Omnitron Systems

iConverter® 10/100M2 and 2FXM2 Media Converter and Network Interface Device

STANDALONE AND PLUG-IN MODULE USER MANUAL

Release 5.2

Table of Contents

1.0 OVERVIEW

This document describes the installation and configuration of the iConverter® 10/100M2 and 2FXM2 standalone Network Interface Device and plug-in modules.

All Menu-Driven Interface screens describe the 10/100M2 module. The screens for 2FXM2 have minor differences.

1.1 GENERAL DESCRIPTION

The Omnitron iConverter 10/100M2 and 2FXM2 are carrier-class media converters and Network Interface Devices (NID) that provide 10BASE-T or 100BASE-TX (10/100) to 100BASE-FX, or 100BASE-FX to 100BASE-FX Fiber media conversion with integrated management.

The modules conform to Ethernet in the First Mile (EFM) fiber standards to support Fiber-to-the-X (FTTX) Metropolitan access and Enterprise LAN/WAN networks. The modules are used to provide managed copper or fiber demarcation points at the customer premises and network edge, offering service provisioning functions, such as Quality of Service and Bandwidth Control (rate-limiting) capabilities.

The IP-based remote management can be accessed by Omnitron's NetOutlook® SNMP Network Management Software, third-party SNMP clients and Telnet. The management IP address is configured manually or automatically as a DHCP client in the configuration menu. IP-less remote management is supported via 802.3ah OAM or Secure OAM protocol. A Menu-Driven Interface is accessible via Telnet, serial console port, or a modem connection to the serial console port.

IMPORTANT

This manual provides information on the installation and configuration of the module using the menu-driven interface (serial console). For ongoing network management, Omnitron Systems recommends NetOutlook, an SNMP-based Network Management Software.

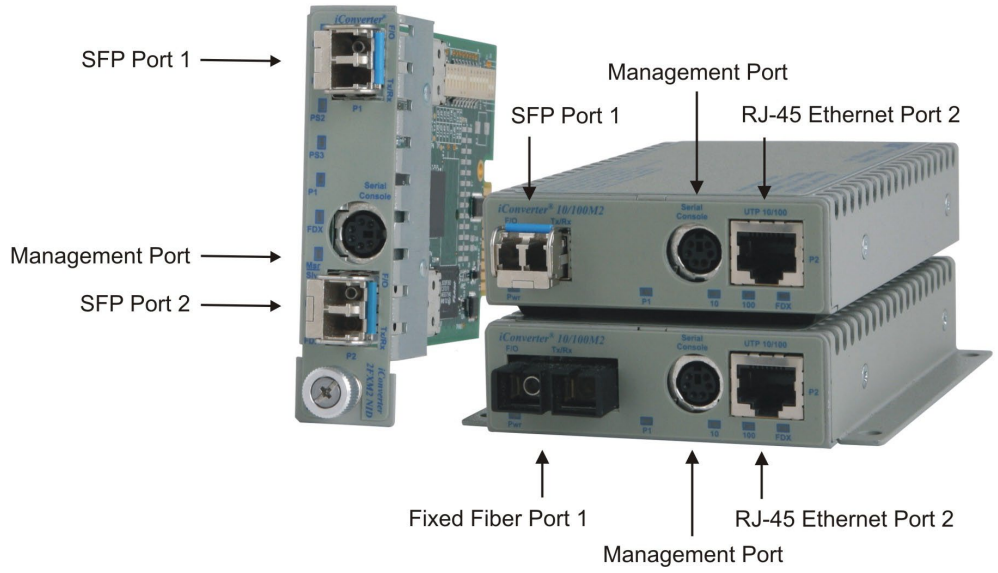
NetOutlook provides an efficient, user-friendly way to configure, monitor and manage devices installed on a single network or on a series of networks by providing an intuitive graphical display with real-time status and alarm (trap) information. The user can easily manage iConverter equipment on a large Enterprise network or Metropolitan Area Network (MAN) from a single location without the need of additional resources.

The firmware version of the Network Management Module (NMM2) and NetOutlook must be the same or greater than the firmware version on the M2 (10/100M2 and 2FXM2) for the module to be managed.

2.0 PORT STRUCTURE

2.1 OVERVIEW

The front panel provides access to the management (serial console), fiber (Port 1) and RJ-45/fiber (Port 2) ports on the module. The 10/100M2 fiber port will vary depending on the connector type; ST, SC, LC or SFP supporting 100BASE-FX transceivers. The 2FXM2 only supports SFP fiber transceivers. The plug-in module features two additional Ethernet ports for connectivity via the chassis backplane.



2.1.1 Management Port

The modules feature a Serial RS-232 Console Port (aka Craft Interface) which can be connected to a computer for initial setup and configuration. The Serial Console Port is accessed through the mini DIN-6 female DCE interface. Connect the interface to a computer's DB-9 serial port using the mini DIN-6 male to DB-9 female cable adapter (Part # 8082-0), which is included with the modules.

An optional DB-9 male to female straight-through serial cable is available for extension (Part # 8081-3).

2.1.2 RJ-45 and Fiber Ports

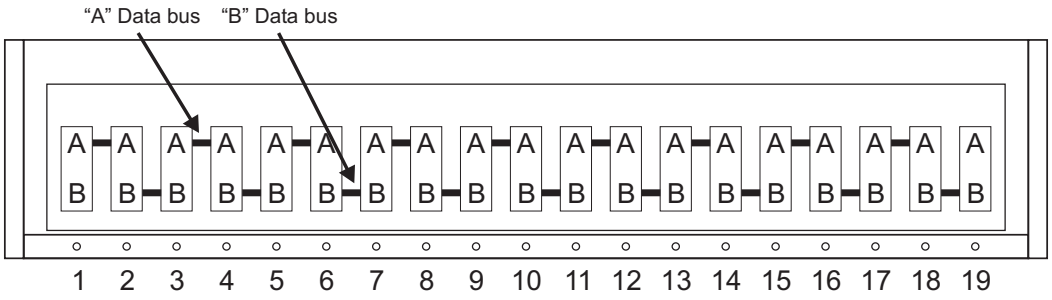
The RJ-45 Ethernet port supports 10BASE-T and 100BASE-TX protocols, auto-negotiation and manual forced modes for half and full duplex operation. The RJ-45 port can be enabled or disabled via network management. A disabled port will still connect and allow 802.3ah OAM communication, but blocks normal data traffic.

The fiber interface supports the 100BASE-FX protocol. The fiber interface operates in manual mode and supports half or full duplex operation. The fiber port can be enabled or disabled via network management. A disabled port will still connect and allow 802.3ah OAM or IP-less (secure) OAM communication, but blocks normal data traffic.

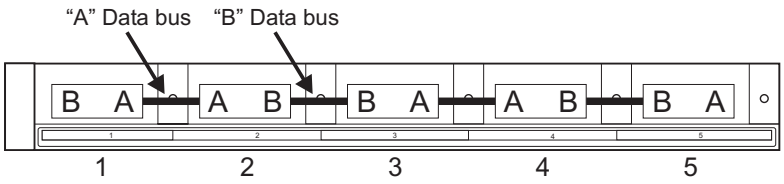
2.1.3 Backplane Ethernet Ports - Chassis Plug-in Module Only

The plug-in module supports two additional 10/100Mbps Ethernet Backplane Ports. The Backplane Ports A and B allow Ethernet data connectivity between adjacent modules in an iConverter chassis. The two backplane ports can be disabled or enabled via a DIP-switch or network management.

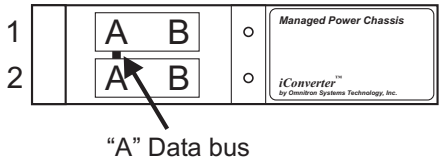
The iConverter 19-Module, 5-Module, 2-Module and 1-Module Redundant Chassis backplanes provide Ethernet data connectivity between adjacent slots or ports. The A and B backplane ports connect the slots as illustrated in the diagram on the next page.



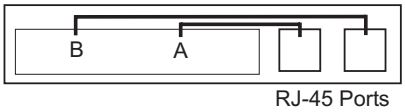
19-Module Chassis



5-Module Chassis



2-Module Chassis



1-Module Redundant Chassis

3.0 INSTALLATION PROCEDURE

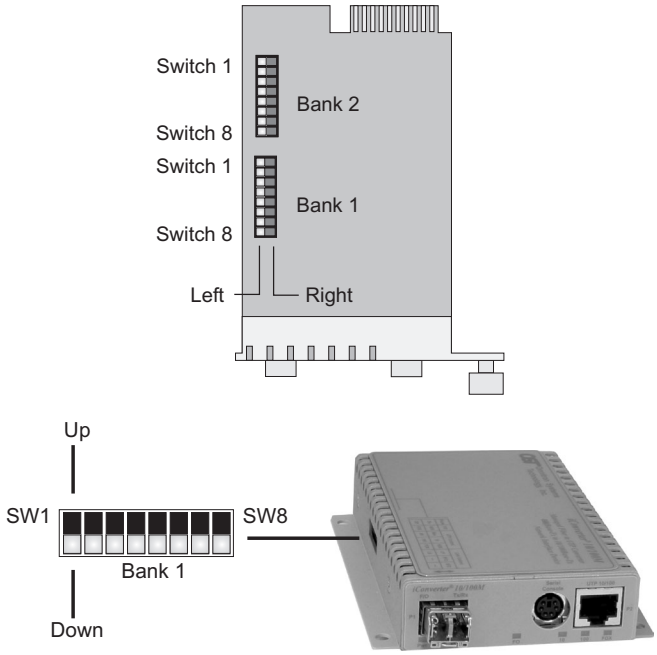
3.1 OVERVIEW

The following steps outline the installation and configuration procedures for the modules. Refer to the specified sections for detailed instructions.

- Configure DIP-switches (Section 3.2)
- Module Installation and Cable Connection (Section 3.3)
- Verify Operation (Section 3.4)
- Module Configuration - Serial Interface (Section 4.0)

3.2 CONFIGURING DIP-SWITCHES

The plug-in module has two board-mounted DIP-switches. The standalone unit has one bank of DIP-switches. The locations of the DIP-switches are illustrated below.



DIP-switch Locations

3.2.1 DIP-Switch Bank 1 Settings

DIP-switch Bank 1 is available on both the plug-in and standalone modules. The table indicates the position of the switch; Left/Down or Right/Up. As indicated in the DIP-switch location diagram, Left and Right refers to the plug-in module and Down and Up refers to the standalone module.

Switch	Left/Down (Factory Default)	Right/Up
SW1	**Off:** Pause Disable	**On:** Pause Enable
SW2	**FDX:** Fiber Full-Duplex	**HDX:** Fiber Half-Duplex
SW3	**AN:** RJ-45 Auto-Negotiate	**Man:** RJ-45 Manual
SW4	**100:** RJ-45 100Mbps	**10:** RJ-45 10Mbps
SW5	**FDX:** RJ-45 Full-Duplex	**HDX:** RJ-45 Half-Duplex
SW6 - SW8	See Link Mode DIP-Switch Table in Section 3.2.1.8	

10/100M2 DIP-switch Description

Switch	Left/Down (Factory Default)	Right/Up
SW1	**Off:** Pause Disable	**On:** Pause Enable
SW2	**FDX:** Fiber Port 1 Full-Duplex	**HDX:** Fiber Port 1 Half-Duplex
SW3	Reserved	Reserved
SW4	Reserved	Reserved
SW5	**FDX:** Fiber Port 2 Full-Duplex	**HDX:** Fiber Port 2 Half-Duplex
SW6 - SW8	See Link Mode DIP-Switch Table in Section 3.2.1.8	

2FXM2 DIP-switch Description

3.2.1.1 SW1: Pause Disable/Enable "Off/On"

The Pause Function sets the flow control functionality for the module, including pause mode advertisement (No Pause or Symmetrical Pause), pause functionality, and half duplex back pressure. When a port is operating in auto-negotiation, its Pause operation is determined by the Pause capability advertised during auto-negotiation between itself and the link partner.

During auto-negotiation, if the Pause Disable/Enable DIP-switch setting is in the "Off" position (factory default), the module will advertise No Pause mode with its link partner. If the Pause Disable/Enable DIP-

switch setting is in the “On” position, the module will negotiate with the link partner the supported Pause mode type; Symmetrical Pause or No Pause mode.

When a port is operating in Manual mode, its Pause operation mode is based on the Pause Disable/Enable DIP-switch setting. Setting the Pause DIP-switch to the “Off” position (factory default) forces the port to operate in No Pause mode. Setting the Pause DIP-switch to the “On” position allows the port to operate in Symmetrical Pause mode.

3.2.1.2 SW2: Fiber Full/Half-Duplex “FDX/HDX”

When the DIP-switch is in the Full Duplex “FDX” position (factory default), the fiber port (Port 1) will facilitate a connection that supports Full-Duplex operation. Setting this DIP-switch to Half-Duplex “HDX” facilitates a connection that supports only Half-Duplex.

3.2.1.3 SW3: RJ-45 Auto/Manual Negotiate “AN/Man” - 10/100M2

When the DIP-switch is in the RJ-45 auto-negotiate “AN” position (factory default), the RJ-45 port (Port 2) automatically determines the speed and duplex mode of the connecting device. If the connecting device cannot provide the proper signal to indicate its own mode of operation, this DIP-switch should be set to the RJ-45 Manual mode “Man” position. Manual mode requires manually configuring the RJ-45 port to match the speed and the duplex mode of the connecting device using the “10/100” and RJ-45 “FDX/HDX” DIP-switches. Refer to the table below for a detailed explanation.

Switch SW3	Switch SW4	Switch SW5	Function
AN	100	FDX	The RJ-45 port is set to auto-negotiation with the following modes advertised: 100F, 100H, 10F, 10H
AN	100	HDX	The RJ-45 port is set to auto-negotiation with the following modes advertised: 100H, 10F, 10H
AN	10	FDX	The RJ-45 port is set to auto-negotiation with the following modes advertised: 10F, 10H
AN	10	HDX	The RJ-45 port is set to auto-negotiation with the following modes advertised: 10H
MAN	100	FDX	The RJ-45 port is set to manual negotiation and is forced to: 100F
MAN	100	HDX	The RJ-45 port is set to manual negotiation and is forced to: 100H
MAN	10	FDX	The RJ-45 port is set to manual negotiation and is forced to: 10F
MAN	10	HDX	The RJ-45 port is set to manual negotiation and is forced to: 10H

3.2.1.4 SW4 - RJ-45 10/100Mbps “10/100” - 10/100M2

When the RJ-45 “AN/Man” DIP-switch (described above) is in the manual “Man” position, the “10/100” DIP-switch determines the speed of operation for the RJ-45 port. Setting the “10/100” DIP-switch to the “100” position (factory default) forces the RJ-45 port to operate at 100Mbps. Setting this DIP-switch to the “10” position forces the RJ-45 port to operate at 10Mbps. Adjust the “10/100” DIP-switch to match the speed of the connecting device.

When the RJ-45 “AN/Man” DIP-switch is in the auto-negotiate “AN” position and the “10/100” DIP-switch is in the “100” position, the RJ-45 port auto-negotiates to 100Mbps or 10Mbps. When in the “10” position, the RJ-45 port only operates at 10Mbps. Refer to the table above for a detailed explanation.

3.2.1.5 SW5 - RJ-45 Full/Half Duplex "FDX/HDX" - 10/100M2

When the RJ-45 "AN/Man" DIP-switch is in the manual "Man" position, the "FDX/HDX" DIP-switch determines the duplex operation mode of the RJ-45 port. Setting the "FDX/HDX" DIP-switch to "FDX" position (factory default) forces the RJ-45 port to operate in Full-Duplex. Setting the DIP-switch to "HDX" forces the RJ-45 port to operate in Half-Duplex. Adjust the "FDX/HDX" DIP-switch to match the duplex mode of the connecting device.

When the RJ-45 "AN/Man" DIP-switch is in the auto-negotiate "AN" position, and the "FDX/HDX" DIP-switch is in the Full-Duplex "FDX" position, the RJ-45 port auto-negotiates to Full or Half-Duplex. When in the Half-Duplex "HDX" position, the RJ-45 port functions only in Half-Duplex for the speed selected. Refer to the table on the previous page for a detailed explanation.

3.2.1.6 SW5: Fiber Full/Half-Duplex "FDX/HDX" - 2FXM2

When the DIP-switch is in the Full Duplex "FDX" position (factory default), the fiber port (Port 2) will facilitate a connection that supports Full-Duplex operation. Setting this DIP-switch to Half-Duplex "HDX" facilitates a connection that supports only Half-Duplex.

3.2.1.7 SW2 - SW4: Reserved - 2FXM2

These DIP-switches are reserved and must be in the LEFT/DOWN (default) position.

3.2.1.8 SW6, SW7, SW8 - Link Modes

These three DIP-switches configure the link mode settings. The following table details possible Link Mode DIP-switch configurations. Link Segment is the factory default setting.

Plug-in Module

SW6	SW7	SW8	Result
Left	Left	Left	Link Segment (LS)
Right	Left	Left	Link Propagate (LP)
Left	Right	Left	Remote Fault Detection mode plus Link Segment mode (RFD + LS)
Right	Right	Left	Remote Fault Detection mode plus Link Propagation mode (RFD + LP)
Left	Left	Right	Symmetrical Fault Detect mode (SFD)
Right	Left	Right	Asymmetrical LP P1 to P2 (ALP P1-P2)
Left	Right	Right	Asymmetrical LP P2 to P1 (ALP P2-P1)
Right	Right	Right	Asymmetrical RFD+LP P1 to P2

Standalone Module

SW6	SW7	SW8	Result
Down	Down	Down	Link Segment (LS)
Up	Down	Down	Link Propagate (LP)
Down	Up	Down	Remote Fault Detection mode plus Link Segment mode (RFD + LS)
Up	Up	Down	Remote Fault Detection mode plus Link Propagation mode (RFD + LP)
Down	Down	Up	Symmetrical Fault Detect mode (SFD)
Up	Down	Up	Asymmetrical LP P1 to P2 (ALP P1-P2)
Down	Up	Up	Asymmetrical LP P2 to P1 (ALP P2-P1)
Up	Up	Up	Asymmetrical RFD+LP P1 to P2

NOTE: Connecting two converters which are set to any of the RFD modes are illegal and will cause a "deadly embrace" lockup.

NOTE: It is recommended to keep the LS setting (default) until initial configuration is complete.

For detailed information on the operation of the different Link Modes, download the application note "iConverter Link Modes" available on Omnitron's web page:

http://www.omnitron-systems.com/component/com_docman/Itemid,869/gid,114/task,cat_view/

3.2.2 DIP-Switch Bank 2 Settings - Chassis Plug-in Module Only

The function of DIP-switch Bank 2 is outlined in the table below.

Switch	Left (Factory Default)	Right
SW1	**A-DS:** Backplane Port A Disabled	**A-EN:** Port A Enabled
SW2	**B-DS:** Backplane Port B Disabled	**B-EN:** Port B Enabled
SW3	**Reserved**	**Reserved**
SW4	**M/SL:** Master/Slave Auto-Select	**SL:** Slave-Mode Only
SW5-SW8	Reserved	Reserved

3.2.2.1 SW1 - Backplane Port A Enabled "A-DS/A-EN"

When the DIP-switch is in the Left "A-DS" position (factory default), Backplane Port A of the module is isolated from the chassis Backplane. When the DIP-switch is in the Right "A-EN" position, Backplane Port A of the module is enabled. This port allows Ethernet Backplane connectivity to an adjacent module via the chassis Backplane Port A. See the backplane illustrations in Section 2.1.3.

3.2.2.2 SW2 - Backplane Port B Enabled "B-DS/B-EN"

When the DIP-switch is in the Left "B-DS" position (factory default), Backplane Port B is isolated from the chassis Backplane. When the DIP-switch is in the Right "B-EN" position, Backplane Port B is enabled. This port allows Ethernet Backplane connectivity to an adjacent module via the chassis Backplane Port B. See the backplane illustrations in Section 2.1.3.

3.2.2.3 SW4 - Master/Slave Auto-Select and Slave-Only "M/SL / SL

Setting this DIP-switch to the Left "M/SL" position (factory default), allows chassis mastership to be automatically negotiated by the installed management modules.

When an NMM2 is installed in the chassis, the NMM2 will always be the master, otherwise the lowest slot number with a management module installed will become the chassis master.

To designate the M2 (10/100M2 or 2FXM2) module as the master of the chassis when an Network Management Module (NMM2) is not installed, set the DIP-switch on the module to the Left "M/SL" position, and set the DIP-switch on the other installed management modules to the Right "SL" position to enable Slave-Only mode.

Only the chassis master can change the configuration settings of other modules. When Slave Writes is enabled on a slave management module, the management module can be modified by directly connecting to the serial console port. See section 4.3.6 for more information.

3.2.2.4 SW3, SW5, SW6, SW7, SW8 - Reserved

These DIP-switches are for factory use only.

NOTE: DIP-switches marked Reserved must be kept in the Left (factory default) position.

3.3 MODULE INSTALLATION AND CABLE CONNECTION

3.3.1 Plug-in Module

Caution: Use proper ESD protection to reduce the risk of damage to your equipment.

a. Carefully slide the module into an open slot in the chassis. Align the module with the installation guides and ensure that the module is firmly seated against the backplane. Secure the module by fastening the front panel thumbscrew (push in and turn clockwise to tighten) to the chassis front. Verify the "Pwr" LED is ON (indicating the chassis is powered).

b. When using a Network Interface Device (NID) model with SFP ports, insert the SFP fiber transceivers into the SFP receptacles on the module.

NOTE: The release latch of the SFP transceiver must be in the closed (up) position before insertion.

c. Connect the appropriate multimode or single-mode fiber cable to the fiber port of the installed module. It is important to ensure that the transmit (TX) is attached to the receive side of the device at the other end and the receive (RX) is attached to the transmit side. Single-fiber (SF) transceivers operate in pairs. The TX wavelength must match the RX wavelength at the other end and the RX wavelength must match the TX wavelength at the other end.

d. When using a NID model with an RJ-45 port, connect the RJ-45 port via a Category 5 or better cable to a 10BASE-T, 100BASE-TX or 1000BASE-T Ethernet device (depending on the configuration of the port).

NOTE: IP-less Remote Management is only supported on Port 1.

3.3.2 Standalone Module

a. The NID is available as a standalone module with or without built-in mounting brackets. When using the standalone module with mounting brackets, attach the module to a wall, backboard or other flat surfaces with appropriate screws (not included). When using the standalone module without mounting brackets, place the module on a flat and level surface. Attach the rubber feet to the bottom of the module to prevent the module from sliding. Make sure the module is placed in a safe, dry and secure location.

To power the module using the AC/DC adapter, connect the AC/DC adapter to an AC outlet. Then connect the barrel plug at the end of the wire on the AC/DC adapter to the 2.5mm DC barrel connector (center-positive) on the module. Confirm that the module has powered up properly by checking the Power LED located on the front of the module.

To power the unit using a DC power source, prepare a power cable (not supplied) using a two conductor insulated 14 AWG wire or better. Cut the power cable to the length required. Strip approximately 3/8 of an inch of insulation from the power cable wires. Connect the power cables to the unit by fastening the stripped ends to the DC power connector. Connect the power wires to the DC power source. The Power LED should indicate the presence of power.

WARNING: Note the wire colors used in making the positive and negative connections. Use the same color assignment for the connection at the DC power source.

NOTE: If mounting with a safety ground attachment, use the safety ground screw at the rear of the unit.

b. When using a NID model with SFP ports, insert the SFP fiber transceivers into the SFP receptacles on the module.

NOTE: The release latch of the SFP transceiver must be in the closed (up) position before insertion.

c. Connect the appropriate multimode or single-mode fiber cable to the fiber port of the installed module. It is important to ensure that the transmit (TX) is attached to the receive side of the device at the other end and the receive (RX) is attached to the transmit side. Single-fiber (SF) transceivers operate in pairs. The TX wavelength must match the RX wavelength at the other end and the RX wavelength must match the TX wavelength at the other end.

d. When using a NID model with an RJ-45 ports, connect the RJ-45 port via a Category 5 or better cable to a 10BASE-T, 100BASE-TX or 1000BASE-T Ethernet device (depending on the configuration of the port).

3.4 VERIFY OPERATION

Once the module has been installed and configured, per Sections 3.2 and 3.3, verify the module is operational by viewing the status of the LED indicators. The table below provides a description for each LED indicator.

The Power LED indicates the module is receiving power from the chassis or power cord. The plug-in modules has an LED indicator for each available power supply in the chassis (the 19-Module Chassis has three, the 5-Module Chassis has two).

The Port 1 Activity "P1" LED on the 10/100M2 and the "P1" and "P2" LEDs on the 2FXM2 indicate a fiber link connection has been established. A blinking LED indicates data activity.

The Port 2 "10/100" LED on the 10/100M2 indicates the module has established a connection across its RJ-45 port. A blinking LED indicates data activity.

Refer to Section 7.0, Troubleshooting Guide, for help in determining possible fault conditions.

LED Function "Legend"	Color	Off State	Plug-in On / Blinking State	Standalone On / Blinking State
Power "Pwr"	Green	No power	On: Module has power	On: Module has power
Power Supply Status "PSx"	Green	Chassis Power Supply not installed	On: Power available from installed Power Supply #X Blinking: No power available from installed Power Supply #X	Not available on standalone
Port 1 Activity "P1"	Green	No Fiber Link	On: Fiber link is active Blinking: Fiber Data Activity	On: Fiber link is active Blinking: Fiber Data Activity
Chassis Master/Slave "Msr/Slv"	Green	Chassis Slave Mode	On: Chassis Master Blinking: Operating in OAM Mode	Not available on standalone
Port 2 10Mbps "10"	Green	10Mbps not active	On: 10Mbps RJ-45 link is active Blinking: Data Activity	On: 10Mbps RJ-45 link is active Blinking: Data Activity
Port 2 100Mbps "100"	Green	100Mbps not active	On: 100Mbps RJ-45 link is active Blinking: Data Activity	On: 100Mbps RJ-45 link is active Blinking: Data Activity
Port 2 Full-Duplex "FDX"	Green	Half-Duplex	On: Full-Duplex	Full-Duplex when any RJ-45 link is active

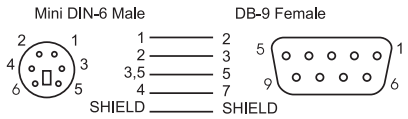
10/100M2 Module

LED Function "Legend"	Color	Off State	Plug-in On / Blinking State	Standalone On / Blinking State
Power "Pwr"	Green	No power	On: Module has power	On: Module has power
Power Supply Status "PSx"	Green	Chassis Power Supply not installed	On: Power available from installed Power Supply #X Blinking: No power available from installed Power Supply #X	Not available on standalone
Port 1 Activity "P1"	Green	No Fiber Link	On: Fiber link is active Blinking: Fiber Data Activity	On: Fiber link is active Blinking: Fiber Data Activity
Port 1 Half/Full Duplex "FDX"	Green	Half-Duplex	On: Full-Duplex	On: Full-Duplex
Chassis Master/Slave "Msr/Slv"	Green	Chassis Slave Mode	On: Chassis Master Blinking: Operating in OAM Mode	Not available on standalone
Port 2 Activity "P2"	Green	No Fiber Link	On: Fiber link is active Blinking: Fiber Data Activity	On: Fiber link is active Blinking: Fiber Data Activity
Port 2 Half/Full Duplex "FDX"	Green	Half-Duplex	On: Full-Duplex	On: Full-Duplex

2FXM2 Module

4.0 MODULE CONFIGURATION - SERIAL INTERFACE

The module can be configured by attaching the serial port to a DB-9 serial (RS-232) equipped computer with terminal emulation software such as ProComm or Putty. The Serial Console Port (DCE) is a mini DIN-6 female connector which can be changed to a DB-9 connector with the included adapter. Attach the ends of a serial cable to the serial port of the PC and the Serial Console Port of the module. The port is a standard RS-232 asynchronous serial interface. The pin-outs are illustrated below.



Serial Connector Pin Outs

Start the terminal emulation program and select the correct COM Port. Set the serial port to the following:

Set the PC's serial port to the following:

Bits Per Second:	57,600
Stop Bits:	1
Data Bits:	8
Parity:	NONE
Hardware Flow Control:	NONE

Power the chassis containing the module and press <*ENTER*> to access the Menu-Driven interface on the attached PC.

The module is configured with the following defaults:

IP

IP Address	192.168.1.220
IP Subnet Mask	255.255.255.0
IP Gateway	192.168.1.1

Protocols

IP	Enabled
TELNET	Enabled
FTP	Disabled
DHCP Client	Disabled

Passwords

Serial	No password assigned
FTP	No password assigned (not enabled)
Telnet	public

SNMPv1/v2c Communities

READ	public
WRITE	public
SNMPv1/v2c agent	Enabled

SNMPv3 Parameters

SNMPv3 agent	Enabled
User 1 name (read only):	guest
User 1 Privacy pwd:	publicguest
User 1 Authen pwd:	publicguest
User 2 name (read/write):	admin
User 2 Privacy pwd:	privateadmin
User 2 Authen pwd:	privateadmin

General SNMP Parameters

SNMP trap type	SNMPv2c

Other Networking Parameters

Keep Alive Trap	Disabled
Keep Alive Trap interval	10 seconds
SW1 Switch Block	Enabled
Soft Switch Reload	Disabled
Slave Write	Disabled
Management Mode	Auto ah
802.3ah OAM State	Enabled
OAM Mode	Active
Pause	Disabled
Port Access Control	All On
Port VLAN Path Setup	All On
Management VLAN	Disabled

A new module does not have a password, and will skip the ***Password Entry*** screen and go straight to the ***Management Options*** screen. If a password has been set, the ***Password Entry*** screen will be displayed. Type the password and press <*ENTER*>.

```
Omnitron Systems Technology, Inc.                                    iConverter
Copyright 2001-2015 OST, Inc.                                        Password Entry

--------------------------------------------------------------------------------
Omnitron Systems Technology        Technical Support:       (949) 250-6510
38 Tesla                           Sales/Products:          (800) 675-8410
Irvine, CA 92618                   On the web at:           www.omnitron-systems.com
--------------------------------------------------------------------------------

IP Address  192.168.1.220
MAC         00:00:00:00:00:00




[xxxxxxxx]
Please enter the password >
```

The ***Management Options*** screen will be displayed.

```
Management Options                                                   iConverter

Network Management
1:  Chassis and Module Management
2:  Set Module Identifier
Management Module Preferences
3:  IP and Control Preferences
4:  SNMP Preferences
5:  Other Networking Features
6:  Restore to Factory Defaults
7:  Restart Management Module
Management Module Maintenance
8:  Firmware Update
9:  Set Date/Time


01/01/2000  00:00:01 AM     (sysUpTime: 0)
IP Address     = 192.168.1.220    [MAC 00:00:00:00:00:00]
Chassis Number = 1   Slot Number = 1

Enter Choice, (H)elp, E(x)it >
```

NOTE: System date and time is not retained during a restart or power cycle. It must be manually configured after a restart or power cycle.

The menu-driven interface provides the ability to make changes to the module. When changes are made in the sub menus, the option will have a "+" next to the number, indicating the option has been changed and the menu will display the following note:

```
*For changes to become permanent select "Save Settings"
```

Use the save command in the sub menu to save the changes.

4.1 IP AND CONTROL PREFERENCES SCREEN

An IP address is required for the SNMP manager to access the module. The factory default IP address is 192.168.1.220. The IP address can be configured automatically using DHCP (see ***Other Networking Features*** screen to enable DHCP client) or manually configured using the options in the ***IP and Control Preference*** screen.

4.1.1 IP Parameters

To configure the IP address and control parameters, select *3* from the ***Management Options*** screen, and press <*ENTER*>. The ***IP and Control Preferences*** screen will be displayed.

```
IP and Control Preferences Screen                                  iConverter

1:  Set IP                              192.168.1.220
2:  Set Subnet Mask                     255.255.255.0
3:  Set Gateway                         192.168.1.1

4:  Chassis Number                      1
5:  Chassis Name (also sysName)         10/100M2

6:  Enable/Disable TELNET               Enabled
7:  Enable/Disable FTP                  Disabled
8:  Enable/Disable Soft Switch Reload   Disabled

9:  TELNET Password                     *****
10: FTP    Password
11: Serial Password

12: Save Settings

Enter Choice, Management Options Screen(0), (H)elp, E(x)it >
```

To configure the IP address, select *1* at the ***IP and Control Preferences*** screen, and press <*ENTER*>. Backspace over the existing value, type the new value (in x.x.x.x format), and press <*ENTER*>.

NOTE: x represents a decimal number between 0 and 255.

To configure the subnet mask, select *2* at the ***IP and Control Preferences*** screen, and press <*ENTER*>. Backspace over the existing value, type the new value (in x.x.x.x format), and press <*ENTER*>.

NOTE: Class A subnet mask is 255.0.0.0, Class B subnet mask is 255.255.0.0 and Class C subnet mask is 255.255.255.0.

To configure the gateway, select *3* at the ***IP and Control Preferences*** screen, and press <*ENTER*>. Backspace over the existing value, type the new value (in x.x.x.x format), and press <*ENTER*>.

To save the new values, select *12* and press <*ENTER*>. Enter *Y* and press <*ENTER*> to save the changes.

4.1.2 Chassis Number/Name

Standalone modules are considered as chassis and can be given a chassis name and number. Plug-in modules reside in a chassis and can be given a chassis name and number.

The Chassis Number can be configured by selecting *4* at the ***IP and Control Preferences*** screen, and pressing <*ENTER*>. Backspace over the existing value, type the new value and press <*ENTER*>. Valid Chassis Numbers are 1-19.

The Chassis Name, or sysName, can be configured to uniquely identify the Chassis. The Chassis Name can be any 1-32 alphanumeric characters. To configure the Chassis Name, select *5* at the ***IP and Control Preferences*** screen, and press <*ENTER*>. Backspace over the existing value, type the new value and press <*ENTER*>.

To save the new values, select *12* and press <*ENTER*>. Enter *Y* and press <*ENTER*> to save the changes.

4.1.3 Enable/Disable Telnet

The module has Telnet enabled by default. To disable Telnet, select option *6* at the ***IP and Control Preference*** screen, and press <*ENTER*>. Enter *Y* and press <*ENTER*> to disable Telnet.

To save the new values, select *12* and press <*ENTER*>. Enter *Y* and press <*ENTER*> to save the changes.

The module may be accessed and configured via Telnet using any standard Telnet client. An inactive Telnet session terminates automatically after 5 minutes.

4.1.4 Enable/Disable FTP

The module has FTP disabled by default. To enable FTP, select *7* at the ***IP and Control Preference*** screen, and press <*ENTER*>. Enter *Y* and press <*ENTER*> to enable FTP.

FTP will need to be enabled to accommodate firmware upgrades.

To save the new values, select *12* and press <*ENTER*>. Enter *Y* and press <*ENTER*> to save the changes.

4.1.5 Enable/Disable Soft-switch Reload

The module provides hardware DIP-switches to configure different functions associated with the copper and fiber ports. The DIP-switches can be set by physically changing the hardware position of the DIP-switch or soft-switch setting. Soft-switch Reload provides the ability to remember the soft-switch settings configured on the module after the module has been power cycled.

When Soft-switch Reload is disabled, the module will load the hardware DIP-switch settings after the module has been power cycled. When Soft-switch Reload is enabled, the module will load the soft-switch setting stored in memory after the module has been power cycled. The hardware DIP-switch settings are ignored when Soft-switch Reload is enabled.

If one or more of the physical DIP-switches are changed, then all the settings that are controlled by DIP-switches will be set to the current physical DIP-switch setting and the new values will be stored in memory and will overwrite any settings made through soft-switch or Soft-switch Reload.

Soft-switch Reload is disabled by default. To enable Soft-switch Reload, select *8* at the ***IP and Control Preferences*** screen, and press <*ENTER*>. Enter *Y* and press <*ENTER*> to enable Soft-switch Reload.

To save the new values, select *12* and press <*ENTER*>. Enter *Y* and press <*ENTER*> to save the changes.

4.1.6 Passwords

The module support passwords for the Serial Console Port, Telnet and FTP access. All passwords can be 1-32 alphanumeric characters.

To set the password for Telnet access, select *9* at the ***IP and Control Preferences*** screen, and press <*ENTER*>. Follow the screen prompts to enter and verify the new password.

To set the password for FTP access, select *10* at the ***IP and Control Preferences*** screen, and press <*ENTER*>. Follow the screen prompts to enter and verify the new password.

To set the password for Serial Console access, select *11* at the ***IP and Control Preferences*** screen, and press <*ENTER*>. Follow the screen prompts to enter and verify the new password.

To save the new values, select *12* and press <*ENTER*>. Enter *Y* and press <*ENTER*> to save the changes.

4.1.7 Save Settings

Select *12* to save the new settings in the ***IP and Control Preferences*** screen.

4.2 SNMP PREFERENCES SCREEN

To configure SNMP preferences, select *4* from the ***Management Options*** screen, and press <*ENTER*>. The ***SNMP Preferences*** screen will be displayed.

```
SNMP Preferences Screen                                          iConverter
Chassis Number     = 1                          SNMP Engine ID 80001CAE03000687003B19

   1: sysContact               Omnitron (949) 250-6510
   2: sysLocation              Irvine, CA USA
   3: SNMP Writes              Enabled
 SNMP v1/v2c ------------------------------------------------------------------------
   4: Read Community           *****        6: Agent                    Enabled
   5: Write Community          *****
 SNMP V3 ----------------------------------------------------------------------------
   7: Agent                    Enabled
   8: User 1 name (read only)  guest
   9: User 2 name (read/write) admin
  10: User 1 Security          noAuthNoPriv 13: User 2 Security         noAuthNoPriv
  11: User 1 Privacy pwd       *****        14: User 2 Privacy pwd      *****
  12: User 1 Authen. pwd       *****        15: User 2 Authen. pwd      *****
 Traps Hosts ------------------------------------------------------------------------
  16: Address 1        255.255.255.255       20: Address 5       255.255.255.255
  17: Address 2        255.255.255.255       21: Address 6       255.255.255.255
  18: Address 3        255.255.255.255       22: Address 7       255.255.255.255
  19: Address 4        255.255.255.255       23: Address 8       255.255.255.255
  24: SNMP trap type   SNMPv2c               25: Save Settings
Enter Choice, Management Options Screen(0), (H)elp, E(x)it >
```

4.2.1 SNMP Contact/Location Names

The SNMP sysContact and sysLocation names can be manually configured. The sysContact and sysLocation names can be any 1-32 alphanumeric characters.

To configure sysContact, select *1* at the ***SNMP Preferences*** screen, and press <*ENTER*>. Backspace over the existing name, type the new name and press <*ENTER*>.

To configure sysLocation, select *2* at the ***SNMP Preferences*** screen, and press <*ENTER*>. Backspace over the existing name, type the new name and press <*ENTER*>.

To save the new values, select *25* and press <*ENTER*>. Enter *Y* and press <*ENTER*> to save the changes.

4.2.2 SNMP Writes

SNMP Writes determines if the module will respond to SNMP write (set) commands. SNMP Writes is enabled by default. To disable SNMP Writes, select *3* at the ***SNMP Preferences*** screen, and press <*ENTER*>. Enter *Y* and press <*ENTER*> to disable SNMP Writes.

To save the new values, select *25* and press <*ENTER*>. Enter *Y* and press <*ENTER*> to save the changes.

When enabled, the SNMP Agent (v1, v2c or v3) will accept SNMP write commands. When disabled, the SNMP Agent will not accept SNMP write commands and will respond with an “insufficient privileges” message.

4.2.3 SNMPv1/v2c Read and Write Community Names

The SNMP agents are enabled by default and the SNMP Read and Write Community names are configured as “public”.

The SNMP Read Community Name is necessary for reading (get) data from the module. The name can be any 1-32 alphanumeric characters. To change the SNMP Read Community Name, select *4* at the ***SNMP***

Preferences screen, and press <*ENTER*>. Follow the screen prompts to enter and verify the new name.

The SNMP Write Community Name is necessary for writing (set) data to the module. The name can be any 1-32 alphanumeric characters. To change the SNMP Write Community Name, select *5* at the ***SNMP Preferences*** screen, and press <*ENTER*>. Follow the screen prompts to enter and verify the new name.

To save the new values, select *25* and press <*ENTER*>. Enter *Y* and press <*ENTER*> to save the changes.

4.2.4 SNMPv1/v2c Agent

SNMPv1/v2c agent is enabled by default. To disable SNMPv1/v2c agent, select *6* at the ***SNMP Preferences*** screen, and press <*ENTER*>. Enter *Y* and press <*ENTER*> to disable SNMPv1/v2c agent.

When disabled, the module will not respond to any requests via the SNMPv1/v2c protocol.

To save the new values, select *25* and press <*ENTER*>. Enter *Y* and press <*ENTER*> to save the changes.

4.2.5 SNMPv3 Agent

SNMPv3 agent is enabled by default. To disable SNMPv3 agent, select *7* at the ***SNMP Preferences*** screen, and press <*ENTER*>. Enter *Y* and press <*ENTER*> to disable SNMPv3 agent.

When disabled, the module will not respond to any requests via the SNMPv3 protocol.

To save the new values, select *25* and press <*ENTER*>. Enter *Y* and press <*ENTER*> to save the changes.

NOTE: Both SNMPv1/v2c and SNMPv3 agents can be enabled at the same time.

4.2.6 SNMPv3 Users

SNMPv3 implements a security model that provides for message integrity, authentication and encryption. Authentication for SNMPv3 is provided through a unique User Name and Authentication Password for each access level.

Two access levels or accounts are available; Read-Only Level (User 1) and Read and Write Level (User 2). User 1 is allowed to request information from the module. User 2 is allowed to request information from and set configuration to the module. To set the User 1 name, select *8* at the ***SNMP Preferences*** screen, press <*ENTER*> and then follow the screen prompts. To set the User 2 name, select *9* at the ***SNMP Preferences*** screen, press <*ENTER*> and then follow the screen prompts. The module is shipped with default values pre-assigned. See Section 4.0 for all factory default settings.

The module supports the three levels of Authentication and Encryption (Security Levels): noAuthNoPriv, authNoPriv and authPriv.

- noAuthNoPriv allows access without authentication and without privacy
- authNoPriv allows access with authentication, but without privacy
- authPriv allows access with authentication and with privacy

Authentication Password and Privacy Password can be any 1-16 alphanumeric characters.

To set User 1 security, select *10* at the ***SNMP Preferences*** screen, press <*ENTER*> and then follow the screen prompts. To set the User 2 security, select *13* at the ***SNMP Preferences*** screen, press <*ENTER*> and then follow the screen prompts.

To set User 1 privacy password, select *11* at the ***SNMP Preferences*** screen, press <*ENTER*> and then follow the screen prompts. To set the User 2 privacy password, select *14* at the ***SNMP Preferences*** screen, press <*ENTER*> and then follow the screen prompts.

To set User 1 authentication password, select *12* at the ***SNMP Preferences*** screen, press <*ENTER*> and then follow the screen prompts. To set the User 2 authentication password, select *15* at the ***SNMP Preferences*** screen, press <*ENTER*> and then follow the screen prompts.

To save the new values, select *25* and press <*ENTER*>. Enter *Y* and press <*ENTER*> to save the changes.

4.2.7 Trap Host IP Addresses

SNMP traps report events that occur during the operation of a network, and may require the attention of the network administrator. The module is capable of sending SNMP traps to eight different SNMP Trap Host (IP addresses).

To enter the IP address of the first Trap Host Address, select *16* at the ***SNMP Preferences*** screen, and press <*ENTER*>. Backspace over the existing value, type the new value (in x.x.x.x format), and press <*ENTER*>. To enter the IP addresses of additional trap-receiving Trap Host Addresses, repeat this process for Trap Host Addresses 2-8 (menu selections *17-23*).

To save the new values, select *25* and press <*ENTER*>. Enter *Y* and press <*ENTER*> to save the changes.

4.2.8 SNMP Trap Type

The SNMP Trap Type determines the way the module reports SNMP traps. The module will report SNMPv2c trap types by default. To change the SNMP Trap Type, select *24* at the ***SNMP Preferences*** screen, and press <*ENTER*>. Backspace over the existing value and enter *1* for SNMPv1, *2* for SNMPv2c or *3* for SNMPv3.

To save the new values, select *25* and press <*ENTER*>. Enter *Y* and press <*ENTER*> to save the changes.

4.2.9 Save Settings

Select *25* to save the new settings in the ***SNMP Preferences*** screen.

4.3 OTHER NETWORKING FEATURES SCREEN

To access the ***Other Networking Features*** screen, select *5* from the ***Management Options*** screen, and press <*ENTER*>. The ***Other Networking Features*** screen will be displayed.

Plug-in *Other Networking Features* screen

```
Other Networking Features Screen                                    iConverter

1:  Enable/Disable DHCP Client                      Disabled

2:  Enable/Disable Keep Alive Trap                  Disabled
3:  Keep Alive Trap interval (10-600 secs)          10

4:  Enable/Disable SW1 Switch Block                 Enabled
5:  Serial Baud Rate                                57600 bps

6:  Enable/Disable VLAN Support                     Disabled
7:  VLAN ID (0-4095)                                2
8:  VLAN Priority (0-7)                             7

9:  Slave Write                                     Disabled
10: Slave Trap Generation                           Disabled
11: Slave Trap Forwarding                           Enabled

12: Save Settings

Enter Choice, Management Options Screen(0), (H)elp, E(x)it >
```

Standalone *Other Networking Features* screen

```
Other Networking Features Screen                                    iConverter

1:  Enable/Disable DHCP Client                      Disabled

2:  Enable/Disable Keep Alive Trap                  Disabled
3:  Keep Alive Trap interval (10-600 secs)          10

4:  Enable/Disable SW1 Switch Block                 Enabled
5:  Serial Baud Rate                                57600 bps

6:  Enable/Disable VLAN Support                     Disabled
7:  VLAN ID (0-4095)                                2
8:  VLAN Priority (0-7)                             7

9:  Not Available
10: Not Available
11: Not Available

12: Save Settings

Enter Choice, Management Options Screen(0), (H)elp, E(x)it >
```

4.3.1 Enable/Disable DHCP Client

The module supports DHCP Client protocol. When DHCP Client is enabled, the module requests IP configuration information from a DHCP server.

DHCP Client is disabled by default. To enable DHCP Client, select *1* at the ***Other Networking Features*** screen, and press <*ENTER*>. Follow the screen prompts to enable DHCP.

The DHCP process will timeout after 120 seconds.

To save the new values, select *12* and press <*ENTER*>. Enter *Y* and press <*ENTER*> to save the changes.

4.3.2 Enable/Disable Keep Alive Trap

The module can be configured to send a Keep Alive Trap to the Trap Host(s) IP addresses.

Keep Alive Trap is disabled by default. To enable Keep Alive Trap, select *2* at the ***Other Networking***

Features screen, and press <*ENTER*>. Enter *Y* and press <*ENTER*> to enable Keep Alive Trap.

To configure the time interval for the Keep Alive Trap, select *3* at the ***Other Networking Features*** screen, and press <*ENTER*>. The Keep Alive Trap Interval can be configured to send the trap every 10 to 600 seconds. Backspace over the existing value, type the new value, and press <*ENTER*>.

To save the new values, select *12* and press <*ENTER*>. Enter *Y* and press <*ENTER*> to save the changes.

4.3.3 Enable/Disable SW1 Switch Block

DIP-switch Bank 1 can be configured to allow/disallow (enable/disable) physical hardware changes. When SW1 Switch Block is enabled, DIP-switch Bank 1 can be physically modified and the module will accept the changes. When SW1 Switch Block is disabled, physical changes to DIP-switch Bank 1 will be ignored.

SW1 Switch Block is enabled by default. To disable SW1 Switch Block, select *4* at the ***Other Networking Features*** screen, and press <*ENTER*>. Enter *Y* and press <*ENTER*> to disable SW1 Switch Block.

To save the new values, select *12* and press <*ENTER*>. Enter *Y* and press <*ENTER*> to save the changes.

4.3.4 Serial Baud Rate

The baud rate of the Serial Console Port can be configured by selecting *5* at the ***Other Networking Features*** screen and pressing <*ENTER*>. The available rates will be displayed. Select the baud rate that matches the baud rate of the device connected to the Serial Console Port by backspacing over the existing value, type the new value, and press <*ENTER*>. The default setting is 57,600bps.

To save the new values, select *12* and press <*ENTER*>. Enter *Y* and press <*ENTER*> to save the changes.

4.3.5 VLAN Support

The module can be configured to support a management VLAN ID. The VLAN ID and the priority (pcp bit) of the frame can be configured. The default priority is 7. When enabled, the management of the module will only be accessible using the configured VLAN ID.

To configure the VLAN ID, select *7* at the ***Other Networking Feature*** screen, and press <*ENTER*>. Backspace over the existing value and enter the VLAN ID and press <*ENTER*>.

To configure the VLAN priority for the management channel, select *8* at the ***Other Networking Feature*** screen and press <*ENTER*>. Valid priority values are 0 - 7; 0 being the lowest priority and 7 being the highest priority. Backspace over the existing value and enter the priority value and press <*ENTER*>.

Once the VLAN ID and priority has been configured, select *6* at the ***Other Networking Feature*** screen to enable VLAN support. Enter *Y* and press <*ENTER*> to enable VLAN support.

To save the new values, select *12* and press <*ENTER*>. Enter *Y* and press <*ENTER*> to save the changes.

4.3.6 Slave Write

This feature is only available on chassis plug-in modules. The feature is Not Available on standalone modules.

Slave Write provides the ability to change configuration settings on a non-master management module when directly accessed through the menu-driven interface or SNMP on the module.

Slave Write is disabled by default. To enable Slave Write, select *9* at the ***Other Networking Feature*** screen and press <*ENTER*>. Enter *Y* and press <*ENTER*> to enable Slave Write.

To save the new values, select *12* and press <*ENTER*>. Enter *Y* and press <*ENTER*> to save the changes.

4.3.7 Slave Trap Generation/Forwarding

This feature is only available on chassis plug-in modules. The feature is Not Available on standalone modules.

Slave Trap Generation allows the module to send traps generated or detected by the module to the Trap

Host(s) configured on the module when the module is not the chassis master. Normally, all traps are sent from the chassis master.

Slave Trap Forwarding sends all traps generated or detected by the module to the chassis master to be sent to the Trap Host(s) configured on the chassis master. This is the default configuration.

Slave Trap Generation is disabled and Slave Trap Forwarding is enabled by default. To enable Slave Trap Generation, select *10* at the ***Other Networking Features*** screen, and press <*ENTER*>. Enter *Y* and press <*ENTER*> to enable Slave Trap Generation. To disable Slave Trap Forwarding, select *11* at the ***Other Networking Features*** screen, and press <*ENTER*>. Enter *Y* and press <*ENTER*> to disable Slave Trap Forwarding.

To save the new values, select *12* and press <*ENTER*>. Enter *Y* and press <*ENTER*> to save the changes.

4.3.8 Save Settings

Select *12* to save the new settings in the ***Other Networking Features*** screen.

4.4 MODULE CONFIGURATION SCREEN

To access the ***Module*** configuration screen, select *1* at the ***Management Options*** screen, and press <*ENTER*>.

```
Management Options                                                    iConverter

Network Management
1:  Chassis and Module Management
2:  Set Module Identifier

Management Module Preferences
3:  IP and Control Preferences
4:  SNMP Preferences
5:  Other Networking Features
6:  Restore to Factory Defaults
7:  Restart Management Module

Management Module Maintenance
8:  Firmware Update
9:  Set Date/Time


01/01/2000  00:00:01 AM     (sysUpTime: 0)
IP Address     = 192.168.1.220    [MAC 00:00:00:00:00:00]
Chassis Number = 1   Slot Number = 1

Enter Choice, (H)elp, E(x)it >
```

The ***Chassis Selection*** screen or the ***Chassis View*** screen will be displayed depending on the type of module accessed.

The ***Chassis Selection*** screen indicates the local module (the module directly connected to the serial console port) is chassis number 1 and the remote module (the module connected via fiber cable) is chassis number 2. To access the local module, select option 1. To access the remote module, select option 2.

Chassis Selection **screen**

```
Chassis Selection                                                     iConverter

Number      Chassis Name
1           NMM2
2           Not Available
3           Not Available
4           Not Available
5           Not Available
6           Not Available
7           Not Available
8           Not Available
9           Not Available
10          Not Available
11          Not Available
12          Not Available
13          Not Available
14          Not Available
15          Not Available
16          Not Available
17          Not Available
18          Not Available
19          Not Available
Connected to Chassis Number 1

Chassis Number(1-19), Management Options(0), (H)elp, E(x)it > 1
```

From the ***Chassis Selection*** menu, select *1* to access the ***Chassis View*** screen, and press <*ENTER*>.

The ***Chassis View*** screen will be displayed. From the ***Chassis View*** menu, select the appropriate slot number for the desired module, and press <*ENTER*>.

Standalone *Chassis View* screen

```
Chassis View Standalone                                          iConverter

Chassis Number = 1

Slot   Model      Type
1      8919N-0B   10/100M2









Module to View(1),   Previous Screen(0), (R)eset, (H)elp, E(x)it > 1
```

Plug-in *Chassis View* screen

```
Chassis View 5 Slot                                              iConverter

Chassis Number = 1

Slot   Model    Type
1      8000N-0  NMM2
2      8903N-1  10/100M2
3      8911N-1  10/100M2
4      N/A
5      8919N-0  10/100M2
6      8220-9   Power Supply
7      8220-9   Power Supply

Module to View(1-7), Previous Screen(0), (R)eset, (H)elp, E(x)it > 5
```

NOTE: All modules are referred to as a chassis with a single slot.

The 8919N-0 (plug-in) or 8919N-0B (standalone) are used for all screen examples.

The ***Module*** configuration screen will be displayed.

Plug-in *Module* screen

```
Module -  iConverter 10/100M2                                          iConverter
Identifier -

Chassis Number      = 1       Switch  ON Condition    OFF Condition     H/W    Actual
Slot Number         = 5            1: Pause Enabled   Pause Disabled    Off    Off
Model Number        = 8919N-0      2: Fiber HDX       Fiber FDX         Off    Off
Serial Number       = xxxxxxxx     3: UTP Manual      UTP Auto-Neg      Off    Off
Manufacturing Date  = xxxxxxxx     4: UTP 10 Mbps     UTP 100 Mbps      Off    Off
Product Revision    = 10           5: UTP HDX         UTP FDX           Off    Off
Software Revision   = x.x.xx       6: Link Propagate  Link Segment      Off    Off
VIN/VOUT/Temp: 3.28V/3.28V/37C     7: Remote Fault    Normal            Off    Off
                                   8: Symm Fault Det  Normal            Off    Off
LED                                9: BP A Enabled    BP A Disabled     Off    Off
1: Power           = On           10: BP B Enabled    BP B Disabled     Off    Off
2: Power Supply 1  = On           11: Not Available
3: Power Supply 2  = Off          12: Slave Only      Master/Slave      Off    Off
4: Power Supply 3  = Off          13: Not Available
5: Fiber Link      = Off          14: Not Available
6: BP Master       = On           15: Not Available
7: UTP 10  Link    = Off          16: Not Available
8: UTP 100 Link    = Off      OAM settings:
9: UTP FDX         = Off          17: IP Protocol State         On
                                  18: Management Mode           Auto ah

Toggle Switch(1-16), (I)dentifier, (R)eset, (H)elp, (P)ortStat, (C)ontrol >
```

Standalone *Module* screen

```
Module -  iConverter 10/100M2                                          iConverter
Identifier -

Chassis Number      = 1       Switch  ON Condition    OFF Condition     H/W    Actual
Slot Number         = 1            1: Pause Enabled   Pause Disabled    Off    Off
Model Number        = 8919N-0B     2: Fiber HDX       Fiber FDX         Off    Off
Serial Number       = xxxxxxxx     3: UTP Manual      UTP Auto-Neg      Off    Off
Manufacturing Date  = xxxxxxxx     4: UTP 10 Mbps     UTP 100 Mbps      Off    Off
Product Revision    = 10           5: UTP HDX         UTP FDX           Off    Off
Software Revision   = x.x.xx       6: Link Propagate  Link Segment      Off    Off
VIN/VOUT/Temp: 9.02V/3.30V/40C     7: Remote Fault    Normal            Off    Off
                                   8: Symm Fault Det  Normal            Off    Off
LED                                9: Not Available
1: Power           = On           10: Not Available
2: Not Available                  11: Not Available
3: Not Available                  12: Not Available
4: Not Available                  13: Not Available
5: Fiber Link      = Off          14: Not Available
6: Not Available                  15: Not Available
7: UTP 10  Link    = Off          16: Not Available
8: UTP 100 Link    = Off      OAM settings:
9: UTP FDX         = Off          17: IP Protocol State         On
                                  18: Management Mode           Auto ah

Toggle Switch(1-16), (I)dentifier, (R)eset, (H)elp, (P)ortStat, (C)ontrol >
```

The ***Module*** configuration screen provides general configuration and status information of the module. The screen displays the model and serial numbers, hardware and software revisions, as well as the state of the LEDs and DIP-switches. The DIP-switches can be configured remotely without physically changing the

DIP-switches. Select the appropriate number to change the DIP-switch setting. Selecting any DIP-switch will cause the selection to change states under the 'Actual' heading. If Soft Switch Reload is enabled, the module will retain the remotely configured DIP-switches after the module has been power cycled. Refer to Section 3.2 on the function of DIP-switches *1 - 12* for plug-in modules or *1 - 8* for standalone module.

4.4.1 IP Protocol State (Configuration Setting 17)

The module can be configured to have IP Protocol State turned On (enabled) or turned Off (disabled). When IP Protocol State is turned Off, the module will not respond to any IP requests.

IP Protocol State is turned On (enabled) by default. To turn Off (disable) IP Protocol State, select *17* from the ***Module*** configuration screen, and press <*ENTER*>.

4.4.2 Management Mode (Configuration Setting 18)

Management Mode configures the type of management channel communication between link partners. The module supports two management modes; Secure OAM and ah OAM. Secure OAM uses a proprietary secure encrypted management channel to communicate to the remote link partner. ah OAM uses the IEEE 802.3ah protocol to communicate with the remote link partner. This option provides an industry standard method of fault detection and monitoring.

Management Mode is ah OAM by default. To change the Management Mode, select *18* from the ***Module*** configuration screen, and press <*ENTER*>. Backspace over the existing value and enter *1* for OAM Off, *2* for Auto Secure OAM, *3* for Auto ah OAM, *4* for Secure OAM and *5* for ah OAM.

4.5 PORT STATISTICS SCREEN

The module provides statistics for Port 1 and Port 2. To access the ***Port Statistics*** screen, select *P* from the ***Module*** configuration screen, and press <*ENTER*>.

```
Module -  iConverter 10/100M2                                          iConverter
Identifier -

Chassis Number      = 1       Switch  ON Condition    OFF Condition     H/W    Actual
Slot Number         = 5           1: Pause Enabled    Pause Disabled    Off    Off
Model Number        = 8919N-0     2: Fiber HDX        Fiber FDX         Off    Off
Serial Number       = 00220682    3: UTP Manual       UTP Auto-Neg      Off    Off
Manufacturing Date  = 20080402    4: UTP 10 Mbps      UTP 100 Mbps      Off    Off
Product Revision    = 10          5: UTP HDX          UTP FDX           Off    Off
Software Revision   = x.x.xx      6: Link Propagate   Link Segment      Off    Off
VIN/VOUT/Temp: 3.28V/3.28V/37C    7: Remote Fault     Normal            Off    Off
                                  8: Symm Fault Det   Normal            Off    Off
LED                               9: BP A Enabled     BP A Disabled     Off    Off
1: Power           = On          10: BP B Enabled     BP B Disabled     Off    Off
2: Power Supply 1  = On          11: Not Available
3: Power Supply 2  = Off         12: Slave Only       Master/Slave      Off    Off
4: Power Supply 3  = Off         13: Not Available
5: Fiber Link      = Off         14: Not Available
6: BP Master       = On          15: Not Available
7: UTP 10  Link    = Off         16: Not Available
8: UTP 100 Link    = Off      OAM settings:
9: UTP FDX         = Off         17: IP Protocol State         On
                                 18: Management Mode           Auto ah

Toggle Switch(1-16), (I)dentifier, (R)eset, (H)elp, (P)ortStat, (C)ontrol >
```

The ***Port Statistic*** screen will be displayed.

Port 1, Port 2, Port A and Port B *Port Statistic* screen

```
Port Statistics - iConverter 10/100M2                                iConverter
Identifier -
Chassis Number = 1    Slot Number = 5    Model Number = 8919N-0 Port = 1

Transmission Counters      Receive Counters           Receive Packets by Size
                           Packets        323791346    64 Octets          6817
Total Octets  1853826256   Total Octets  1771269822    65-127           150388
Good Pkts      324228366   Good Pkts      323791345    128-255       323556390
Pause Pkts             0   Pause Pkts             0    256-511           77759
Unicast Pkts   323624095   Unicast Pkts   323556381    512-1023              0
Multicast Pkts    604271   Multicast Pkts    234964    1024-2048             0
Broadcast Pkts         0   Broadcast Pkts         0
Errored Pkts           0   Errored Pkts           1
Dropped Pkts           0   Dropped Pkts           0
Bad Events             0   FCS Errors             1
Deferred               0   Symbol Errors          0
Collisions:                CRC/Alignment          1
   Total               0   Undersized             0
   Single              0   Oversized              0
   Multiple            0   Fragments              0
   Late                0   Jabber                 0
   Excessive           0   Alignment              0

Enter Choice, (c)lear, (n)ext port, (H)elp, E(x)it >
```

To refresh the ***Port Statistic*** screen, press *<ENTER>*. Use option *n* to go to the next port, option *p* to go to the previous port and option *c* to clear the statistics.

Mgt *Port Statistic* screen

```
Port Statistics - iConverter 10/100M2                                iConverter
Identifier -
Chassis Number = 1    Slot Number = 5    Model Number = 8919N-0 Port =  Mgt

Transmission Counters      Receive Counters
                           Packets            36021
Total Octets     5626322   Total Octets    11788203
Good Pkts          78045   Good Pkts          36021
Pause Pkts             0   Pause Pkts             0
Unicast Pkts       78045   Unicast Pkts       36021
Multicast Pkts         0   Multicast Pkts         0
Broadcast Pkts         0   Broadcast Pkts         0
Errored Pkts           0   Errored Pkts           0
Dropped Pkts           0   Dropped Pkts           0
Bad Events             0   FCS Errors             0
Deferred               0   Symbol Errors          0
Collisions:                CRC/Alignment          0
   Total               0   Undersized             0
   Single              0   Oversized              0
   Multiple            0   Fragments              0
   Late                0   Jabber                 0
   Excessive           0   Alignment              0

Enter Choice, (c)lear, (n)ext port, (H)elp, E(x)it >
```

4.6 CONTROL SCREEN

The ***Control*** screen provides access to the port level configuration parameters, such as Tagged VLANs, 802.3ah, SFP Information, Bandwidth Control, L2CP, Restore to Factory Defaults, Port Access and Port VLANs. System level configuration parameters are also available from the ***Control*** screen. To access the ***Control*** screen, select *C* from the ***Module*** configuration screen, and press <*ENTER*>. The ***Control*** screen will be displayed.

Plug-in *Control* screen

```
Control - iConverter 10/100M2                                        iConverter
Identifier -

Chassis Number     = 1                  Port Access Control Setup
Slot Number        = 5                ----------------------------------
Model Number       = 8919N-0            15: Port 1  Enable              On
       Feature Selection                16: Port 2  Enable              On
---------------------------------
 1: 802.1Q Processing Enable   Off           Port VLAN Path Setup
 2: Configure Tag VLAN Control        ----------------------------------
 3: Configure VLAN Membership           17: Port 1  to Port 2   Enable   On
 4: Save TAG VLAN Parameters            18: Port 1  to BP A     Enable   On
 5: Configure 802.3ah Parameters        19: Port 1  to BP B     Enable   On
 6: Configure 802.3ah Events            20: Port 2  to BP A     Enable   On
 7: SFP Information                     21: Port 2  to BP B     Enable   On
 8: Bandwidth Control                   22: BP A    to BP B     Enable   On
 9: L2CP Control                        23: Port 1  to Mngmnt   Enable   On
10: Not Available                       24: Port 2  to Mngmnt   Enable   On
11: Restore to Factory Defaults         25: BP A    to Mngmnt   Enable   On
12: IP and Control Preferences          26: BP B    to Mngmnt   Enable   On
13: SNMP Preferences
14: Other Networking Features

Enter Choice, Previous Screen(0), (H)elp, E(x)it >
```

Standalone *Control* screen

```
Control - iConverter 10/100M2                                        iConverter
Identifier -

Chassis Number     = 1                  Port Access Control Setup
Slot Number        = 1                ----------------------------------
Model Number       = 8919N-0B           15: Port 1 Enable               On
       Feature Selection                16: Port 2 Enable               On
---------------------------------
 1: 802.1Q Processing Enable   Off           Port VLAN Path Setup
 2: Configure Tag VLAN Control        ----------------------------------
 3: Configure VLAN Membership           17: Port 1 to Port 2   Enable   On
 4: Save TAG VLAN Parameters            18: Port 1 to Mngmnt   Enable   On
 5: Configure 802.3ah Parameters        19: Port 2 to Mngmnt   Enable   On
 6: Configure 802.3ah Events
 7: SFP Information
 8: Bandwidth Control
 9: L2CP Control
10: Not Available
11: Restore to Factory Defaults
12: IP and Control Preferences
13: SNMP Preferences
14: Other Networking Features

Enter Choice, Previous Screen(0), (H)elp, E(x)it >
```

4.6.1 Tag VLAN Control

The module supports the IEEE 802.1Q tag VLAN (Q-in-Q multi-tagging) and the 802.1p Quality of Service priority standards.

Tagged VLAN is accessed by selecting option *2* from the ***Control*** screen. The ***Tag VLAN Control*** screen will be displayed.

Plug-in *Tag VLAN Control* screen

```
Tag VLAN Control - iConverter 10/100M2                              iConverter
Identifier -
Chassis Number = 1     Slot Number = 5     Model Number = 8919N-0

Port 1  1: Port Priority (PRI)       0        BP B     16: Port Priority (PRI)    0
        2: PVID (Port VLAN ID        2                 17: PVID (Port VLAN ID)    2
        3: Tagged Packets Use        PVID              18: Tagged Packets Use     PVID
        4: Ingress Security          Low               19: Ingress Security       Low
        5: Port Type                 Tunnel            20: Port Type              Tunnel

Port 2  6: Port Priority (PRI)       0      Mngmnt     21: Port Priority (PRI)    0
        7: PVID (Port VLAN ID)       2                 22: PVID (Port VLAN ID)    2
        8: Tagged Packets Use        PVID              23: Tagged Packets Use     PVID
        9: Ingress Security          Low               24: Ingress Security       Low
        10: Port Type                Tunnel            25: Port Type              Tunnel

BP A    11: Port Priority (PRI)      0      Module Global Settings
        12: PVID (Port VLAN ID)      2                 26: C-TAG (hex)            8100
        13: Tagged Packets Use       PVID              27: Q-in-Q (S-TAG) (hex)   8100
        14: Ingress Security         Low
        15: Port Type                Tunnel

Enter Choice, Previous Screen(0), (H)elp, E(x)it >
```

Standalone *Tag VLAN Control* screen

```
Tag VLAN Control - iConverter 10/100M2                              iConverter
Identifier -
Chassis Number = 1     Slot Number = 1     Model Number = 8919N-0B

Port 1  1: Port Priority (PRI)          0
        2: PVID (Port VLAN ID)          2
        3: Tagged Packets Use           PVID
        4: Ingress Security             Low
        5: Port Type                    Tunnel

Port 2  6: Port Priority (PRI)          0
        7: PVID (Port VLAN ID)          2
        8: Tagged Packets Use           PVID
        9: Ingress Security             Low
        10: Port Type                   Tunnel

Mngmnt  11: Port Priority (PRI)         0      Module Global Settings
        12: PVID (Port VLAN ID)         2               16: C-TAG (hex)            8100
        13: Tagged Packets Use          PVID            17: Q-in-Q (S-TAG) (hex)   8100
        14: Ingress Security            Low
        15: Port Type                   Tunnel


Enter Choice, Previous Screen(0), (H)elp, E(x)it >
```

The following parameters can be configured on each port:

4.6.1.1 Port Priority (PRI)

This user-specified value (IEEE 802.1p) of *0* through *7* can be assigned as a QoS priority level (0 being lowest and 7 being highest) to packets ingressing (entering) a port. If no value is specified by the user, a default priority value of "0" is assigned.

The PRI value is always assigned to all untagged packets. Tagged packets are assigned the PRI value when the "PVID" option is selected in the "Tagged Packet Use" section.

4.6.1.2 Port VLAN ID (PVID)

This user-specified value (IEEE 802.1Q) of *0* through *4094* can be assigned as a Port VLAN ID (PVID) to packets ingressing a port. If no value is specified by the user, a default PVID value of "2" is assigned.

The PVID value is always assigned to untagged packets. Tagged packets are assigned the PVID value when the "PVID" option is selected in the "Tagged Packet Use" section.

4.6.1.3 Tagged Packet Use

This section defines how tagged packets ingressing a port are processed.

Selecting the "PVID" option causes the PRI and PVID user-specified values to be used as the packet's VLAN ID (VID) for processing the packet.

Selecting the "TVID" (Tagged VLAN ID) option causes the packet's original Tag VLAN ID (TVID) and priority level to be used as the packet's VLAN ID (VID) for processing the packet.

NOTE: Untagged packets are always assigned the port's PRI and PVID values as their VID.

4.6.1.4 Ingress Security

This section selects the ingress security level of a port.

Selecting the **"Low"** option allows any packet to ingress a port.

Selecting the **"High"** option allows only packets that have a VLAN ID (VID) value assigned in the VLAN Membership table to ingress a port.

4.6.1.5 Port Type

This section defines the port type.

Selecting the **"Tunnel"** option, sets the egress mode to "Pass" for each VID assigned to the port in the membership table. The port is set to "Accept Tagged" frames.

Selecting the **"Trunk"** option, the port is set to a Egress Tag Mode of "Provider Tag". Frames ingressing will have the "Provider Tag" removed.

Selecting the **"Access"** option, sets the egress mode to "Pass" for each VID assigned to the port in the membership table. The port is set to "Discard Tagged" frames.

A tag is added to the data when going between an Access port and a Trunk port. The tag value will be the user assigned PVID. A tag will be removed from the data when going between a Trunk port and an Access port. The tag value will be the user assigned PVID. No tag is removed between a Trunk port and a Tunnel port.

4.6.1.6 Global Settings

The module allows the setting of the customer facing port (C-TAG) and the network facing port (S-TAG). C-Tag is used by the port when Port Type is set to "Access" or "Tunnel". The C-Tag defaults to 0x8100h. S-TAG is used by the port when Port Type is set to "Trunk". The S-Tag defaults to 0x8100h. If the S-Tag is changed the port functions as an IEEE 802.1ad S-Tag port.

4.6.2 VLAN Membership Table

The VLAN Membership Table lists the permitted VLAN ID (VID) for each egress port on the module. Only packets that are assigned a VID value that matches one of the egress port's VID memberships are allowed to egress through the port.

When the Ingress Security is set to High for a specific port, the membership table is used to list the VIDs of the packets that are allowed to ingress that port.

VLAN Membership is accessed by selecting option *3* from the ***Control*** screen. The ***VLAN Membership*** screen will be displayed.

Plug-in *VLAN Membership* screen

```
VLAN Membership - iConverter 10/100M2                                  iConverter
Identifier -

Chassis Number = 1     Slot Number = 5     Model Number = 8919N-0


              VLAN ID (VID)      Port 1     Port 2       BP A      BP B      Mngmnt

    VLAN TABLE IS EMPTY


   Add new entry (a), Delete entry (d), Edit entry (e), Clear table (c)

Enter Choice, Previous Screen(0), (H)elp, E(x)it >
```

Standalone *VLAN Membership* screen

```
VLAN Membership - iConverter 10/100M2                                  iConverter
Identifier -

Chassis Number = 1     Slot Number = 1     Model Number = 8919N-0B


                      VLAN ID (VID)      Port 1     Port 2       Mngmnt

    VLAN TABLE IS EMPTY


   Add new entry (a), Delete entry (d), Edit entry (e), Clear table (c)

Enter Choice, Previous Screen(0), (H)elp, E(x)it >
```

Initially the table is empty. To configure the ports with VLAN IDs, select option *(a)* from the ***VLAN Membership*** screen.

Plug-in *Membership Entry* screen

```
Membership Entry - iConverter 10/100M2                                iConverter
Identifier -

Chassis Number = 1     Slot Number = 5     Model Number = 8919N-0


           VLAN Table Membership Entry 1
           -----------------------------


       1: VLAN ID                   2
       2: Port 1 Port Membership    No
       3: Port 2 Port Membership    No
       4: BP A   Port Membership    No
       5: BP B   Port Membership    No
       6: Mngmnt Port Membership    No

       7: Submit Entry As Defined

Enter Choice, Previous Screen(0), (H)elp, E(x)it >
```

Standalone *Membership Entry* screen

```
Membership Entry - iConverter 10/100M2                                iConverter
Identifier -

Chassis Number = 1     Slot Number = 1     Model Number = 8919N-0B


           VLAN Table Membership Entry 1
           -----------------------------

       1: VLAN ID                   2
       2: Port 1 Port Membership    No
       3: Port 2 Port Membership    No
       4: Mngmnt Port Membership    No

       5: Submit Entry As Defined

Enter Choice, Previous Screen(0), (H)elp, E(x)it >
```

To add a VLAN ID to the membership table, select option *1* and enter the VLAN ID #. To associate the VLAN ID to a port, select the appropriate port option *2 - 6* or *2 - 4* depending on the module type; plug-in or standalone.

Plug-in *Membership Entry* screen

```
Membership Entry - iConverter 10/100M2                                iConverter
Identifier -

Chassis Number = 1     Slot Number = 5     Model Number = 8919N-0


           VLAN Table Membership Entry 1
           -----------------------------

     +1: VLAN ID 100
     +2: Port 1  Port Membership     Yes
      3: Port 2  Port Membership     No
      4: BP A    Port Membership     No
      5: BP B    Port Membership     No
      6: Mngmnt  Port Membership     No

      *7: Submit Entry As Defined

Enter Choice, Previous Screen(0), (H)elp, E(x)it >
```

Standalone *Membership Entry* screen

```
Membership Entry - iConverter 10/100M2                                iConverter
Identifier -

Chassis Number = 1     Slot Number = 1     Model Number = 8919N-0B


           VLAN Table Membership Entry 1
           -----------------------------

      +1: VLAN ID                    100
      +2: Port 1  Port Membership    Yes
       3: Port 2  Port Membership    No
       4: Mngmnt  Port Membership    No

      *5: Submit Entry As Defined

Enter Choice, Previous Screen(0), (H)elp, E(x)it >
```

Once all the VLAN IDs have been assigned, select option *7* or *5* depending on the module type, plug-in or standalone, to submit the entries.

Plug-in *VLAN Membership* screen

```
VLAN Membership - iConverter 10/100M2                                    iConverter
Identifier -

Chassis Number = 1     Slot Number = 5     Model Number = 8919N-0


              VLAN ID (VID)      Port 1    Port 2    BP A      BP B      Mngmnt

         1:       100            Yes       No        No        No        No


   Add new entry (a), Delete entry (d), Edit entry (e), Clear table (c)

Enter Choice, Previous Screen(0), (H)elp, E(x)it >
```

The VLAN membership entries are saved from the ***Control*** screen, option *4*.

4.6.3 802.3ah Control Screen

The 802.3ah (Ethernet Link OAM) parameters can be monitored and/or configured in the ***802.3ah Control*** screen. 802.3ah Ethernet Link OAM supports tools to detect network problems, provides performance monitoring and simplifies network maintenance through link discovery, performance monitoring (error notification), remote loopback and fault detection. Ethernet Link OAM detects network problems between two directly connected points and cannot propagate beyond a single hop within an Ethernet network.

To access the ***802.3ah Control*** screen, select *5* from the ***Control*** screen, and press <*ENTER*>. The ***802.3ah Control*** screen will be displayed.

```
802.3ah Control -iConverter 10/100M2                                     iConverter
Identifier -
Chassis Number = 1    Slot Number = 5    Model Number = 8919N-0    Port = 1


  1: 802.3ah OAM State      Enabled      Local Status
  2: OAM Mode               Active           Discovery State        In Process
  3: Loopback Mode          Disabled         Multiplexer State      Forward
  4: Loopback Timeout       30 sec           Parser Action          Forward
  5: Unidirectional Mode    Disabled         Critical Event         No
  6: OAM PDU Tx Rate (fps)  10               Link Fault             No
                                             Supports           LB, Events

                                     Remote Status
                                         Discovery State        In Process
                                         Multiplexer State      Unknown
                                         Parser Action          Unknown
                                         Critical Event         No
                                         Link Fault             No
                                         Mode                   Unknown
                                         Supports               Unknown
                                         OUI:                   Unknown

Enter, Previous Screen (0), (n)ext page, (H)elp, E(x)it >
```

To configure the 802.3ah parameters for the next port, use option *n*. To return to the previous port, select option *p* and press <*ENTER*>.

- Option *1*: 802.3ah OAM State - The 802.3ah OAM State turns 802.3ah processing on or off for the selected port. When the port is configured as "Disabled" it will not respond to OAM PDUs (OAM Protocol Data Units). They will be dropped by the processor and not acted upon. When the port is configured as "Enabled", it will respond to and be involved in the Discovery process and other supported 802.3ah OAM functions.
- Option *2*: 802.3ah OAM Mode - The 802.3ah OAM Mode sets the selected port to "Passive" or "Active" configuration mode. In "Passive" mode the port cannot initiate Discovery or initiate Loopback Mode. It can observe and report only the port status of its 802.3ah enabled remote partner. An "Active" port can initiate Discovery and initiate loopback mode.
- Option *3*: Loopback Mode - The Loopback Mode turns loopback operations "On" or "Off". When Loopback Mode is set to "Off", the port of the 802.3ah enabled local device will not initiate Loopback operations. It can respond to loopback commands from its 802.3ah enabled remote partner if set to "Passive" or "Active" OAM Mode. When Loopback Mode is set to "On", the port of the 802.3ah enabled local device will initiate Loopback operations and set the 802.3ah enabled remote partner into loopback. In this mode, the 802.3ah enabled local device will not respond to any other configuration changes until its port is set to "Off."
- Option *4*: Loopback Mode Timeout (sec) - The Loopback Mode Timeout field controls the length of time that the port will be set to Loopback "On" mode. Loopback can be set between 0 and 300 seconds. The 0 setting disables the timer and the module will stay in loopback until stopped by the user.
- Option *5*: Unidirectional Mode - OAM provides a mechanism to notify the remote link partner when one direction of a link is non-operational and therefore data transmission is disabled. The ability to operate a link in a unidirectional mode for diagnostic purposes supports the maintenance objective of failure detection and notification. The 802.3ah unidirectional link can be enabled on the fiber port. Unidirectional fiber link allows a fiber port to send link fault OAM PDUs when a link fault is detected. For proper operation of unidirectional mode, power cycle the modules once fiber link has been established. Then enable unidirectional mode.
- Option *6*: OAM PDU Tx Rate (fps) - The transmission rate for the OAM PDUs can be configured from 5 - 100 PDUs/sec with a default value of 10 frames per second.

Local Status Section

The Local Status section displays the status of Port 1 and Port 2 of the 802.3ah enabled local device. The local device is controlled directly by SNMP, Telnet or via the Serial Port and has the ability to communicate with an 802.3ah enabled remote partner.

- Discovery State - Indicates the Discovery state ("Complete", "In Process", "Incomplete" or "Disabled") of the local ports. If "Complete" is displayed, Discovery has been completed. If "In Process", Discovery has been initiated but no response from the 802.3ah enabled remote partner has been received by the local device. If "Incomplete", Discovery has received a response from the 802.3ah enabled remote partner but the Discovery process is not yet completed. If "Disabled", Discovery has not been initiated or 802.3ah is disabled.
- Multiplexer State - Indicates the Multiplexer state ("Discard" or "Forward") of the local ports. If "Forward" is displayed, the local device is forwarding non-OAM PDU network frames to the **lower** sublayer. If "Discard", the local device is discarding non-OAM PDU network frames.
- Parser Action - Indicates the Parser Action ("Discard", "Forward" or "Loopback") of the local ports. If "Forward" is displayed, the local device is forwarding non-OAM PDU network frames to the **higher** sublayer. If "Loopback", the local device is looping back non-OAM PDUs network frames. If "Discard", the device is discarding non-OAM PDUs network frames.

- Critical Event - Indicates the Critical Event state ("Yes" or "No") of the local device. If "Yes" is displayed, the local device has detected a Critical Event. If "No", the local device has not detected a critical event.
- Link Fault - Indicates the local device has detected a fault in the receive direction ("Yes" or "No"). If "Yes" is displayed, the receive link is down. If "No", the receive link is up.
- Supports - Indicates the supported options (Variable Access "Var", Link Event Notification "Events", Loopback "LB" or "Unknown" if no options are supported) of the remote partner.

Remote Status Section

The Remote Status section displays the status of the ports of the 802.3ah enabled remote partner. These remote ports are connected to the ports of the local device. The remote partner is managed by the local device via the 802.3ah OAM channel.

- Discovery State - Indicates the Discovery state ("Complete", "In Process", "Incomplete" or "Unknown") of the remote ports. If "Complete" is displayed, Discovery has been completed. If "In Process", Discovery has been initiated but no response from the local device has yet been received by the remote partner. If "Incomplete", Discovery is in process, but is not yet completed. If "Unknown" is displayed, Discovery state of the remote partner is indeterminate.
- Multiplexer State - Indicates the Multiplexer state ("Discard", "Forward" or "Unknown") of the remote ports. If "Forward" is displayed, the remote partner is forwarding non-OAM PDUs to the **lower** sublayer. If "Discard", the remote partner is discarding non-OAM PDUs network frames. If "Unknown", the Multiplexer state of the remote partner is indeterminate.
- Parser Action - Indicates the Parser Action state ("Discard", "Forward", "Loopback" or "Unknown") of the remote ports. If "Forward" is displayed, the remote partner is forwarding non-OAM PDUs network frames to the **higher** sublayer. If "Loopback" is displayed, the remote partner is looping back non-OAM PDUs network frames. If "Discard" is displayed, the remote partner is discarding non-OAM PDUs network frames. If "Unknown" is displayed, Parser action of the remote partner is indeterminate.
- Critical Event - Indicates the Critical Event state ("Yes" or "No") of the remote partner. If "Yes" is displayed, the local device has detected a Critical Event. If "No", the local device has not detected a critical event.
- Link Fault - Indicates the remote partner has detected a fault in the receive direction ("Yes" or "No"). If "Yes" is displayed, the receive link is down. If "No", the receive link is up.
- OAM Mode - Indicates the OAM mode ("Active", "Passive" or "Unknown") of the remote partner. If "Unknown" is displayed, OAM mode of the remote partner is indeterminate.
- Supports - Indicates the supported options (Variable Access "Var", Link Event Notification "Events", Loopback "LB" or "Unknown") of the remote partner. If "Unknown" is displayed, support option of the remote partner is indeterminate.
- OUI - Indicates the three hex byte IEEE organizational specific identifier (or "Unknown") of the remote partner. If "Unknown" is displayed, OUI of the remote partner is indeterminate.

4.6.4 802.3ah Events Screen

IEEE 802.3ah supports event notification to communicate the health of the link Event notification provides user configured error thresholds/windows to monitor signal degradation. Event windows and error thresholds can be monitored and/or configured by accessing the ***802.3ah Event*** screen.

To access the ***802.3ah Event*** screen, select *6* from the ***Control*** screen, and press <*ENTER*>. The ***802.3ah Event*** screen will be displayed.

```
802.3ah Event -iConverter 10/100M2                                    iConverter
Identifier -
Chassis Number = 1    Slot Number = 5    Model Number = 8919N-0   Port = 1

  1: Symbol Period Window                 1     seconds (     25000000 symbols)
  2: Symbol Period Threshold              1     symbols
  3: Frame Window                         1     seconds
  4: Frame Threshold                      1     frames
  5: Frame Period Window                  1     seconds (      148800 frames)
  6: Frame Period Threshold               1     frames
  7: Frame Seconds Summary Window         1     seconds
  8: Frame Seconds Summary Threshold      1     seconds

  Symbol Error Running Total              0
  Symbol Error Event Total                0
  Frame Error Running Total               0
  Frame Error Event Total                 0
  Frame Period Running Total              0
  Frame Period Event Total                0
  Frame Seconds Summary Running Total     0
  Frame Seconds Summary Event Total       0

Enter, Previous Screen (0), (c)lear counters, (n)ext port >
```

The ***802.3ah Event*** screen is used to set up event windows and error thresholds for each 802.3ah event type. It also displays the statistics for the running and event totals. There are four event windows and thresholds:

Windows

Symbol Period Sets the Symbol Period window size in 1 second intervals. The window specifies the number of symbols in the defined period (time interval). For 10G, 1 sec is 1,250,000,000 symbols.

Frame Sets the Frame window size in 1 second intervals. The window specifies the number of frames in the defined period (time interval).

Frame Period Sets the Frame Period window size in 1 seconds intervals. The window specifies the number of frames in the defined period (time interval). For 10G, 1 sec is 14,880,000 frames.

Frame Seconds Sets the Frame Seconds window size in 1 second intervals. The window specifies the time interval for counting errored frames (1-second intervals with at least one frame error).

Frame Seconds Summary Sets the number of error seconds (1-second intervals with at least one frame error) within the last x seconds during a specified period or window (error seconds per x seconds). The window is specified by a time interval.

Threshold

Symbol Period Sets the threshold for the number of errored symbols for the defined Symbol Period window (error symbols per second) before a alarm is generated.

Frame Sets the threshold for the number of errors allowed for the defined Frame window (error frames per second) before a alarm is generated.

Frame Period Sets the threshold for the number of errors allowed for the defined Frame Period window (error frames per x frames) before a alarm is generated.

Frame Seconds Sets the threshold for the number of errors allowed for the defined Frame Second window (error seconds per x seconds) before a alarm is generated.

Frame Seconds Summary Sets the threshold for the number of errors allowed for the defined window before a alarm is generated.

The module displays the running totals for total events (event totals) and total errors (running totals) for the locally accessed module.

Events Totals

Symbol Period Indicates the number of errored Symbol Period events alarms that have been generated.

Frame Window Indicates the number of errored Frame event alarms that have been generated.

Frame Period Indicates the number of errored Frame Period event alarms that have been generated.

Frame Seconds Indicates the number of errored Frame Seconds event alarms that have been generated.

Running Totals

Symbol Period Indicates the sum of Symbol errors that have been detected.

Frame Window Indicates the sum of Frame errors that have been detected.

Frame Period Indicates the sum of Frame Period errors that have been detected.

Frame Seconds Indicates the sum of Frame Second errors that have been detected.

Select *1-8* to configure the event windows and error thresholds for each selection, and press <*ENTER*>. Backspace over the existing entry and enter the new value.

The module displays the running totals for total events and total errors for the locally accessed module. The counters can be cleared by selecting *c* from the ***802.3ah Event*** screen.

To configure the 802.3ah events for the next port, type *n* and press <*ENTER*>.

These events/errors are defined on a per port basis. A non-zero window value enables the event. All windows entries are in seconds. Threshold values are based on the number of symbol/frame errors allowed during the specified window period before an alarm is generated. When the threshold is exceeded, a SNMP trap is initiated.

The conversion factor for symbols/frames depends on the speed of the port.

4.6.5 SFP Information Screen

The SFP port provides general and specific information on the installed SFP transceivers. The following information is available:

SFP Address A0 Page

This section displays fixed SFP transceiver information for the following areas.

- Identifier Values
- Connector Values
- Encoding Rules
- Link Length
- Vendor OUI
- Laser Wavelength
- Vendor Serial Number
- Diagnostic Monitoring Type
- SFF-8472 Compliance
- Extended Identifier
- Transceiver Codes
- Normal Bit Rate
- Vendor Name
- Vendor Revision Number
- Options
- Date Code
- Enhanced Options

SFP Address A2 Page

This section displays decoded SFP data collected for the following statistics, if supported by the installed SFP transceiver.

- Measured Temperature
- Measured Bias
- Measured Rx Power
- Measured Vcc
- Measured Tx Power
- Temperature High Alarm Setting

Specific data has been decoded and displayed. All other data is displayed using hexadecimal values per specification SFF-8472.

To view the information on the installed SFP transceivers, select *7* from the ***Control*** screen, and press <*ENTER*>. The ***SFP Information*** screen for Port 1 Address A0 Page will be displayed.

```
SFP Information - iConverter 10/100M2                                iConverter
Identifier -
Chassis Number = 1    Slot Number = 5    Model Number = 8919N-0   Port = 1

Address A0 Page Contents
================================================
00: 03 04 07 00 10 02 30 00 00 00 00 03 02 00 1E FF ......0.........
10: 00 00 00 00 4F 6D 6E 69 74 72 6F 6E 20 53 79 73 ....Omnitron Sys
20: 74 65 6D 73 00 00 06 87 37 30 30 37 2D 31 20 20 tems....7007-1
30: 20 20 20 20 20 20 20 20 30 31 30 30 05 1E 00 BD        0100....
40: 00 1A 00 00 39 33 33 31 31 35 30 30 33 32 20 20 ....9331150032
50: 20 20 20 20 30 39 30 34 30 32 20 20 58 B0 01 4D    090402  X..M
60: 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20
70: 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20
80: FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF ................
90: FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF ................
A0: FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF ................
B0: FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF ................
C0: FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF ................
D0: FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF ................
E0: FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF ................
F0: FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF ................

Bit rate: 200 Mbps
Vendor Name: Omnitron Systems
Vendor Part Number: 7007-1
Vendor Serial Number: 9331150032
Date Code: 04/02/2009

Enter Previous Screen(0), (n)ext page, (H)elp, E(x)it > n
```

Use option *n* to go to the next page. The ***SFP Information*** screen for Port 1 Address A2 Page will be displayed.

```
SFP Information - iConverter 10/100M2                                iConverter
Identifier -
Chassis Number = 1    Slot Number = 5    Model Number = 8919N-0   Port = 1

Address A2 Page Contents
================================================
00: 5A 00 F6 00 55 00 FB 00 92 7C 6B 6C 8A AC 72 10 Z...U....|kl..r.
10: 28 10 00 0D 23 0E 00 40 1A AA 02 1F 15 2D 02 AA (...#..@.....-..
20: BA C0 01 50 94 91 01 B0 00 00 00 00 00 00 00 00 ...P............
30: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 ................
40: 00 00 00 00 3D 2B C9 CB C1 21 B8 FA 03 E6 00 00 ....=+...!......
50: 00 5E 00 00 01 00 FB 00 01 00 01 F4 00 00 00 30 .^.............0
60: 36 98 7F 90 03 18 09 88 49 E8 00 00 00 00 00 F8 6.......I.......
70: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 ................
80: FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF ................
90: FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF ................
A0: FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF ................
B0: FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF ................
C0: FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF ................
D0: FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF ................
E0: FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF ................
F0: FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF ................

Temperature: 49.6C
Vcc: 3.3v
Bias current: 6.2ma
Tx power: -10.5dbm
Rx power: -11.1dbm

Enter Previous Screen(0), (p)revious page, (H)elp, E(x)it >
```

Use option *p* to go to the previous page. For the 2FXM2 module, use option *n* to go to the next port.

4.6.6 Bandwidth Control

Bandwidth Control is accessed by selecting option *8* at the ***Control*** screen.

The module provides separate ingress and egress rate control on each port.

Ingress rates are limited by Committed Information Rate (CIR) and Committed Burst Size (CBS). The CIR is the rate at which the network supports data transfer under normal operations. The CBS defines the number of bits that can transmit over a specified time interval when congestion is occurring. Ingress CIR values are entered as a number of kbps, ranging from 64kbps to 100,000kbps. CIR values will be rounded to the nearest 64k. CBS values can range from 5kB to 150kB.

Ingress rate limiting provides an excess traffic policy with the option to "drop" the excess frames or "accept, send PAUSE" to the port's link partner when traffic excess the ingress CIR and CBS values.

Egress rates are selected from a menu of 20 options.

Egress rate limiting can be selected to use either Starvation Queuing (low latency) or Weighted Fair Queuing (high latency). Starvation Queuing processes all high priority traffic before any low priority traffic and uses a strict priority scheme. Weighted Fair Queuing will process high priority traffic more often then low priority traffic in an 8 (high priority), 4, 2, 1 (low priority) weighted scheme.

Quality of Service (QoS) is supported by mapping customer frames into four egress queues using the 3-bit Priority Code Point (PCP) field in the Ethernet frame.

The priority of received frames corresponds to eight possible values or priorities (0 through 7). Each frame is mapped to one of four egress queues based on the frames PCP priority field. PCP 0 and 1 are mapped to egress queue 0 (lowest priority), PCP 2 and 3 are mapped to egress queue 1, PCP 4 and 5 are mapped to egress queue 2 and PCP 6 and 7 are mapped to egress queue 3 (highest priority).

Quality of Service (QoS) Egress Queuing								
Priority Code Point (PCP)	0	1	2	3	4	5	6	7
Egress Queue	0	0	1	1	2	2	3	3

Egress Queue vs Frame Priority

```
Bandwidth Control - iConverter 10/100M2                              iConverter
Identifier -

Chassis Number     = 1
Slot Number        = 5
Model Number       = 8919N-0


Port 1:
 1: Ingress CIR            100,000 kbps
 2: Ingress CBS            150 kB
 3: Not Available
 4: Egress rate            100 Mbps
 5: Queueing               Fair Weight


Port 2:
 6: Ingress CIR            100,000 kbps
 7: Ingress CBS            150 kB
 8: Not Available
 9: Egress rate            100 Mbps
10: Queueing               Fair Weight

Enter Choice, Previous Screen(0), (H)elp, E(x)it >
```

To change the ingress rate of Port 1, select option *1*.

```
Change Port 1 CIR (range 64 to 100000)> 100000
```

To change the ingress rate of Port 2, select option *6*.

```
Change Port 2 CIR (range 64 to 100000)> 100000
```

To change the egress rate, select option *4* for Port 1 or option *9* for Port 2. The egress rates are displayed. Select the desired egress rate.

```
Bandwidth Control - iConverter 10/100M2                              iConverter
Identifier -

Chassis Number    = 1
Slot Number       = 5
Model Number      = 8919N-0
                                                 1:  64 Kbps     11: 6 Mbps
                                                 2:  128 Kbps    12: 7 Mbps
Port 1:                                          3:  256 Kbps    13: 8 Mbps
 1: Ingress CIR           100000 kbps            4:  512 Kbps    14: 9 Mbps
 2: Ingress CBS           150 kB                 5:  768 Kbps    15: 10 Mbps
 3: Not Available                                6:  1 Mbps      16: 20 Mbps
 4: Egress rate           100 Mbps               7:  2 Mbps      17: 30 Mbps
 5: Queueing              Fair Weight            8:  3 Mbps      18: 40 Mbps
                                                 9:  4 Mbps      19: 50 Mbps
                                                 10: 5 Mbps      20: 100 Mbps
Port 2:
 6: Ingress CIR           100000 kbps
 7: Ingress CBS           150 kB
 8: Not Available
 9: Egress rate           100 Mbps
10: Queueing              Fair Weight

Select Fiber Egress Rate from menu above (1-20) >
```

4.6.7 Layer 2 Control Protocol Filter

Layer 2 Control Protocol Filter provides the ability to discard, forward or tunnel L2CP frames based on the network requirements. Select 'discard', 'forward' or 'tunnel'.

The Layer 2 Control Protocol Filter is accessed by selecting option *9* from the ***Control*** screen.

```
L2CP Control - iConverter 10/100M2                                    iConverter
Identifier -

Chassis Number = 1    Slot Number = 5    Model Number = 8919N-0


  1: Global L2CP Control     Tunnel


Enter Choice, Previous Screen(0), (H)elp, E(x)it >
```

Select the appropriate option to configure the module for the desired operation.

Discard: The ingress frame will be dropped and not passed.

Forward: The ingress frame will not be altered. All Tagged VLAN settings will be ignored as the frame egresses the port (unmodified).

Tunnel: The ingress frame will be treated as normal Ethernet service data. When the frame egresses the port, it and will follow Port VLAN, Tag VLAN and Port Access settings configured on the module.

4.6.8 Restore to Factory Defaults

The Restore to Factory Defaults option allows the module to be restored to the original factory configuration. Restore to Factory Default option can be accessed by selecting *11* from the ***Control*** screen and pressing <*ENTER*>.

4.6.9 IP and Control Preferences Screen

To configure the IP address and control parameters, select *12* from the ***Control*** screen, and press <*ENTER*>. The ***IP and Control Preferences*** screen will be displayed.

```
IP and Control Preferences Screen                                    iConverter


 1: Set IP                              192.168.1.220
 2: Set Subnet Mask                     255.255.255.0
 3: Set Gateway                         192.168.1.1

 4: Chassis Number                      1
 5: Chassis Name (also sysName)         10/100M2

 6: Enable/Disable TELNET               Enabled
 7: Enable/Disable FTP                  Disabled
 8: Enable/Disable Soft Switch Reload   Disabled

 9: TELNET Password                     *****
10: FTP    Password
11: Serial Password

12: Save Settings



Enter Choice, Management Options Screen(0), (H)elp, E(x)it >
```

Refer to Section 4.1 for configuration details.

4.6.10 SNMP Preference Screen

To configure the SNMP preferences, select *13* from the ***Control*** screen, and press <*ENTER*>. The ***SNMP Preferences*** screen will be displayed.

```
SNMP Preferences Screen                                              iConverter
Chassis Number     = 1                          SNMP Engine ID 80001CAE030006870058BC

 1: sysContact               Omnitron (949) 250-6510
 2: sysLocation              Irvine, CA USA
 3: SNMP Writes              Enabled
SNMPv1/v2c ------------------------------------------------------------------------
 4: Read Community           *****       6: Agent                Enabled
 5: Write Community          *****
SNMPv3 ----------------------------------------------------------------------------
 7: Agent                    Enabled
 8: User 1 name (read only)  guest
 9: User 2 name (read/write) admin
10: User 1 Security          noAuthNoPriv 13: User 2 Security     noAuthNoPriv
11: User 1 Privacy pwd       *****        14: User 2 Privacy pwd  *****
12: User 1 Authen. pwd       *****        15: User 2 Authen. pwd  *****
Traps Hosts -----------------------------------------------------------------------
16:  Address 1      255.255.255.255       20: Address 5    255.255.255.255
17:  Address 2      255.255.255.255       21: Address 6    255.255.255.255
18:  Address 3      255.255.255.255       22: Address 7    255.255.255.255
19:  Address 4      255.255.255.255       23: Address 8    255.255.255.255
24:  SNMP trap type  SNMPv2c              25: Save Settings

Enter Choice, Previous Screen(0), (H)elp, E(x)it >
```

Refer to Section 4.2 for configuration details.

4.6.11 Other Networking Features Screen

To access the ***Other Networking Features*** screen, select *14* from the ***Control*** screen, and press <*ENTER*>. The ***Other Networking Features*** screen will be displayed.

```
Other Networking Features Screen                                    iConverter

1:  Enable/Disable DHCP Client                    Disabled

2:  Enable/Disable Keep Alive Trap                Disabled
3:  Keep Alive Trap interval (10-600 secs)        10

4:  Enable/Disable SW1 Switch Block               Enabled
5:  Serial Baud Rate                              57600 bps

6:  Enable/Disable VLAN Support                   Disabled
7:  VLAN ID (0-4095)                              2
8:  VLAN Priority (0-7)                           7

9:  Slave Write                                   Disabled
10: Slave Trap Generation                         Disabled
11: Slave Trap Forwarding                         Enabled

12: Save Settings

Enter Choice, Management Options Screen(0), (H)elp, E(x)it >
```

Refer to Section 4.3 for configuration details.

4.6.12 Port Access Control Setup

The Port Access Control Setup controls data access to each port on the module.

Port Access Control Setup can be configured to block (Off) user access or enable (On) user access. Port Access Control Setup enables the service provider to control user access while maintaining port configuration for easy disabling or enabling of customer service. Port Access Control Setup provides enterprise administrators the capability to improve network security by controlling port access when the port is not in use. When a port is turned Off using Port Access Control Setup, the port configuration and network link will be maintained.

To configure Port Access Control Setup, select *15 and/or 16* from the ***Control*** screen, and press <*ENTER*>.

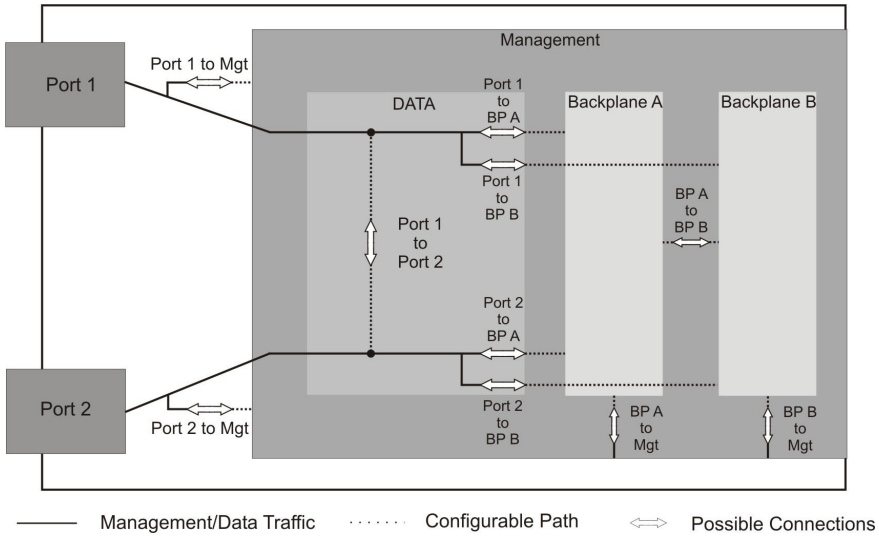
```
Control - iConverter 10/100M2                                       iConverter
Identifier -
Chassis Number     = 1                  Port Access Control Setup
Slot Number        = 5                 ----------------------------------
Model Number       = 8919N-0            15: Port 1  Enable              On
       Feature Selection                16: Port 2  Enable              On
---------------------------------
 1: 802.1Q Processing Enable   Off           Port VLAN Path Setup
 2: Configure Tag VLAN Control              ----------------------------------
 3: Configure VLAN Membership               17: Port 1  to Port 2  Enable   On
 4: Save TAG VLAN Parameters                18: Port 1  to BP A    Enable   On
 5: Configure 802.3ah Parameters            19: Port 1  to BP B    Enable   On
 6: Configure 802.3ah Events                20: Port 2  to BP A    Enable   On
 7: SFP Information                         21: Port 2  to BP B    Enable   On
 8: Bandwidth Control                       22: BP A    to BP B    Enable   On
 9: L2CP Control                            23: Port 1  to Mngmnt  Enable   On
10: Not Available                           24: Port 2  to Mngmnt  Enable   On
11: Restore to Factory Defaults             25: BP A    to Mngmnt  Enable   On
12: IP and Control Preferences              26: BP B    to Mngmnt  Enable   On
13: SNMP Preferences
14: Other Networking Features

Enter Choice, Previous Screen(0), (H)elp, E(x)it >
```

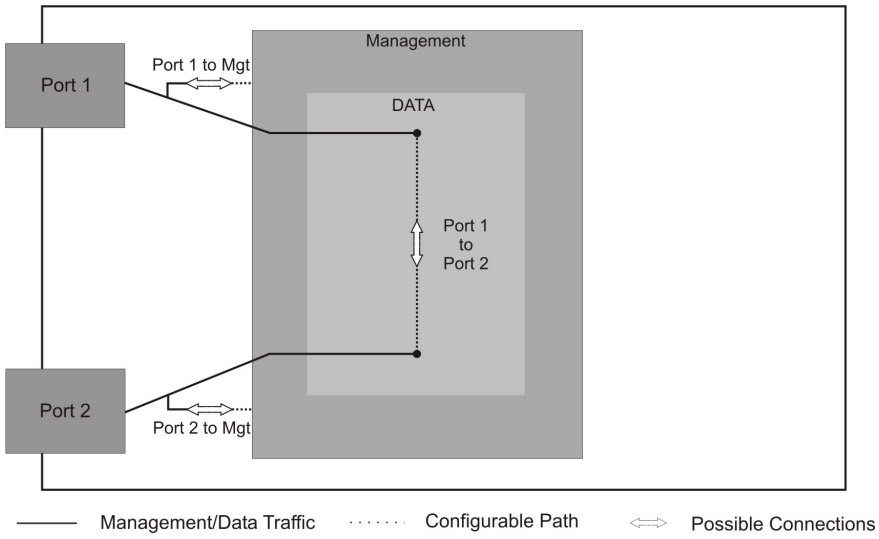
4.6.13 Port VLAN Path Setup

Port VLAN Path Setup controls the flow of traffic on the module The block diagram on the next page illustrates the flow of both the management and data traffic. The data traffic is controlled by a switch matrix which provides connectivity to the ports on the module. The management traffic is simply enabled or disabled at each port. When management traffic is disabled, the module will not respond to IP management requests across the disabled path.

Using the Port VLAN Path Setup settings, traffic will only be forwarded across the enabled path, unless blocked by one of the other features (Port Access Control or VLAN). Secure and ah OAM Management data will pass to and from the Management port even if the path has been "disabled". This allows OAM maintenance functions to always be enabled.



Port VLAN Plug-in Block Diagram



Port VLAN Standalone Block Diagram

Port VLAN Path Setup provides the ability to enable or disable data traffic between ports and control where management traffic is allowed. By default, all ports are enabled. To disable a port, select *17 - 26* or *17 - 19* depending on the module type; plug-in or standalone from the ***Control*** screen, and press <*ENTER*>.

Plug-in *Control* screen

```
Control - iConverter 10/100M2                                        iConverter
Identifier -
Chassis Number     = 1                  Port Access Control Setup
Slot Number        = 5                ---------------------------------
Model Number       = 8919N-0           15: Port 1  Enable              On
       Feature Selection               16: Port 2  Enable              On
---------------------------------
 1: 802.1Q Processing Enable   Off           Port VLAN Path Setup
 2: Configure Tag VLAN Control              ---------------------------------
 3: Configure VLAN Membership               17: Port 1  to Port 2  Enable   On
 4: Save TAG VLAN Parameters                18: Port 1  to BP A    Enable   On
 5: Configure 802.3ah Parameters            19: Port 1  to BP B    Enable   On
 6: Configure 802.3ah Events                20: Port 2  to BP A    Enable   On
 7: SFP Information                         21: Port 2  to BP B    Enable   On
 8: Bandwidth Control                       22: BP A    to BP B    Enable   On
 9: L2CP Control                            23: Port 1  to Mngmnt  Enable   On
10: Not Available                           24: Port 2  to Mngmnt  Enable   On
11: Restore to Factory Defaults             25: BP A    to Mngmnt  Enable   On
12: IP and Control Preferences              26: BP B    to Mngmnt  Enable   On
13: SNMP Preferences
14: Other Networking Features

Enter Choice, Previous Screen(0), (H)elp, E(x)it >
```

Standalone *Control* screen

```
Control - iConverter 10/100M2                                        iConverter
Identifier -
Chassis Number     = 1                  Port Access Control Setup
Slot Number        = 1                ---------------------------------
Model Number       = 8919N-0B          15: Port 1 Enable               On
       Feature Selection               16: Port 2 Enable               On
---------------------------------
 1: 802.1Q Processing Enable   Off           Port VLAN Path Setup
 2: Configure Tag VLAN Control              ---------------------------------
 3: Configure VLAN Membership               17: Port 1 to Port 2   Enable   On
 4: Save TAG VLAN Parameters                18: Port 1 to Mngmnt   Enable   On
 5: Configure 802.3ah Parameters            19: Port 2 to Mngmnt   Enable   On
 6: Configure 802.3ah Events
 7: SFP Information
 8: Bandwidth Control
 9: L2CP Control
10: Not Available
11: Restore to Factory Defaults
12: IP and Control Preferences
13: SNMP Preferences
14: Other Networking Features

Enter Choice, Previous Screen(0), (H)elp, E(x)it >
```

5.0 SPECIFICATIONS

Description	*iConverter* 10/100M2 10/100BASE-TX UTP to 100BASE-FX Fiber Network Interface Device	
Standard Compliances	IEEE 802.1Q, 802.1p, 802.3, 802.3ah RFC 2819 (RMON), 2863 (IF-MIB), 2131 (DHCP) MEF 9, 14, 21	
Management	Telnet, SNMPv1, SNMPv2c, SNMPv3, Serial Console	
Regulatory Compliances	UL, CE, FCC Class A, NEBS Level 3	
Frame Size	Up to 2,048 bytes	
Port Types	Copper:	10/100BASE-T (RJ-45)
	Fiber:	100BASE-FX (ST, SC, LC, SFP) 100BASE-BX (SC, SFP) single-fiber
	Serial:	RS-232 (Mini DIN-6 female) Mini DIN-6 to DB-9 adapter included
Cable Types	Copper:	EIA/TIA 568 A/B, Category 5 and higher
	Fiber:	Multimode: 50/125um, 62.5/125um Single-mode: 9/125um
	Serial:	RS-232, 22 to 24 AWG, 12 to 50 pF/ft
AC Power Requirements	US AC Adapter:	100 - 120VAC/60Hz, 0.06A @ 120VAC
	Universal AC Adapter:	100 - 240VAC/50 - 60Hz, 0.06A @ 120VAC
DC Power Requirements (Plug-in)	Power Supplied by Backplane:	0.9A @ 3.3VDC
DC Power Requirements (Standalone)	DC Input (Terminal Block):	+8 to +15VDC, 0.5A @ 9VDC 2-Pin Terminal
	DC Input (AC Adapter):	+8 to +15VDC, 0.5A @ 9VDC 2.5mm Barrel Connector
Dimensions (W x D x H)	Plug-in: Standalone: w/ integrated mounting brackets:	0.85” x 4.5” x 2.8” (21.59 mm x 114.3 mm x 71.12 mm) 3.1” x 4.8” x 1.0” (78.74 mm x 121.92 mm x 25.4 mm) 3.8” x 4.8” x 1.0” (96.52 mm x 121.92 mm x 25.4 mm)
Weight	Plug-in: Standalone w/o AC adapter: Standalone w/ AC adapter:	8 oz. (226.79 grams) 1.0 lbs. (0.454 kg) 1.5 lbs. (0.680 kg)
Temperature	Commercial: Wide: Extended: Storage:	0 to 50° C -40 to 60° C -40 to 75° C -40 to 80° C
Humidity	5% to 95% (non-condensing)	
Altitude	-100m to 4,000m	
MTBF (hours)	Plug-in: w/o AC adapter: w/ AC adapter (US): w/ AC adapter (Unv):	550,000 550,000 250,000 100,000

10/100M2 Specification

Description	*iConverter* 2FXM2 100BASE-FX Fiber to 100BASE-FX Fiber Network Interface Device	
Standard Compliances	IEEE 802.1Q, 802.1p, 802.3, 802.3ah RFC 2819 (RMON), 2863 (IF-MIB), 2131 (DHCP) MEF 9, 14, 21	
Management	Telnet, SNMPv1, SNMPv2c, SNMPv3, Serial Console	
Regulatory Compliances	UL, CE, FCC Class A, NEBS Level 3	
Frame Size	Up to 2,048 bytes	
Port Types	Fiber:	100BASE-FX (ST, SC, LC, SFP) 100BASE-BX (SC, SFP) single-fiber
	Serial:	RS-232 (Mini DIN-6 female) Mini DIN-6 to DB-9 adapter included
Cable Types	Fiber:	Multimode: 50/125um, 62.5/125um Single-mode: 9/125um
	Serial:	RS-232, 22 to 24 AWG, 12 to 50 pF/ft
AC Power Requirements	US AC Adapter:	100 - 120VAC/60Hz, 0.08A @ 120VAC
	Universal AC Adapter:	100 - 240VAC/50 - 60Hz, 0.08A @ 120VAC
DC Power Requirements (Plug-in)	Power Supplied by Backplane:	1.2A @ 3.3VDC
DC Power Requirements (Standalone)	DC Input (Terminal Block):	+8 to +15VDC, 0.6A @ 9VDC 2-Pin Terminal
	DC Input (AC Adapter):	+8 to +15VDC, 0.6A @ 9VDC 2.5mm Barrel Connector
Dimensions (W x D x H)	Plug-in: Standalone: w/ integrated mounting brackets:	0.85” x 4.5” x 2.8” (21.59 mm x 114.3 mm x 71.12 mm) 3.1” x 4.8” x 1.0” (78.74 mm x 121.92 mm x 25.4 mm) 3.8” x 4.8” x 1.0” (96.52 mm x 121.92 mm x 25.4 mm)
Weight	Plug-in: Standalone w/o AC adapter: Standalone w/ AC adapter:	8 oz. (226.79 grams) 1.0 lbs. (0.454 kg) 1.5 lbs. (0.680 kg)
Temperature	Commercial: Wide: Extended: Storage:	0 to 50° C -40 to 60° C -40 to 75° C -40 to 80° C
Humidity	5% to 95% (non-condensing)	
Altitude	-100m to 4,000m	
MTBF (hours)	Plug-in: w/o AC adapter: w/ AC adapter (US): w/ AC adapter (Unv):	500,000 500,000 250,000 100,000

2FXM2 Specification

6.0 FIRMWARE UPDATE PROCEDURE

6.1 COPY THE FIRMWARE FILE TO YOUR HARD DRIVE

The file should be copied to a convenient location on the hard drive of the workstation. The name of the new application firmware file is similar to 10-100M2-2FXM2-App-Vx.x.xx.bin (x.x.xx refers to the firmware version).

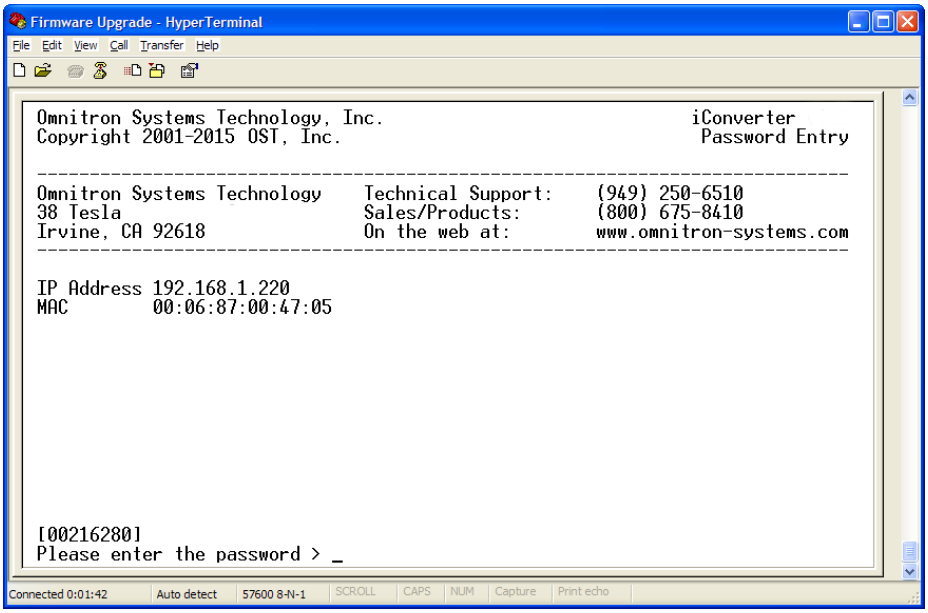
6.2 UPDATE THE FIRMWARE

The application firmware can be updated using the Serial Console Port or a network connection. Section 6.2.1 outlines the procedure for updating the module via the Serial Console Port and section 6.2.2 outlines the procedure for updating the module via ftp (network).

6.2.1 Updating Application Firmware Using the Serial Console Port

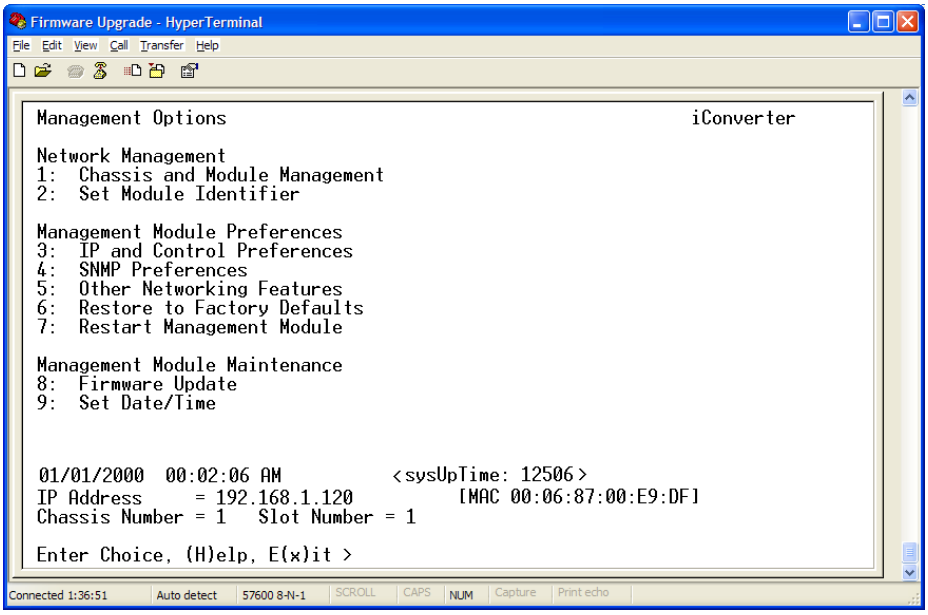
Connect a serial cable between the workstation and the 6-pin DIN connector on the module. Configure the COM port: Bits per second = 57600, Data bits = 8; Parity = None; Stop bits = 1; No Flow Control.

Start the Terminal Emulator program on the workstation. The the ***Password Entry*** screen will be displayed. Type the password and press <*ENTER*>. If no password has been configured, the ***Password Entry*** screen will be skip and the ***Management Options*** screen will be displayed.

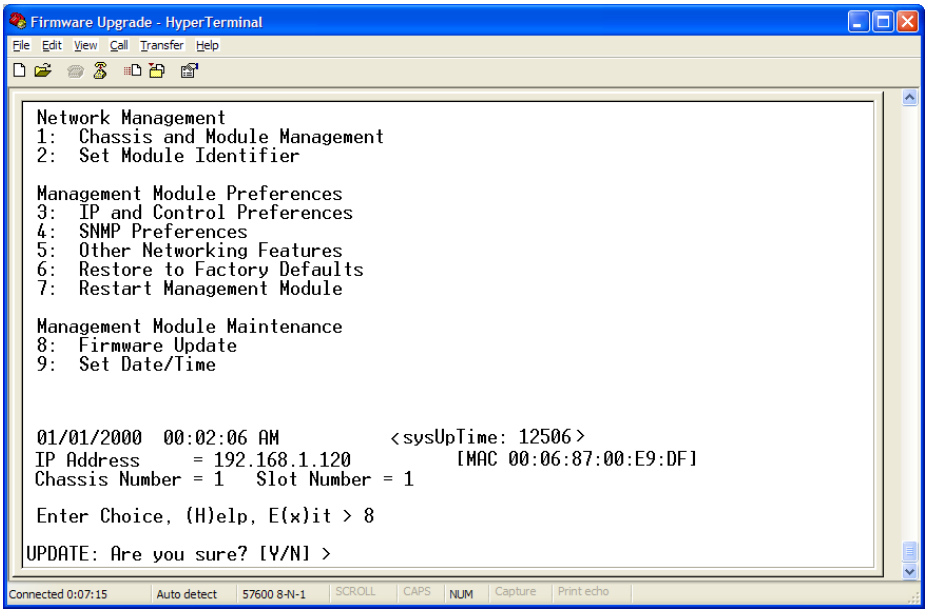


NOTE: The screen options may vary depending on the firmware revision of the module, however, the procedure is the same.

The ***Management Options*** screen will be displayed.



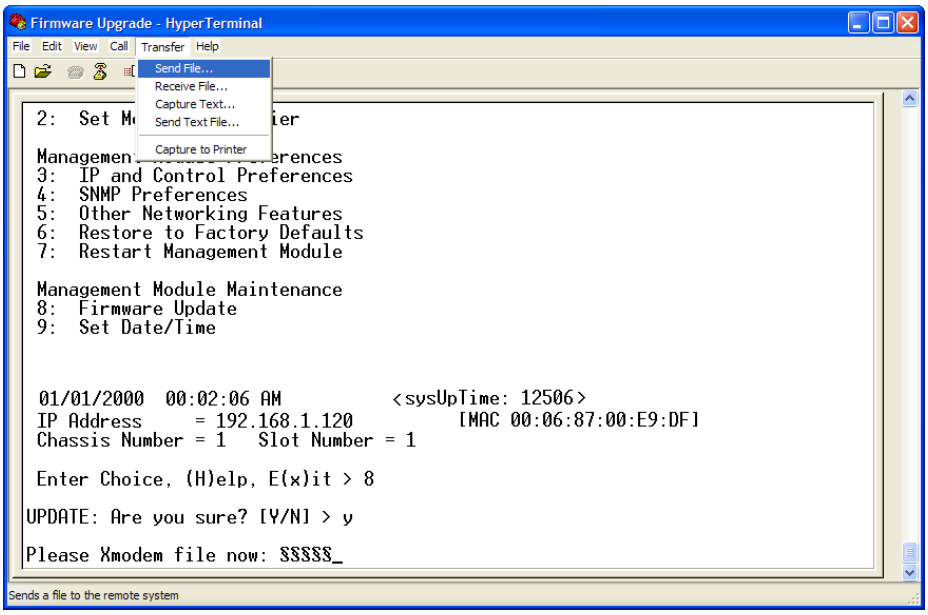
To update the firmware, select *Firmware Update* option from the ***Management Options*** screen, and press *<ENTER>*.



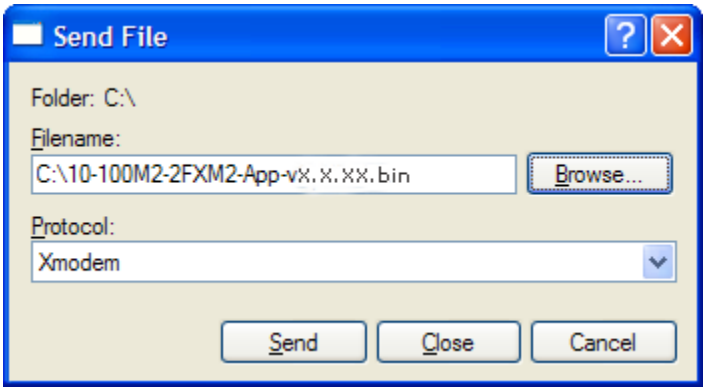
Enter *Y* to upgrade the module.

Please Xmodem file now will be displayed. To upload the firmware, select *Transfer* from the options at the top of the screen. Select *Send File* from the pull-down options.

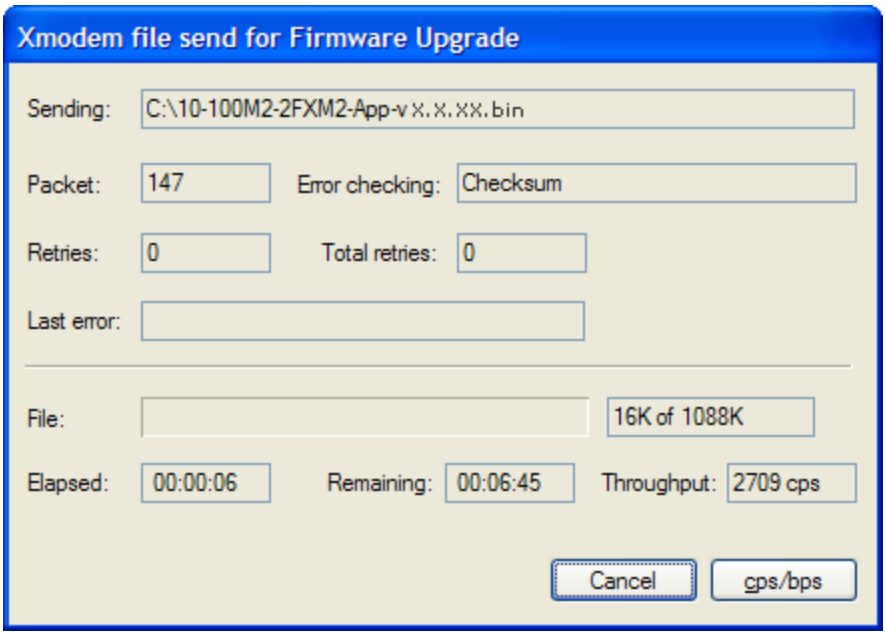
NOTE: The module will only wait ~3 minutes for the firmware file to be selected and sent.



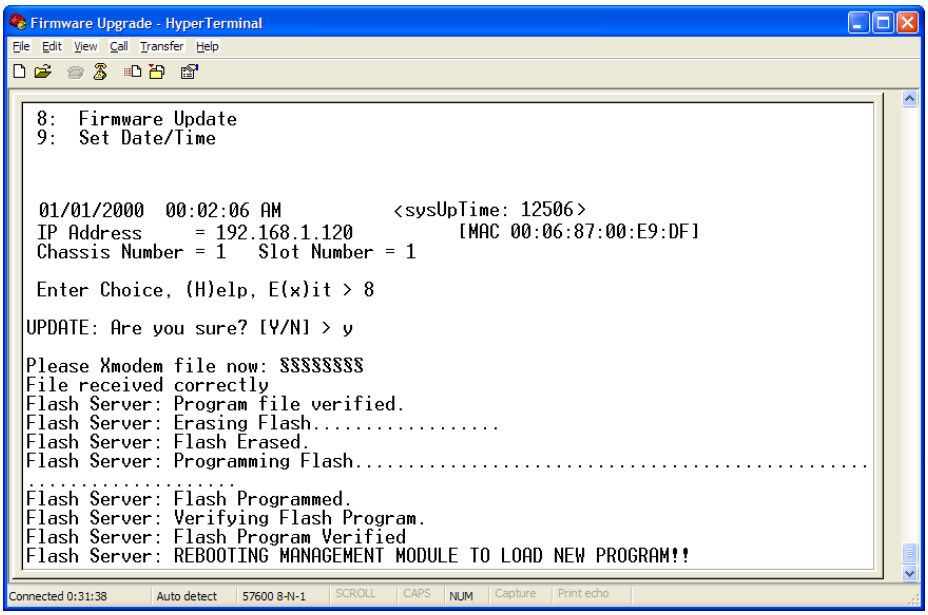
In the Send File dialog box, browse for the firmware file and select it. Verify the Protocol is set to Xmodem.



Click the Send button to download the firmware file to the module. The operation will take approximately six minutes or more.

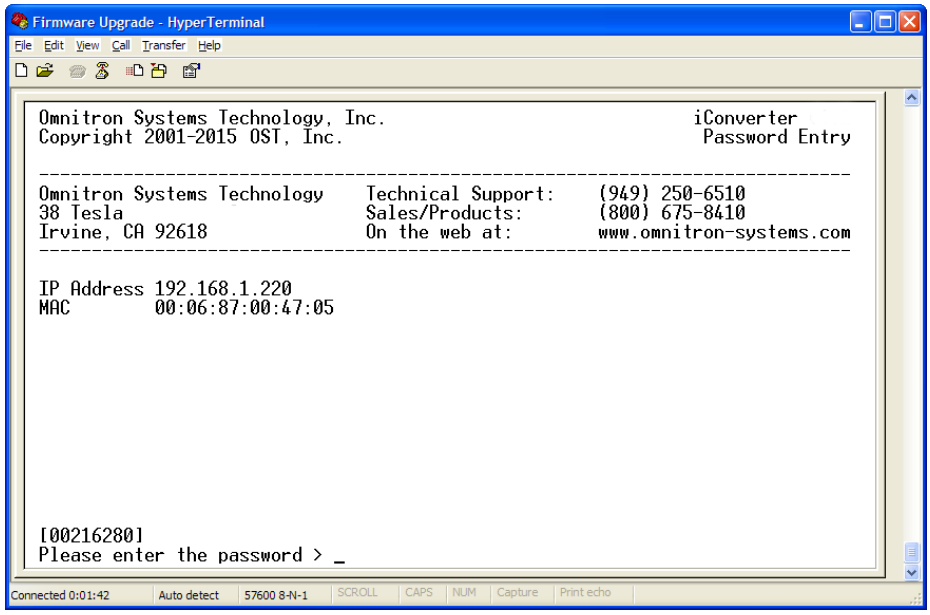


After downloading the firmware, the module will automatically reprogram the flash memory and reboot.



NOTE: Do not remove the power from the module until the module reboots and displays the *Password Entry* or *Management Options* screen.

After the reboot, the ***Password Entry*** or ***Management Options*** screen will be displayed.



The firmware update is complete. Verify the module will respond by pinging the IP address of the module.

NOTE: If the updated firmware includes changes to the defaults values, these new default values will not take effect until *Restore to Factory Defaults* option from the *Management Options* screen is executed.

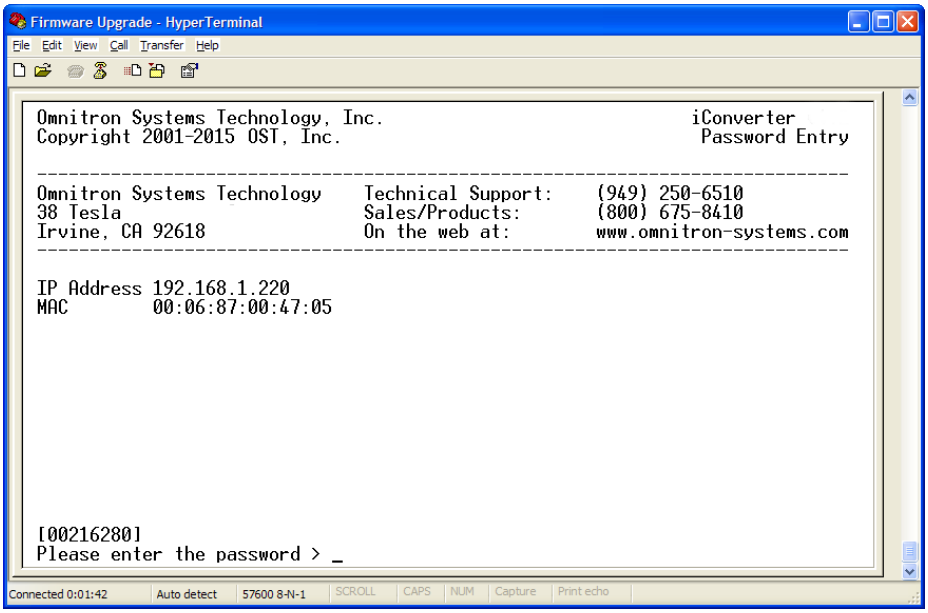
6.2.2 Updating the Application Firmware Using FTP

FTP can be used to update the application firmware over a network. Verify the following parameters:

- IP Protocol is turned On and the module has a valid IP Address
- FTP Protocol turned On and a password has been set

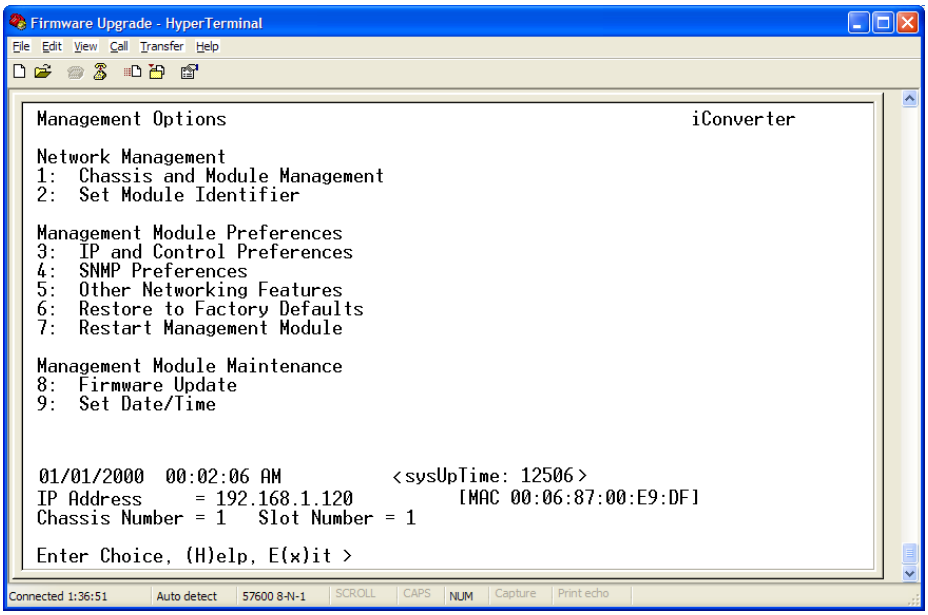
Depending on the operating system of the workstation and/or FTP installation, the name of the application firmware file may need to be renamed to the "DOS 8.3 Format". Rename the firmware file from 10-100M2-2FXM2-App-Vx.x.xx.bin to Vx.x-xx.bin (x.xxx refers to the firmware build number) and store the file is on the root or c:\ directory.

To configure the module for FTP, access the module through the serial console port. The the ***Password Entry*** or ***Management Options*** screen will be displayed. Type the password and press <*ENTER*>.



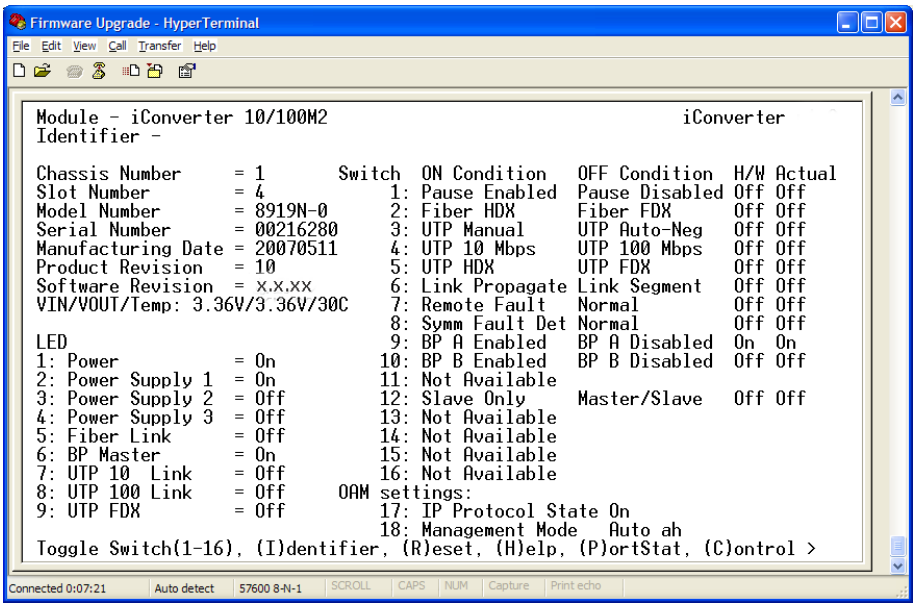
NOTE: The screen options may vary depending on the firmware revision of the module, however, the procedure is the same.

The ***Management Options*** screen will be displayed.



If an IP address is displayed, IP Protocol is enabled. Go to page 60 to enable FTP.

To enable IP protocol, select *Chassis and Module Management* option to access the ***Module*** configuration screen.

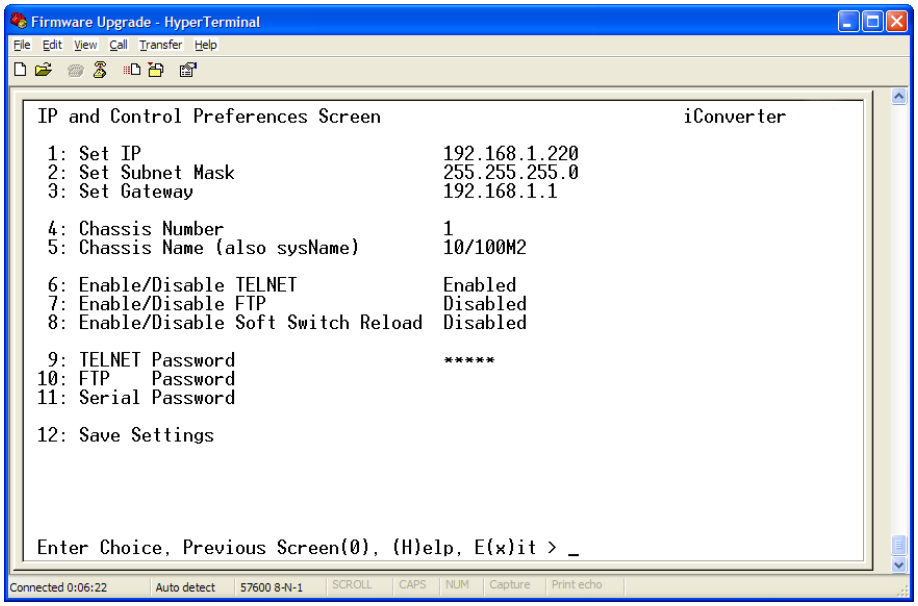


To enable IP protocol, select *IP Protocol State* at the ***Module*** configuration screen, and press <*ENTER*>. Enter *Y* to enable IP Protocol State, and press <*ENTER*>.

Press the <*ESC*> key twice to return to the ***Management Options*** screen.

To configure the IP Address of the module, select *IP and Control Preferences* option from the ***Management Options*** screen, and press <*ENTER*>.

The ***IP and Control Preferences*** screen will be displayed.



To configure the IP address, select *Set IP* option at the ***IP and Control Preferences*** screen, and press <*ENTER*>. Backspace over the existing value, type the new value (in x.x.x.x format), and press <*ENTER*>.

NOTE: x represents a decimal number between 0 and 255.

To configure the subnet mask, select *Set Subnet Mask* option at the ***IP and Control Preferences*** screen, and press <*ENTER*>. Backspace over the existing value, type the new value (in x.x.x.x format), and press <*ENTER*>.

NOTE: Class A mask is 255.0.0.0, Class B mask is 255.255.0.0 and Class C mask is 255.255.255.0.

To configure the gateway, select *Set Gateway* option at the ***IP and Control Preferences*** screen, and press <*ENTER*>. Backspace over the existing value, type the new value (in x.x.x.x format), and press <*ENTER*>.

NOTE: x represents a decimal number between 0 and 255.

To enable FTP, select *Enable/Disable FTP* option at the ***IP and Control Preferences*** screen, and press <*ENTER*>. Follow the screen prompts to enable FTP.

An FTP password is required. To set the password for FTP access, select *FTP Password* option at the ***IP and Control Preferences*** screen, and press <*ENTER*>. Follow the screen prompts to enter and verify the password.

Save the new values by selecting the *Save* option at the ***IP and Control Preference*** screen or return to the ***Management Option*** screen and select *Save Preference Changes* option depending on the firmware version.

Press <*ESC*> or *X* to return to the ***Management Options*** screen.

To update the firmware using an FTP application, verify the following:

- IP protocol is enabled, IP Address and FTP has been configured
- The firmware file resides on the root c:\ directory and its name has been changed to Vx.x-xx.bin (firmware renamed on page 58)

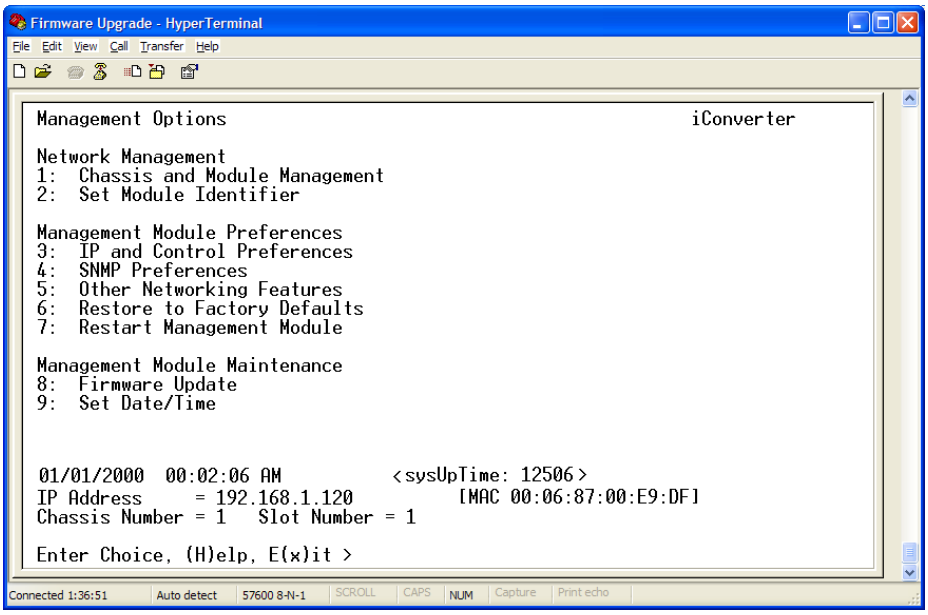
From a DOS command window, enter the following commands. Bold lettering indicates information to be entered.

> **ftp 192.168.1.220**	(module's IP address)
Connected to 192.168.1.220	
220 FTP server ready	
User (192.168.1.220:(none)): **admin**	(default login name)
331 Password required	
Password: **<enter ftp password>**	(from the ***IP and Control Preferences*** screen **)**
230 User logged in	
ftp> **put <location and filename of the firmware>**	(stored on the hard drive of the workstation)
200 OK	
150 ready to take file	
226 transfer complete	
226 Management module firmware update in process.....closing session	
Connection closed by remote host	
ftp>**quit**	(exit FTP session)

When the file transfer is complete, the module verifies the file, programs the flash memory and automatically restarts with the newly loaded firmware.

When the module is accessed after the firmware has been updated (telnet or serial console), the ***Password Entry*** screen will be displayed if a password has been assigned. Enter the password.

The ***Management Options*** screen will be displayed.



The firmware update is complete. You can use the ping command to test the module's response.

NOTE: If the updated firmware includes changes to the defaults values, these new default values will not take effect until *Restore to Factory Defaults* option from the *Management Options* screen is executed.

7.0 TROUBLESHOOTING GUIDE

7.1 OVERVIEW

The module has several LED indicators to visually troubleshoot problems associated with the module. Refer to Section 3.5, Verify Operation, for LED definitions.

7.1.1 Power Issues

Problem:

The Power LED does not illuminate after installation is complete or no LED indicators are ON

Possible Causes:

A. For standalone modules, confirm that the power supply is connected to both the module and the AC or DC power source. If Power LED is still not illuminated, use a voltmeter and check the voltage of the power source (AC/DC converter used with the standalone unit should measure between 8 -15 VDC no load at the barrel connector).

B. For plug-in module, confirm that the chassis is connected to an AC or DC power source. If the Power LED is still not illuminated, remove the module and verify the operation of other modules in the chassis. If power is present and the module will not turn ON, replace the module.

C. The 10/100M2 plug-in module requires ~ 2.97 watts (0.9 amps @ 3.3VDC) for normal operation. The 2FXM2 plug-in module requires ~3.96 watts (1.2 amps @ 3.3VDC) for normal operation.

The standard AC Power Supply in a 19-Module Chassis can supply ~ 60 watts (18 amps @ 3.3VDC). The high capacity AC Power Supply can supply ~120 watts (36 amps @ 3.3VDC). A fully loaded 19-Module chassis of modules will require two standard power supplies or one high capacity power supply for standard operation. This condition will cause the power LED not to illuminate.

7.1.2 Fiber Issues

Problem:

The Fiber Optic link LED does not illuminate after installation is complete.

Possible Causes:

A. Verify the Link Mode selection is set to Link Segment (LS). Until a stable link is established, leave the Link Mode configured for LS. After a Link presence is established, the Link Mode selection can be modified.

B. Confirm that the fiber optic cable is properly connected to the module and the remote fiber optic device. Connecting the fiber between the Tx of the far end to the Rx on the near end will cause the P1 LED on the near end to illuminate (only when the link mode is configured for Link Segment). Completing the connection will cause the far end P1 LED to illuminate.

C. Confirm that the fiber cable type matches the fiber transceiver type (multimode, single-mode) on the module.

D. If using a dual-fiber model, confirm that the transmitter (Tx) is attached to the receiver side of its link partner, and that the receiver (Rx) is attached to the transmitter. A optical power meter will assist in determining which cable should be connected to the Tx and Rx of the module. To insure proper operation, a minimum of -30dBm must be present at the fiber optic receiver.

E. If using a single-fiber model, confirm that the Tx wavelength on the module matches the Rx of the connected fiber optic device. Single-fiber units transmit and receive at different wavelengths (1550nm/1310nm). Verify the model numbers to insure proper compatibility.

7.1.3 RJ-45 Issues - 10/100M2

Problem:

The RJ-45 link LED does not illuminate after installation is complete.

Possible Causes:

A. Confirm that the UTP cable is connected properly to the iConverter 10/100M2 and the attached device. Once a connection has been established between the iConverter and its link partner (switch or workstation), the RJ-45 "10/100" LED should illuminate. If the LED does not illuminate, check the Link Mode configuration. A link mode other than Link Segment may cause the RJ-45 "10/100" LED not to turn ON.

B. Verify the iConverter 10/100M2 RJ-45 port is configured with the proper settings based on the attached device (AN or MAN, 10 or 100, HD or FD).

C. Verify the distance between the iConverter and the link partner is within 100 meters.

D. Confirm that the UTP cable pin-out is correct (EIA/TIA-568-A). The module has auto-crossover capability, so it will accept either a straight-through or crossover cable.

NOTE: If corrective actions do not resolve your situation, please contact Omnitron Systems Technical Support.

8.0 WARRANTY

This product is warranted to the original purchaser against defects in material and workmanship for a period of TWO YEARS from the date of shipment. A LIFETIME warranty may be obtained by the original purchaser by REGISTERING this product with Omnitron within 90 days from the date of shipment. TO REGISTER, COMPLETE AND MAIL OR FAX THE ENCLOSED REGISTRATION FORM TO THE INDICATED ADDRESS. Or you may register your product on the Internet at http://www.omnitron-systems.com. During the warranty period, Omnitron will, at its option, repair or replace a product which is proven to be defective.

For warranty service, the product must be sent to an Omnitron designated facility, at Buyer's expense. Omnitron will pay the shipping charge to return the product to Buyer's designated US address using Omnitron's standard shipping method.

Limitation of Warranty

The foregoing warranty shall not apply to defects resulting from improper or inadequate use and/or maintenance of the equipment by Buyer, Buyer-supplied equipment, Buyer-supplied interfacing, unauthorized modifications or tampering with equipment (including removal of equipment cover by personnel not specifically authorized and certified by Omnitron), or misuse, or operating outside the environmental specification of the product (including but not limited to voltage, ambient temperature, radiation, unusual dust, etc.), or improper site preparation or maintenance.

No other warranty is expressed or implied. Omnitron specifically disclaims the implied warranties of merchantability and fitness for any particular purpose.

Exclusive Remedies

The remedies provided herein are the Buyer's sole and exclusive remedies. Omnitron shall not be liable for any direct, indirect, special, incidental, or consequential damages, whether based on contract, tort, or any legal theory.

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