions".

3.4.4.3 Home Page, MGMT Tab

The "MGMT" tab has the information and settings for the "System", which includes "Configuration", "Information", "IP", "SNTP" & "Time Zone" setup. The "SNMP" section contains the manager IPs, community strings and Trap destinations. The "Login Configuration" section is where the login password is set for the default 'admin' user. The "Maintenance" section includes the "Restart Device", "Factory Defaults", and "Software Upload" (upgrade). The "Configuration" section allows saving the running configuration, plus downloading and uploading (restoring) of the device configuration.

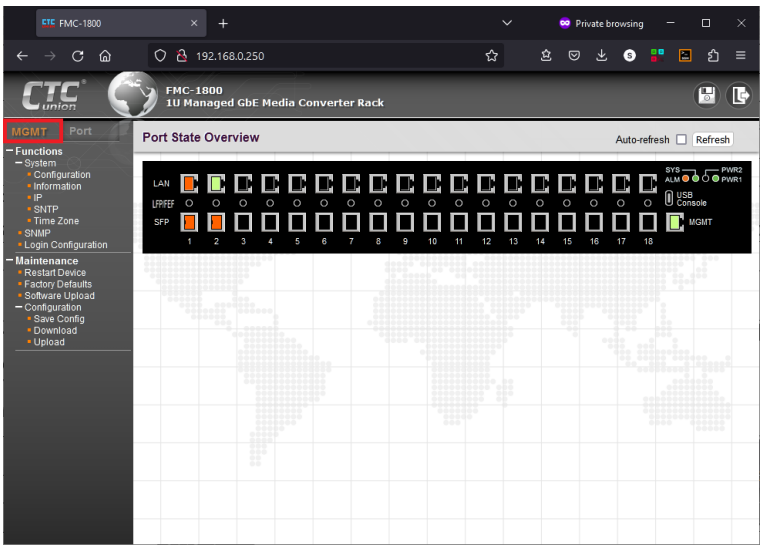


Figure 3.28 MGMT Tab

3.4.4.4 System Configuration

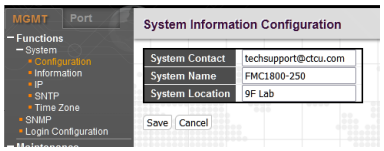


Figure 3.29 System Configuration

The information entered here will be reflected in the mib-2 when polled by SNMP.

3.4.4.5 System Information

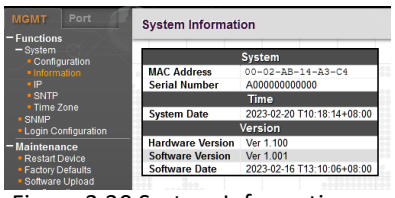


Figure 3.30 System Information

The system information is a read only display which will display the device MAC address and Serial Number, the current local network time and date, the device's hardware and software versions and the software compile date.

3.4.4.6 System IP

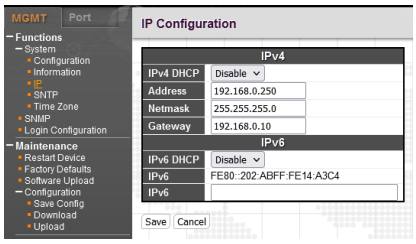


Figure 3.31 IP Configuration

The device supports either DHCP (Dynamic Host Configuration Protocol) or manual IP settings for IPv4 and IPv6. Clicking "Save" here will make the changes immediately to the running configuration. Be sure to save the running configuration to the startup config to save the changes in flash memory.

3.4.4.7 System SNTP

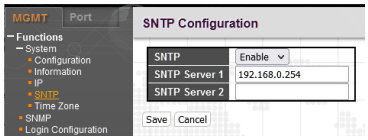


Figure 3.32 SNTP Configuration

The device's time may only be set from a network time server. The SNTP function must be enabled and then one or two Time Server IP addresses entered. Clicking "Save" here will make the changes immediately to the running configuration. Be sure to save the running configuration to the startup config to save the changes in flash memory.

3.4.4.8 System Time Zone

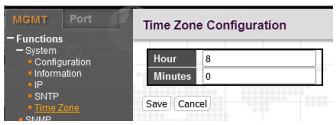


Figure 3.33 Time Zone Configuration

As the Time Server protocol synchronizes to UTC (Universal Time Coordinates), it is important for the local time zone to be set, so that the date and time are shown for the local geographical location. The time zone hours can be set + or – (0~11). Clicking "Save" here will make the changes immediately to the running configuration. Be sure to save the running configuration to the startup config to save the changes in flash memory.

3.4.4.9 SNMP

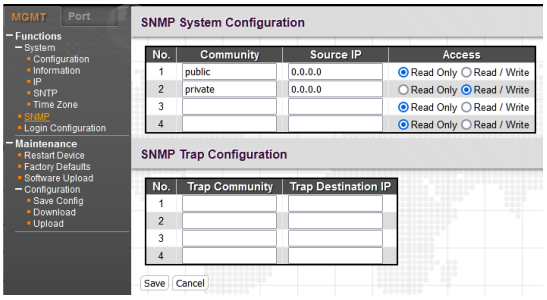


Figure 3.34 SNMP Configuration

SNMP System Configuration (No. 1~4)

The ***FMC-1800*** allows up to four (4) SNMP managers to manage the device. Each entry must set a 'community string', the IP address of the manager and the permission of either read/write (get/set) or read only (get).

SNMP Trap Configuration (No. 1~4)

Up to four (4) trap destinations may be set. Each entry must contain a 'community string' and an IP address destination. Clicking "Save" here will make the changes immediately to the running configuration. Be sure to save the running configuration to the startup config to save the changes in flash memory.

Chapter 4 will have more details for SNMP operation.

3.4.4.10 Login Configuration

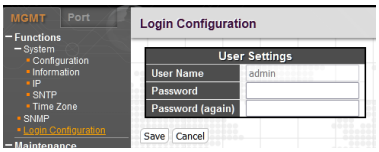


Figure 3.35 Password Setting

The username if fixed as 'admin'. There is only this one user, and that user has full control over the ***FMC-1800***.

The password for admin must include alphanumeric characters only, up to 12 characters.

The password must be entered again and match the first password to become active. If the password is forgotten, refer to section 3.3 for resetting the password from local console.

Clicking "Save" here will make the changes immediately to the running configuration. Be sure to save the running configuration to the startup config to save the changes in flash memory.

3.4.4.11 Maintenance Restart Device

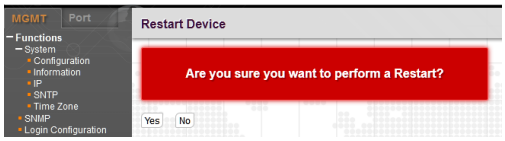


Figure 3.36 Restart (reboot) Device

Clicking No will return to the main screen. Clicking Yes will cause the device to do a cold reboot.

CAUTION: Rebooting the unit will block traffic on all channels for about 12~15 seconds as the unit re-initializes.

Be sure to save the running configuration to the startup config to save the changes in flash memory before performing a reboot.

3.4.4.12 Maintenance Factory Default

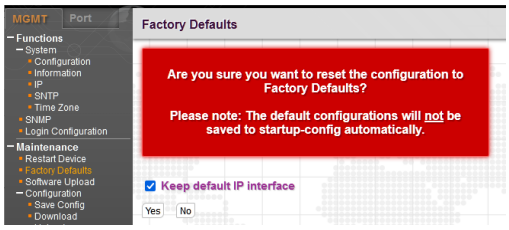


Figure 3.37 Factory Default

When selected, the "Factory Defaults" screen is displayed. Clicking Yes will immediately perform the factory default function. If the "Keep default IP interface" checkbox is checked, the IP address settings will NOT be returned to the factory default of 10.1.1.1. Be sure to check this option if you wish to continue configuration using the current IP address.

3.4.4.13 Maintenance Software Upload

Figure 3.38 Software Upload

From time to time, new software for the ***FMC-1800*** may become available, which could add new features or fix bugs found in the field. The ***FMC-1800*** supports field upgrade through the Web interface.

This two-step process involves first browsing for and selecting the binary (bin) software image file from the local PC. Then clicking the 'Upload' button to transfer the image to the ***FMC-1800*** and start the upgrade flashing.

Do not interrupt the upgrade or recovery may be necessary. Wait for the device to finish and complete rebooting. Traffic through all ports will be blocked as the device reboots, normally for only about 15 seconds. Perform this upgrade during a time when traffic is not heavy, to avoid network disruption.

3.4.4.14 Maintenance Configuration Save Config

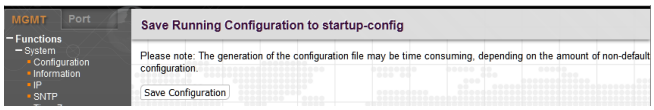


Figure 3.39 Save Running Configuration

When selected, the "Save Configuration" button is displayed. Clicking the button will copy the current "running configuration" from RAM to non-volatile storage so that the configuration will be available on successive reboots or power cycling of the device.

Important Notice: This action MUST be executed after making any changes to the device through the menu system, or the changes will be lost.

3.4.4.15 Maintenance Configuration Download

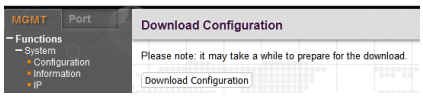


Figure 3.40 Download Configuration

By clicking the "Download Configuration" button, a binary file containing all the device's configuration data will be downloaded to the browser's default download folder. This backup may be used to restore a corrupt configuration, used in a replacement device or used to 'clone' additional devices.

3.4.4.16 Maintenance Configuration Upload

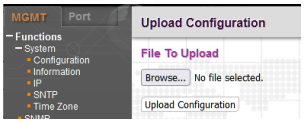


Figure 3.41 Upload Configuration

This is a two-step process. First click the "Browse" button and search the local PC for the previously saved configuration. Then click the "Upload Configuration" button, a backup file containing all the device's configuration data will be uploaded to the ***FMC-1800***.

3.4.5 Port Configuration

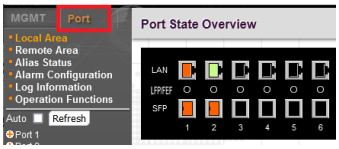


Figure 3.42 "Port" tab

The "MGMT" and "Port" tabs may be freely selected. All parameters dealing with each of the media converters are performed under the "Port" tab.

3.4.5.1 Local Area

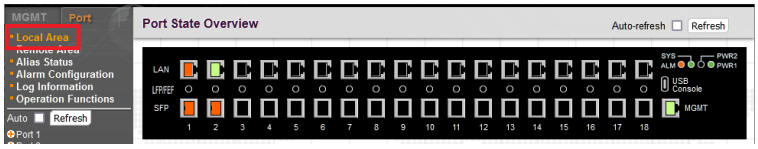


Figure 3.43 The Local Area

Local Area will provide a quick, real-time view of the link status of all the converters plus Alarm and Power status.

3.4.5.2 Remote Area

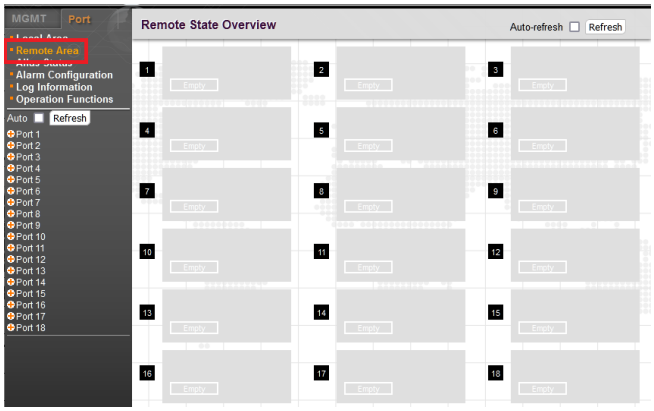


Figure 3.44 Remote Area

Remote Area will provide a quick, real-time view of the link status of all the remote converters which support the in-band management protocol of the ***FMC-1800***. This page may be ignored if no compatible remote is connected.

3.4.5.3 Alias Status

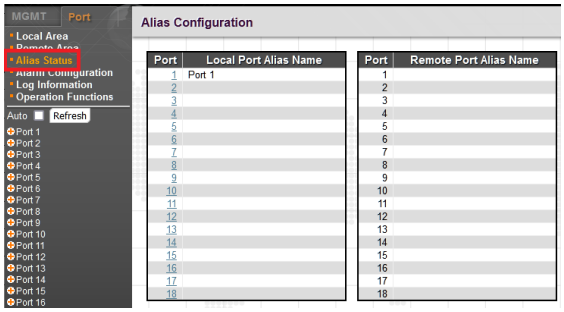


Figure 3.45 Alias Status

The current state of all local and remote Alias names are shown for each Port.

Each Port has a "link" to go directly to that port to create or modify the port alias name.

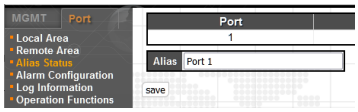


Figure 3.46 Port Alias Name

The port alias name may be composed of any alphanumeric character, space and some special characters if accepted. The alias name may not exceed 30 characters. Clicking "Save" here will make the changes immediately to the running configuration. Be sure to save the running configuration to the startup config to save the changes in flash memory.

3.4.5.4 Alarm Configuration

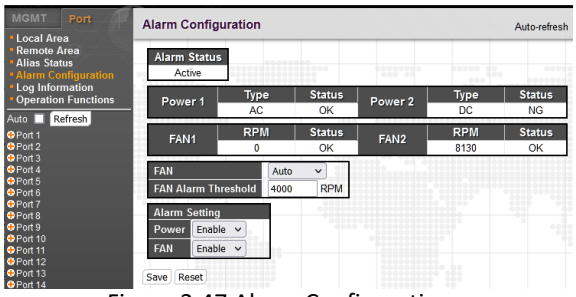


Figure 3.47 Alarm Configuration

The Alarm State is indicated as either 'Inactive' or 'Active'. The power supplies and fan are independently monitored. Note the ***FMC-1800*** chassis has only a single fan and is recognized as "FAN2". In this example, the fan status is 'OK' as the fan RPM is above the alarm fault threshold set here as 4000RPM. The alarm is shown 'Active' since **Power 2** (a DC power) is not powered up in the AC + DC model.

The alarm status is shown on the front panel as an amber LED and it could also be polled by and OID under SNMP. Clicking "Save" here will make the changes immediately to the running configuration. Be sure to save the running configuration to the startup config to save the changes in flash memory.

3.4.5.5 Log Information

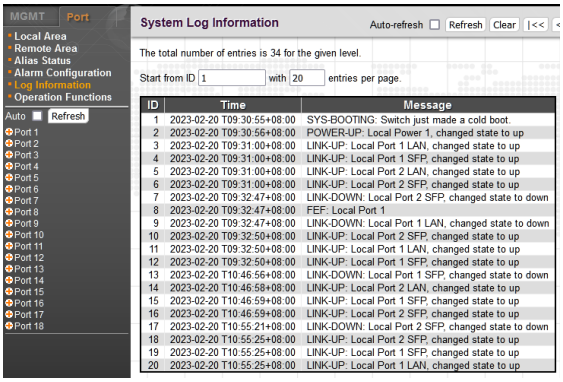


Figure 3.48 System Log Information

The system log is stored in volatile RAM with a new log created with every system reboot. The log will display system and link states with time-stamping. The log may hold up to 255 entries with first-in first-out rule. Cursor buttons allow browsing through multiple log pages, with twenty (20) entries per page.

3.4.5.6 Operation Functions

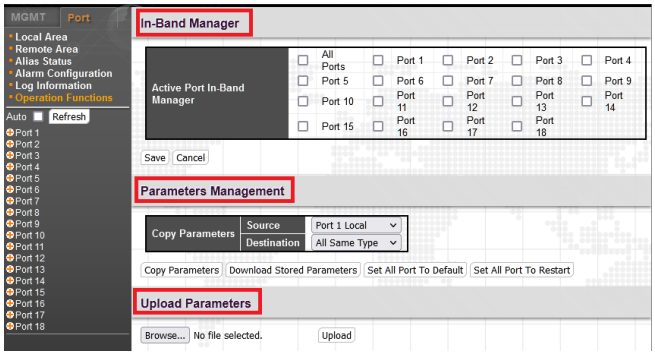


Figure 3.49 Operation Functions

<In-Band Manager>

When compatible in-band managed remote devices connect to the FMC-1800, individual ports may enable the proprietary in-band management feature.

Clicking "Save" here will make the changes immediately to the running configuration. Be sure to save the running configuration to the startup config to save the changes in flash memory.

<Parameter Management>

This feature allows a single configured port to have its configuration cloned to all other ports. There are also options to download to PC all parameters, to set all port parameters to factory default or to set all ports to reboot.

<Upload Parameters>

This is a two-step function of browse and upload. It is used in conjunction with the *Download Stored Parameters*, taking the previously saved parameter file on the PC and uploading (restoring) the parameters to all ports. Be sure to save the running configuration to the startup config to save the changes in flash memory.

3.4.5.7 Ports 1 ~ 18 Configuration

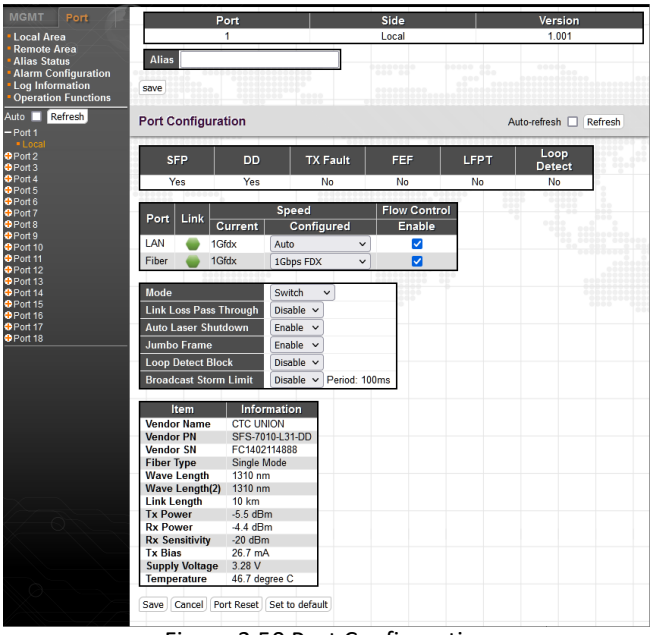


Figure 3.50 Port Configuration

Each individual port has its own configuration page. The page contains statuses and settings for the converter.

Port – Side – Version: The port number being displayed (1~18), the side local or remote and the port converter version.

The Alias name: May be set or cleared for this port. Clicking "Save" here will make the changes immediately to the running configuration. Be sure to save the running configuration to the startup config to save the changes in flash memory.

SFP – DD – TX Fault – FEF – LFTP – Loop Detect: Is an SFP installed? Yes or No.
Does the installed SFP support DDOM? Yes or No.
Does the SFP report a "TX Fault"? Yes or No.
Is there a FEF (Far End Fault)? Yes or No.
Is LFPT (Link Fault Pass-Thru) detected? Yes or No.
Is a loop condition detected? Yes or No.
Port – Link – Speed – Flow Control:
Shows both the copper LAN and the optical Fiber Ports.
Link: Green if linked, Amber is no link
Speed: Current is the detected speed.
Configured: A pull-down menu to disable the port, set for 'Auto', or to forced the speed (for fiber) or the speed and duplex (for the LAN port). Forced LAN supports 10M, 100M, full or half duplex or 1G full duplex. Forced settings will disable auto-negotiation, so use with care. The peer connection must also be forced. Only connect forced to forced or auto to auto to avoid a duplex mismatch condition.
Flow Control: This is the IEEE802.3x Ethernet flow control mechanism using 'pause' frames. It is enabled by selecting the checkbox.
Converter Functions:
Mode – Either "Switch" mode, which supports store & forward with MAC learning OR "Converter" mode which will bypass the switch for low latency and no MAC learning (fiber and Lan speed and duplex MUST match).
Link Loss Pass Through - Link Fault Pass through mechanism will pass link fault from fiber to UTP or from UTP to fiber, when enabled.
Auto Laser Shutdown - This safety feature, when enabled, will disable the transmit laser if there is no received signal. It is also referred to as 'Auto Laser Shutdown'.
Jumbo Frame - According to IEEE802.3, any Ethernet frame larger than 1518 bytes, or larger than 1522 bytes with VLAN tag is a non-standard frame. Being non-standard, these "jumbo frames" are not compatible with many networks. Currently the defacto definition for a jumbo frame is one of up to 9600 bytes in size. Many switches, routers, DSL, computers and WiFi devices do not support these non-standard packet sizes. However, due to marketing pressures, most new Ethernet chips have support for jumbo frames and therefore all newer equipment will support them. If you are on an education network backbone or run a data center, then you may possibly have use for jumbo frame support. Here, it can be specifically enabled.

Loop Detect Block - Disable or enable the loop detection/protection mechanism.
Broadcast Storm Limit – Disable or set packet per second storm threshold protection mechanism.
SFP Information - Displays the SFP information. The DDOM for SFP is described in SFF-8472 Multi-Source Agreement (MSA). The ***FMC-1800*** is ability to read and display this information from any vendor SFP that follows SFF-8472.

Function Buttons:
"Save" This button will save the port configuration to the active running configuration. Be sure to save the running configuration to the startup config to save the changes in flash memory.
"Cancel" This will undo any settings that have been changed.
"Port Reset" This will reboot the CPU/Switch for this converter port.
"Set to Default" This will load the factory defaults to this converter port.
Be sure to save the running configuration to the startup config to save the changes in flash memory.

This completes the Web configuration portion for the ***FMC-1800*** converter rack.

This page left blank intentionally.

Chapter 4 SNMP Management

4.1 SNMP Operation

Simple Network Management Protocol (SNMP) is a component of the Internet Protocol Suite as defined by the Internet Engineering Task Force (IETF). It consists of a set of standards for network management, including an application layer protocol, a database schema, and a set of data objects.

The SNMP management functions of the ***FMC-1800*** are provided by an internal SNMP agent, which utilizes out-of-band communication over standard 10Base-T or 100Base-TX Ethernet. The SNMP agent is compliant with the SNMPv1/v2C standards. SNMP communications use the User Datagram Protocol (UDP). UDP is a connectionless transport protocol, part of the TCP/IP suite. The SNMP application uses an asynchronous command/response polling protocol and operates at the OSI Layer 7 (Layer 7 is the Application Layer. Other IP applications that operate at this layer are FTP, Telnet, HTTP, SMTP, etc.). All management traffic is initiated by the SNMP-based network management station. Only the addressed managed entity (agent) answers the polling of the management station (except for trap messages).

4.1.1 SNMP Protocol Operations

The SNMP protocol includes four types of operations:

getRequest Command for retrieving specific value of an "instance" from the managed node. The managed node responds with a **getResponse** message.

getNextRequest Command for retrieving sequentially specific management information from the managed node. The managed node responds with a **getResponse** message.

getBulkRequest Command for retrieving a block of management information from the managed node. The managed node responds with a getResponse message. getBulkRequest was introduced in SNMPv2c.

setRequest Command for manipulating the value of an "instance" within the managed node. The managed node responds with a **getResponse** message.

trap Management message carrying unsolicited information on extraordinary events (that is, events which occurred not in response to a management operation) reported by the managed node.

4.1.2 The Management Information Base

The management information base (MIB) includes a collection of managed objects. Managed objects are defined as parameters that can be managed, such as specific information on device configuring or on performance statistics values.

The MIB includes the definitions of relevant managed objects (MIB variables) for the specific node. Various MIB's can be defined for various management purposes, types of equipment, etc. The management data itself is a collection of integer, string and MIB address variables that contain all the information necessary to manage the node.

A leaf object's definition includes the range of instances (values) and the "access" rights:

Read-only Instances of an object can be read, but cannot be set.

Read-write Instances of an object can be read or set.

Write-only Instances of an object can be set, but cannot be read.

Not accessible Instances of an object cannot be read, nor set.

4.1.3 MIB Structure

The MIB has an inverted tree-like structure (root over leaves), with each definition of a managed instance forming one leaf, located at the end of a branch of that tree. Each "leaf" in the MIB is reached by a unique path, therefore by numbering the branching points, starting with the top, each leaf can be uniquely defined by a sequence of numbers. The formal description of the managed objects and the MIB structure is provided in a special standardized format, called Abstract Syntax Notation 1, or ASN.1 (pronounced A-S-N dot one).

Since the general collection of MIB's can also be organized in a similar structure, under the supervision of the Internet Activities Board (IAB), any parameter included in a MIB that is recognized by the IAB is uniquely defined.

To provide the flexibility necessary in a global structure, MIB's are classified in various classes (branches), one of them being the experimental branch, another being the management (mgmt) branch, and yet another the group of private (enterprise-specific) branch. Under the private enterprise-specific branch of MIB's, each enterprise (manufacturer) can be assigned a number, which is its enterprise number. The assigned number designates the top of an enterprise-specific sub-tree of non-standard MIB's.

Enterprise-specific MIB's are published and distributed by their creators, who are responsible for their contents.

The MIB supported by the ***FMC-1800*** SNMP Agent follows RFC 1158 (MIB-II standard).

4.1.4 SNMP Communities

To enable the delimitation of management domains, SNMP uses "communities". Each community is identified by a name, which is a case sensitive alphanumeric string of up to 255 characters defined by the user. Any SNMP entity (this term includes both managed nodes and management stations) is assigned by its user a community name. In parallel, the user defines for each SNMP entity a list of the communities which are authorized to communicate with it, and the access rights associated with each community (this is the SNMP community name table of the entity).

In general, SNMP agents support two types of access rights:

Read-only the SNMP agent accepts and processes only SNMP **getRequest** and **getNextRequest** commands from management stations which have a read-only community name.

Read-write the SNMP agent accepts and processes all the SNMP commands received from a management station with a read-write community name. SNMP agents are usually configured to send traps to management stations having read-write communities.

4.1.5 SNMP Object

OID Path to Device ： 1.3.6.1.4.1.4756.196

4.2 SNMP MIB OID Definitions

Label	OID	Access	Description
portPmc1000sCfgPoeActive	.1.3.6.1.4.1.4756.196.10.40.17.1.39	ReadWrite	Broadcast Storm Limit. Period: 100ms. 0: Disable 1: Enable
portPmc1000sCfgBroadcast	.1.3.6.1.4.1.4756.196.10.40.17.1.38	ReadWrite	Broadcast Storm Limit. Period: 100ms. 0: Disable 1: 30 2: 60 3: 90 4: 120 5: 150 6: 180 7: 210 8: 240
portPmc1000sCfgLoopBlock	.1.3.6.1.4.1.4756.196.10.40.17.1.37	ReadWrite	Loop detect block. 0: Disable 1: Enable
portPmc1000sCfgLoopDetect	.1.3.6.1.4.1.4756.196.10.40.17.1.36	ReadWrite	Loop detect function. 0: Disable 1: Enable
portPmc1000sCfgJumbo	.1.3.6.1.4.1.4756.196.10.40.17.1.35	ReadWrite	16K jumbo frame packet support. 0: Disable 1: Enable
portPmc1000sCfgMode	.1.3.6.1.4.1.4756.196.10.40.17.1.32	ReadWrite	Switch mode or converter mode. 0: Switch Mode 1: Converter Mode
portPmc1000sCfgFiberFlow	.1.3.6.1.4.1.4756.196.10.40.17.1.31	ReadWrite	Fiber port flow control. 0: Disable 1: Enable
portPmc1000sCfgFiberSpd	.1.3.6.1.4.1.4756.196.10.40.17.1.30	ReadWrite	Fiber port speed setting. 0: Disable 4: 100M Full 5: 1G Full
portPmc1000sCfgLanFlow	.1.3.6.1.4.1.4756.196.10.40.17.1.29	ReadWrite	LAN port flow control. 0: Disable 1: Enable
portPmc1000sCfgLanSpd	.1.3.6.1.4.1.4756.196.10.40.17.1.28	ReadWrite	LAN port speed setting. 0: Disable 1: 10M Half 2: 10M Full 3: 100M Half 4: 100M Full 5: 1G Full 6: Auto
portPmc1000sStsFiberSpd	.1.3.6.1.4.1.4756.196.10.40.17.1.27	ReadOnly	Fiber port speed status. 0: Link Down 4: 100M Full 5: 1G Full
portPmc1000sStsLanSpd	.1.3.6.1.4.1.4756.196.10.40.17.1.26	ReadOnly	LAN port speed status. 0: Link Down 1: 10M Half 2: 10M Full 3: 100M Half 4: 100M Full 5: 1G Full
portPmc1000sStsPoeCur	.1.3.6.1.4.1.4756.196.10.40.17.1.25	ReadOnly	PoE supply current.
portPmc1000sStsPoeVol	.1.3.6.1.4.1.4756.196.10.40.17.1.24	ReadOnly	PoE input vol.
portPmc1000sStsPoePwr	.1.3.6.1.4.1.4756.196.10.40.17.1.23	ReadOnly	PoE supply power.
portPmc1000sStsLoopDetect	.1.3.6.1.4.1.4756.196.10.40.17.1.22	ReadOnly	Loop detect. 0: No 1: Yes
portPmc1000sStsDdm	.1.3.6.1.4.1.4756.196.10.40.17.1.21	ReadOnly	Digital diagnostic monitoring. 0: No 1: Yes
portPmc1000sStsSfpExist	.1.3.6.1.4.1.4756.196.10.40.17.1.20	ReadOnly	SFP inserted. 0: No 1: Yes
portPmc1000sVersion	.1.3.6.1.4.1.4756.196.10.40.17.1.10	ReadOnly	Port version.
portFmc180CfgBroadcast	.1.3.6.1.4.1.4756.196.10.40.16.1.38	ReadWrite	Broadcast Storm Limit. Period: 100ms. 0: Disable 1: 30 2: 60 3: 90 4: 120 5: 150 6: 180 7: 210 8: 240
portFmc180CfgLoopBlock	.1.3.6.1.4.1.4756.196.10.40.16.1.37	ReadWrite	Loop detect block. 0: Disable 1: Enable
portFmc180CfgLoopDetect	.1.3.6.1.4.1.4756.196.10.40.16.1.36	ReadWrite	Loop detect function. 0: Disable 1: Enable
portFmc180CfgJumbo	.1.3.6.1.4.1.4756.196.10.40.16.1.35	ReadWrite	16K jumbo frame packet support. 0: Disable 1: Enable
portFmc180CfgALS	.1.3.6.1.4.1.4756.196.10.40.16.1.34	ReadWrite	Auto laser shutdown. 0: Disable 1: Enable
portFmc180CfgLLPT	.1.3.6.1.4.1.4756.196.10.40.16.1.33	ReadWrite	Link Loss Pass Through. 0: Disable 1: Enable
portFmc180CfgMode	.1.3.6.1.4.1.4756.196.10.40.16.1.32	ReadWrite	Switch mode or converter mode. 0: Switch Mode 1: Converter Mode
portFmc180CfgFiberFlow	.1.3.6.1.4.1.4756.196.10.40.16.1.31	ReadWrite	Fiber port flow control. 0: Disable 1: Enable
portFmc180CfgFiberSpd	.1.3.6.1.4.1.4756.196.10.40.16.1.30	ReadWrite	Fiber port speed setting. 0: Disable 4: 100M Full 5: 1G Full
portFmc180CfgLanFlow	.1.3.6.1.4.1.4756.196.10.40.16.1.29	ReadWrite	LAN port flow control. 0: Disable 1: Enable
portFmc180CfgLanSpd	.1.3.6.1.4.1.4756.196.10.40.16.1.28	ReadWrite	LAN port speed setting. 0: Disable 1: 10M Half 2: 10M Full 3: 100M Half 4: 100M Full 5: 1G Full 6: Auto
portFmc180StsFiberSpd	.1.3.6.1.4.1.4756.196.10.40.16.1.27	ReadOnly	Fiber port speed status. 0: Link Down 4: 100M Full 5: 1G Full
portFmc180StsLanSpd	.1.3.6.1.4.1.4756.196.10.40.16.1.26	ReadOnly	LAN port speed status. 0: Link Down 1: 10M Half 2: 10M Full 3: 100M Half 4: 100M Full 5: 1G Full
portFmc180StsLoopDetect	.1.3.6.1.4.1.4756.196.10.40.16.1.25	ReadOnly	Loop detect. 0: No 1: Yes
portFmc180StsFEF	.1.3.6.1.4.1.4756.196.10.40.16.1.23	ReadOnly	Far end fault. 0: No 1: Yes
portFmc180StsTxFault	.1.3.6.1.4.1.4756.196.10.40.16.1.22	ReadOnly	SFP TX fault. 0: No 1: Yes
portFmc180StsDdm	.1.3.6.1.4.1.4756.196.10.40.16.1.21	ReadOnly	Digital diagnostic monitoring. 0: No 1: Yes
portFmc180StsSfpExist	.1.3.6.1.4.1.4756.196.10.40.16.1.20	ReadOnly	SFP inserted. 0: No 1: Yes
portFmc180Version	.1.3.6.1.4.1.4756.196.10.40.16.1.10	ReadOnly	Port version.
allPortsRestart	.1.3.6.1.4.1.4756.196.10.30.20.2	ReadWrite	If set all port set to default.
allPortsDefault	.1.3.6.1.4.1.4756.196.10.30.20.1	ReadWrite	If set all port set to default.
copyParamManagementAction	.1.3.6.1.4.1.4756.196.10.30.10.100	ReadWrite	If set copy source port settings to destination port.
copyParamManagementDestination	.1.3.6.1.4.1.4756.196.10.30.10.2	ReadWrite	Destination port. Copy settings from one port to all other ports or you can copy settings to selected ports.
copyParamManagementSource	.1.3.6.1.4.1.4756.196.10.30.10.1	ReadWrite	Source port. Copy settings from one port to all other ports or you can copy settings to selected ports.
portInBandManager	.1.3.6.1.4.1.4756.196.10.30.1.1.10	ReadWrite	In-Band Manager 0: Disable 1: Enable
alarmSetFan1	.1.3.6.1.4.1.4756.196.10.20.28	ReadWrite	FAN alarm setting 0: Disable 1: Enable
alarmSetPwr1	.1.3.6.1.4.1.4756.196.10.20.27	ReadWrite	Port alarm setting 0: Disable 1: Enable
fanAlarmThreshold	.1.3.6.1.4.1.4756.196.10.20.26	ReadWrite	FAN alarm threshold.
fanCfg	.1.3.6.1.4.1.4756.196.10.20.25	ReadWrite	FAN configuration: 0: Turn-Off 1: Turn-ON 2: Auto
fan2Status	.1.3.6.1.4.1.4756.196.10.20.24	ReadOnly	FAN status 0: NG 1: OK
fan2Rpm	.1.3.6.1.4.1.4756.196.10.20.23	ReadOnly	FAN RPM
fan1Status	.1.3.6.1.4.1.4756.196.10.20.22	ReadOnly	FAN status 0: NG 1: OK
fan1Rpm	.1.3.6.1.4.1.4756.196.10.20.21	ReadOnly	FAN RPM
fanModule	.1.3.6.1.4.1.4756.196.10.20.20	ReadOnly	Fan module 0: Fan 1 is not present Fan 2 is not present. 1: Fan 1 is present Fan 2 is not present. 2: Fan 1 is not present Fan 2 is present. 3: Fan 1 is present Fan 2 is present.
power2Status	.1.3.6.1.4.1.4756.196.10.20.12	ReadOnly	Power status 0: NG 1: OK
power1Status	.1.3.6.1.4.1.4756.196.10.20.11	ReadOnly	Power status 0: NG 1: OK
powerModule	.1.3.6.1.4.1.4756.196.10.20.10	ReadOnly	Power module 0: Power 1 is AC module power 2 is AC 1: Power 1 is DC module power 2 is DC 2: Power 1 is DC module power 2 is AC 3: Power 1 is AC module power 2 is DC 4: Power 1 is AC module power 2 is empty 5: Power 1 is DC module power 2 is empty 6: Power 1 is empty power 2 is AC module 7: Power 1 is empty power 2 is DC module
alarmStatus	.1.3.6.1.4.1.4756.196.10.20.1	ReadOnly	Alarm status 0: Inactive 1: Active
agentPortAreaAlias	.1.3.6.1.4.1.4756.196.10.1.1.20	ReadWrite	Port alias name
agentPortAreaType	.1.3.6.1.4.1.4756.196.10.1.1.10	ReadOnly	0: Empty 16: FMC-180 17: PMC-1000S
switchMaintSave	.1.3.6.1.4.1.4756.196.1.20.20	ReadWrite	If set save configuration.
switchMaintDefault	.1.3.6.1.4.1.4756.196.1.20.10	ReadWrite	If set reset configuration to factory default.
switchMaintRestart	.1.3.6.1.4.1.4756.196.1.20.1	ReadWrite	If set device restart.
switchSnmpTrapIp	.1.3.6.1.4.1.4756.196.1.10.10.1.20	ReadWrite	The SNMP trap source IP address.
switchSnmpTrapCommunity	.1.3.6.1.4.1.4756.196.1.10.10.1.10	ReadWrite	SNMP trap community.
switchSnmpSystAccess	.1.3.6.1.4.1.4756.196.1.10.1.1.30	ReadWrite	DHCPv6 0: Read-Only 1: Read-Write
switchSnmpSystIp	.1.3.6.1.4.1.4756.196.1.10.1.1.20	ReadWrite	The SNMP access source IPv4 address
switchSnmpSystCommunity	.1.3.6.1.4.1.4756.196.1.10.1.1.10	ReadWrite	SNMP Community
switchSysTimeZoneMinute	.1.3.6.1.4.1.4756.196.1.1.41	ReadWrite	Time Zone: Minutes.
switchSysTimeZoneHour	.1.3.6.1.4.1.4756.196.1.1.40	ReadWrite	Time Zone: Hour.
switchSysSntpServer2	.1.3.6.1.4.1.4756.196.1.1.32	ReadWrite	SNTP server 2 IP address.
switchSysSntpServer1	.1.3.6.1.4.1.4756.196.1.1.31	ReadWrite	SNTP server 1 IP address.
switchSysSntpActive	.1.3.6.1.4.1.4756.196.1.1.30	ReadWrite	SNTP Active 0: Disable 1: Enable
switchSysIP6	.1.3.6.1.4.1.4756.196.1.1.20	ReadWrite	IP Address
switchSysIP6Slaac	.1.3.6.1.4.1.4756.196.1.1.19	ReadOnly	Stateless address auto-configuration (SLAAC).
switchSysDhcp6	.1.3.6.1.4.1.4756.196.1.1.18	ReadWrite	IPv6 > DHCP 0: Disable 1: Enable
switchSysGateway	.1.3.6.1.4.1.4756.196.1.1.17	ReadWrite	Netmask
switchSysNetmask	.1.3.6.1.4.1.4756.196.1.1.16	ReadWrite	Netmask
switchSysIP4	.1.3.6.1.4.1.4756.196.1.1.15	ReadWrite	IP address.
switchSysDhcp4Gateway	.1.3.6.1.4.1.4756.196.1.1.14	ReadOnly	Gateway allocated by DHCP server.
switchSysDhcp4Netmask	.1.3.6.1.4.1.4756.196.1.1.13	ReadOnly	Netmask allocated by DHCP server.
switchSysDhcp4IP	.1.3.6.1.4.1.4756.196.1.1.12	ReadOnly	IP address allocated by DHCP server.
switchSysDhcp4Server	.1.3.6.1.4.1.4756.196.1.1.11	ReadOnly	DHCP server IP address
switchSysDhcp4	.1.3.6.1.4.1.4756.196.1.1.10	ReadWrite	IPv4 > DHCP 0: Disable 1: Enable
switchSysSwDate	.1.3.6.1.4.1.4756.196.1.1.5	ReadOnly	Software Date
switchSysSw	.1.3.6.1.4.1.4756.196.1.1.4	ReadOnly	Software Version
switchSysHw	.1.3.6.1.4.1.4756.196.1.1.3	ReadOnly	Hardware Version
switchSysDate	.1.3.6.1.4.1.4756.196.1.1.2	ReadOnly	System Date
switchSysMAC	.1.3.6.1.4.1.4756.196.1.1.1	ReadOnly	Mac address.

Table 4.1 MIB Variables

This page left blank intentionally.

w w w . c t c u . c o m

T +886-2 2659-1021 **F** +886-2 2659-0237 **E** sales@ctcu.com