



FEBRUARY 2007

LMM101A
LMM102A
LMM103A
LMM104A

IE Managed Miniature Media Converter



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INFORMATION**

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FCC and Industry Canada RF Interference Statements

Class B Digital Device. This equipment has been tested and found to comply with the limits for a Class B computing device pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. However, there is no guarantee that interference will not occur in a particular installation. This equipment generates, uses, and can radiate radio frequency energy, and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. If this equipment does cause harmful interference to radio or telephone reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult an experienced radio/TV technician for help.

CAUTION

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

To meet FCC requirements, shielded cables and power cords are required to connect this device to a personal computer or other Class B certified device.

This digital apparatus does not exceed the Class B limits for radio noise emission from digital apparatus set out in the Radio Interference Regulation of Industry Canada.

Normas Oficiales Mexicanas (NOM) Electrical Safety Statement

Instrucciones de Seguridad

1. Todas las instrucciones de seguridad y operación deberán ser leídas antes de que el aparato eléctrico sea operado.
2. Las instrucciones de seguridad y operación deberán ser guardadas para referencia futura.
3. Todas las advertencias en el aparato eléctrico y en sus instrucciones de operación deben ser respetadas.
4. Todas las instrucciones de operación y uso deben ser seguidas.
5. El aparato eléctrico no deberá ser usado cerca del agua—por ejemplo, cerca de la tina de baño, lavabo, sótano mojado o cerca de una alberca, etc.
6. El aparato eléctrico debe ser usado únicamente con carritos o pedestales que sean recomendados por el fabricante.
7. El aparato eléctrico debe ser montado a la pared o al techo sólo como sea recomendado por el fabricante.
8. Servicio—El usuario no debe intentar dar servicio al equipo eléctrico más allá a lo descrito en las instrucciones de operación. Todo otro servicio deberá ser referido a personal de servicio calificado.
9. El aparato eléctrico debe ser situado de tal manera que su posición no interfiera su uso. La colocación del aparato eléctrico sobre una cama, sofá, alfombra o superficie similar puede bloquear la ventilación. No se debe colocar en librerías o gabinetes que impidan el flujo de aire por los orificios de ventilación.
10. El equipo eléctrico debe ser situado fuera del alcance de fuentes de calor como radiadores, registros de calor, estufas u otros aparatos (incluyendo amplificadores) que producen calor.
11. El aparato eléctrico deberá ser conectado a una fuente de poder sólo del tipo descrito en el instructivo de operación, o como se indique en el aparato.
12. Precaución debe ser tomada de tal manera que la tierra física y la polarización del equipo no sea eliminada.
13. Los cables de la fuente de poder deben ser guiados de tal manera que no sean pisados ni pellizcados por objetos colocados sobre o contra ellos, poniendo particular atención a los contactos y receptáculos donde salen del aparato.
14. El equipo eléctrico debe ser limpiado únicamente de acuerdo a las recomendaciones del fabricante.
15. En caso de existir, una antena externa deberá ser localizada lejos de las líneas de energía.
16. El cable de corriente deberá ser desconectado cuando el equipo no sea usado por un largo período de tiempo.

17. Cuidado debe ser tomado de tal manera que objetos líquidos no sean derramados sobre la cubierta u orificios de ventilación.
18. Servicio por personal calificado deberá ser provisto cuando:
 - a. El cable de poder o el contacto ha sido dañado; u
 - b. Objetos han caído o líquido ha sido derramado dentro del aparato; o
 - c. El aparato ha sido expuesto a la lluvia; o
 - d. El aparato parece no operar normalmente o muestra un cambio en su desempeño; o
 - e. El aparato ha sido tirado o su cubierta ha sido dañada.

Table of Contents

FCC and Industry Canada RF Interference Statements	ii
Normas Oficiales Mexicanas (NOM) Electrical Safety Statement	iii
IE Managed Miniature Media Converter Part Numbers	vi
About the IE Managed Miniature Media Converter	1
About iView²	1
About Features and Configuration	2
LED Operation	2
Powering Options	3
Product Applications	4
Modes of Operation	5
Installation	8
Troubleshooting	8
Configuration	9
Auto-Cross Feature for Twisted Pair Connection	9
Mini-Serial Port	9
Assigning IP Information	9
Software Configuration	10
Serial Configuration/Telnet Session	12
Main Configuration Screen	13
About DHCP	24
Using iView²	25
Specifications	29
Black Box Customer Service	30
Safety Certifications	30

IE Managed Miniature Media Converter Part Numbers

The part numbers include the following:

Part Number	Port 1	Port 2	Speed	Media 1	Media 2	Distance
LMM101A	RJ45	ST	10/100 Mbps	10/100	MM-1300	2 km
LMM102A	RJ45	SC	10/100 Mbps	10/100	MM-1300	2 km
LMM103A	RJ45	ST	10/100 Mbps	10/100	SM-1310	40 km
LMM104A	RJ45	SC	10/100 Mbps	10/100	SM-1310	40 km

About the IE Managed Miniature Media Converter

The IE Managed Miniature Media Converter is an optical demarcation network interface device, allowing fiber network operators to connect to and manage remote network segments. Advanced networking capabilities allow operators to easily observe both end points and the fiber link between them as a single management entity, rather than as separate networks. No host management traffic is visible to the remote or customer network nor is access to the customer network required, guaranteeing end-to-end data integrity.

The IE Managed Miniature Media Converter includes one 100 Mbps fiber port, one 10/100 twisted pair data port, and one auxiliary port for serial configuration (with the included adapter). The twisted pair port can auto-negotiate or be set manually for 10 or 100 Mbps, and half or full-duplex. The optics port operates at 100 Mbps, full duplex mode only. Powering options include AC and DC power as well as Power over Ethernet, functioning as a Powered Device (PD) compliant with 802.3af.

The IE Managed Miniature Media Converter is 802.1Q VLAN compatible, supporting a full-range of VLAN IDs, and offering Q-in-Q tagging and a 2-tier queue for differential prioritization (802.1p). The IE Managed Miniature Media Converter also includes the LinkLoss and FiberAlert features for troubleshooting, loopback testing functionality, bi-directional bandwidth control, and optional protection against Broadcast storms. Black Box offers a graphical user interface (GUI) based element management system called iView², which runs on SNMP.

About iView²

iView² is a network management application for Black Box's intelligent networking devices. It features a GUI, which provides network managers the ability to monitor and control Black Box products. The application is available in several versions and can also function as a snap-in module for HP OpenViewTM Network Node Manager. Refer to the iView² help files for information regarding configuring and managing the IE Managed Miniature Media Converter.

ABOUT ICONFIG

iConfig is an in-band utility used for SNMP configuration for SNMP-manageable devices.

The iConfig feature allows you to perform the following:

- Set an IP address, subnet mask and default gateway
- Define community strings and SNMP traps

iConfig also includes an authorized IP address system and restricted access to MIB groups which are supported by manageable devices. These extra layers of security do not affect SNMP compatibility. iConfig can upload new versions of the system software and new MIB information. It also includes diagnostic capabilities for faster resolution of technical support issues.

iConfig works with the following platforms:

- Windows 98™
- Windows NT™
- Windows 2000™
- Windows XP™

iConfig is also available as a standalone application. (Windows 98 users must use the standalone version of iConfig.) Both applications are included on the iView² CD or can be downloaded from the Black Box website. For information regarding the use of iConfig, refer to the iView² help menu.

About Features and Configuration

The IE Managed Miniature Media Converter offers a full feature set including Auto-Negotiation, Selective Advertising, FiberAlert, AutoCross, read/write VLANs, SNMP management, bandwidth control, and loopback testing. Features can be configured through software or by using a serial port, Telnet session, iConfig, or SNMP.

Unit software updates can be downloaded through TFTP and iConfig.

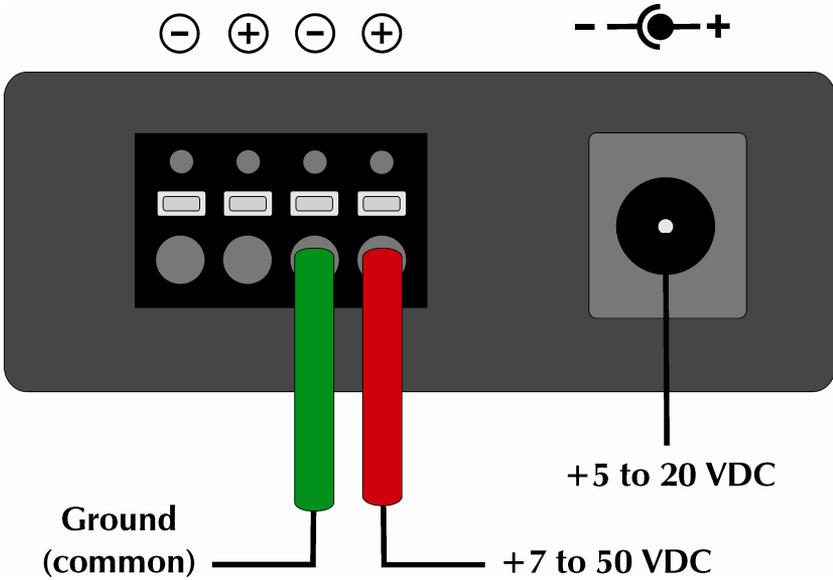
LED Operation

The IE Managed Miniature Media Converter features two diagnostic LEDs:

- **FX LNK/ACT:** This LED is on when a FX Link exists and blinks when data passes through the fiber connection.
- **TX LNK/ACT:** This LED is on when a TX Link exists and blinks when data passes through the twisted-pair connection.

Powering Options

The IE Managed Miniature Media Converter powering options include AC and DC power as well as Power over Ethernet, functioning as a PD compliant with 802.3af. The DC Terminal block allows you to daisy-chain one IE Managed Miniature Media Converter to another. To use the DC terminal block, connect to any one positive and any one negative terminal from a power source. The illustration shows the wiring configurations for the DC terminal block (7 to 50 VDC).

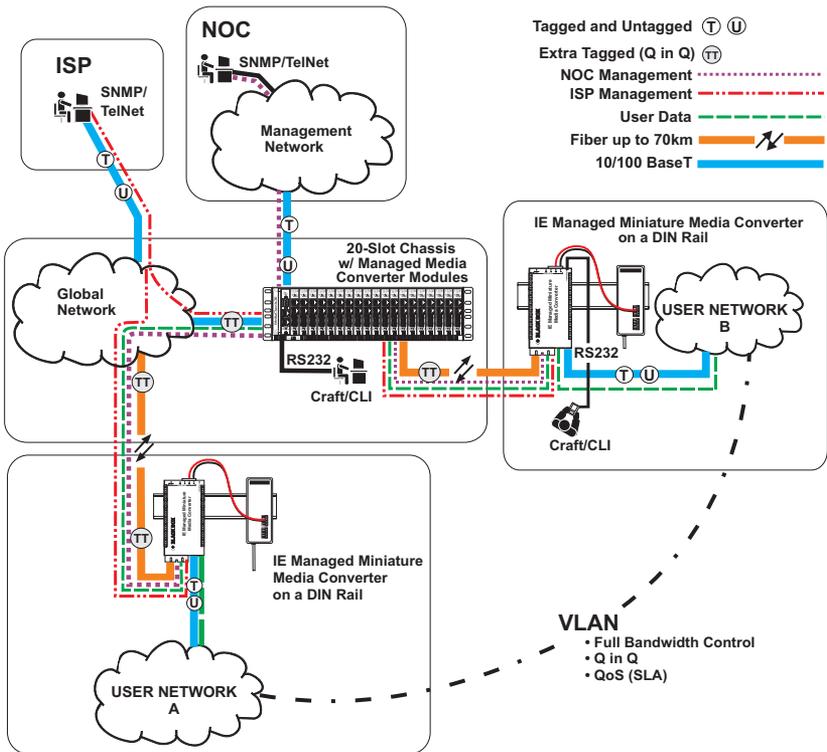


Product Applications

The IE Managed Miniature Media Converter comes with a variety of features for different network environments. When connected with different types of devices, some features can be enabled, such as extra tagging or “Q-in-Q”, and different network setups come with different requirements. The network setup example below shows one deployment scenario with a full range of management options.

The IE Managed Miniature Media Converter can be setup two ways:

- One IE Managed Miniature Media Converter and a Managed Media Converter Module for a Host/Remote application (one at each end)
- One IE Managed Miniature Media Converter for a standalone application



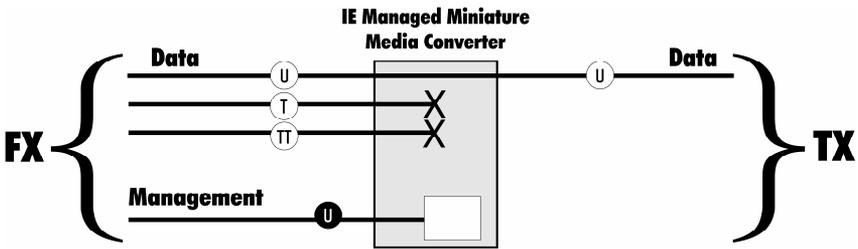
Modes of Operation

The following are application examples of Operation Modes for the IE Managed Miniature Media Converter. There are six modes of operation that can be configured through the Serial/Telnet session. All modes of operation block management traffic from the user network on the data port.

- ⓪ Data Untagged
- Ⓣ Data Tagged
- Ⓧ Data Extra Tag
- ⓪ Mgmt Untagged
- Ⓣ Mgmt Tagged

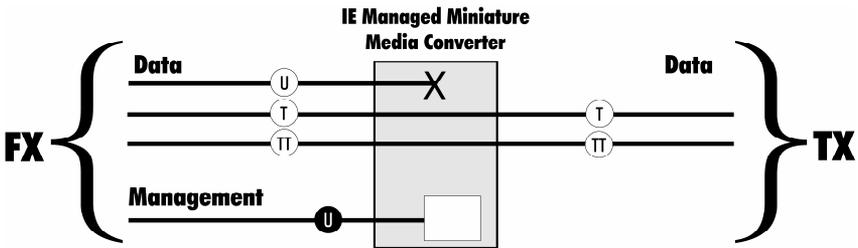
Mode One - Default

The default mode is provided to pass only untagged traffic.



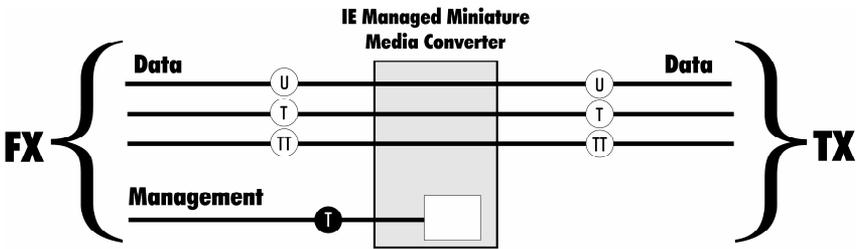
Mode Two - Transparency with Untagged Management

This mode is designed to pass all tagged and extra-tagged customer traffic unchanged and must be managed using untagged traffic only. It does not add or remove tags.



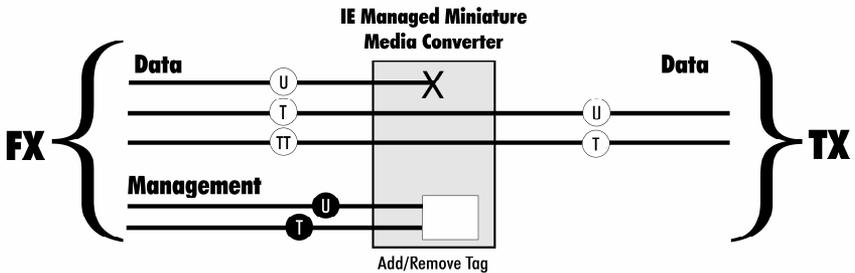
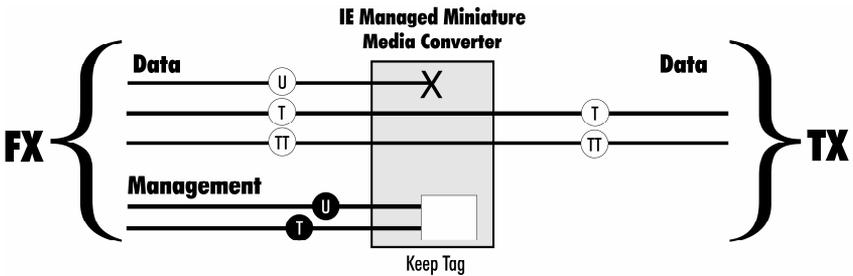
Mode Three - Transparency with Tagged Management

This mode will pass all tagged and untagged customer traffic. Management traffic must be tagged. It does not add or remove tags.



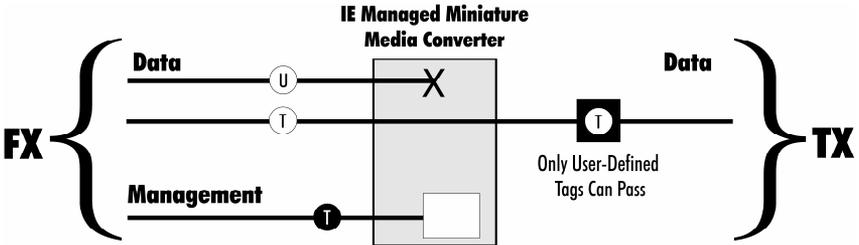
Mode Four - Transparency with Extra Tagging (Q-in-Q)

This mode is designed to either pass all customer traffic with the defined extra tag (Q-in-Q) or add and remove the defined extra tag (Q-in-Q) on all customer traffic. Management traffic can be tagged or untagged.



Mode Five - VLAN Filter

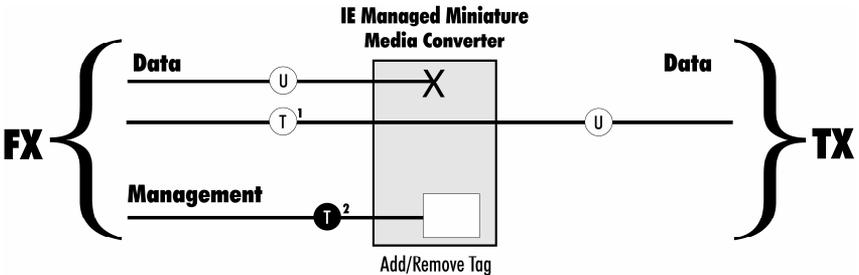
This mode is designed to only pass traffic with any of the 32 user-defined tags that have been identified in the VLAN table. No untagged traffic can pass and management traffic must be tagged. No tags are added or removed from the traffic.



NOTE: VLAN IDs can be any number between 1 and 4,094.

Mode Six - Port VLAN

This mode tags all customer traffic received by the copper port going to the fiber port, un-tagging traffic conversely. Management traffic must be tagged with a different VLAN ID than the port.



Installation

To install the IE Managed Miniature Media Converter into a network environment, connect the proper twisted-pair and fiber cables. In a standalone configuration, or if direct management is desired, an IP Address will need to be assigned to the IE Managed Miniature Media Converter after installation. Refer to Assigning IP Information for information on assigning an IP Address.

Troubleshooting

If a fiber connection cannot be established, perform the following to make sure that the fiber transceivers on the IE Managed Miniature Media Converter are not over/under driving the fiber receivers:

- Make sure the fiber wavelength on both connected devices match (i.e. both are 1310 nm multi-mode fiber).
- Make sure that FiberAlert is enabled on only one unit when connecting an IE Managed Miniature Media Converter to another media converter with the FiberAlert feature.
- Make sure that the twisted-pair port speed on the IE Managed Miniature Media Converter matches that of the end devices connected to the IE Managed Miniature Media Converter. Configure the IE Managed Miniature Media Converter and its link partner to Auto-Negotiation or, if using Force mode, be sure speed and duplex match.
- Management (VLAN tagged or Untagged) traffic will not be allowed to pass through the data port and will only pass through the fiber port.
- When using the IE Managed Miniature Media Converter as a PD device, establish power first, check the LEDs to confirm this, and then connect the serial port in order to configure the device via a console session. If performing the steps in the reverse order, the unit will appear dead. The same is true when connecting a DC terminal block.

To restore the unit to factory default settings, use the **cleandb** function from the serial port management menu.

Configuration

The IE Managed Miniature Media Converter includes many features that function automatically or are configurable via iView², iConfig, or a serial/Telnet session.

Auto-Cross Feature for Twisted Pair Connection

The twisted pair ports on the IE Managed Miniature Media Converter includes Auto-Cross, a feature that automatically selects between a crossover workstation or straight-through connection depending on the connected device.

Mini-Serial Port

Included with the IE Managed Miniature Media Converter is a serial port adapter for configuration.

A standard AC mini-jack on the IE Managed Miniature Media Converter provides a local, RS-232, Craft interface for management. A special mini-jack to DF-9F cable is provided for direct connection to a PC serial port.

NOTE: To log on through the serial port, set the computer for VT-100 emulation, with: 38.4K baud, 8 data bits, 1 stop bit, no parity, no flow control.

Assigning IP Information

To utilize SNMP-management in a standalone environment, the IE Managed Miniature Media Converter IP configuration information (e.g., IP address, subnet mask, etc.) must be assigned by using iConfig (from iView²), by using the unit's serial port or by using DHCP.

These methods will also allow you to create community strings, assign access rights, configure traps and more. iConfig offers more options than serial port configuration. After assigning the IE Managed Miniature Media Converter an IP address, use iView² or another SNMP-compatible Network Management System (NMS) for remote configuration, monitoring and management.

NOTE: Access to the Remote site's IE Managed Miniature Media Converter for performance upgrades and management through iConfig, Telnet, etc., can be gained through the IP Address assigned to the Host unit or, when used in a standalone application, through its own, unique IP address.

Software Configuration

The following table presents port options configurable from iView² or from a serial/Telnet session. Refer to the iView² section later in this chapter or the iView² Help file for more information. For information on configuring VLANs, refer to the Serial Configuration/Telnet Session section in this chapter.

Feature	Serial/Telnet	iView ²
FX/TX LinkLoss	✓	✓
FiberAlert	✓	✓
Loopback	✓	✓
Auto-Negotiation	✓	✓
Selective Advertising	✓	✓
Force Mode	✓	✓
Flow Control	✓	✓
Bandwidth Control		✓
VLANs	✓	

The following table presents management options configurable via iConfig or a serial/Telnet session.

Feature	iConfig	Serial/Telnet
PROM Software Download/Upload	✓	
Telnet Session	✓	
TFTP Trigger		✓
Software Download Setup (TFTP)		✓
DHCP		✓

The following options are configurable through both iConfig and Serial:

- IP Address
- Subnet Mask
- Default Gateway
- MIB Community
- Traps Assignment
- Users
- Passwords
- Access Level
- Reboot.

Auto-Negotiation, Duplex Mode and Speed

The twisted pair port on the IE Managed Miniature Media Converter auto-negotiates for speed and duplex mode, while also providing the option of selectively advertising or forcing the speed and duplex mode. The optics port does not auto-negotiate; it operates at 100 Mbps Full-Duplex. Use the management software to configure the features on the twisted pair ports.

The IE Managed Miniature Media Converter ships from the factory with Auto-Negotiation enabled on the twisted pair port. In this mode, the port automatically negotiates for speed and duplex.

The twisted pair port on the IE Managed Miniature Media Converter can also be manually set for 10 Mbps or 100 Mbps operation and for Half- or Full-Duplex (i.e. 10 Mbps Full-Duplex, 10 Mbps Half-Duplex, 100 Mbps Full-Duplex or 100 Mbps Half-Duplex).

Selective Advertising, when used in combination with Auto-Negotiation, advertises only the configured speed and duplex mode for the twisted pair port. If a specific speed and/or duplex mode is desired, Selective Advertising should be used rather than Force Mode, when connecting to devices that only auto-negotiate.

Bandwidth Control

The IE Managed Miniature Media Converter includes bi-directional bandwidth control, which can be independently set, in 32 Kbps increments up to 100 Mbps. Bandwidth control can only be configured through iView². The device features an integrating algorithm with a 64 Kb buffer, allowing bursty traffic. This allows operators to offer tiered services. See the iView² online help for configuration information.

FX/TX LinkLoss and FiberAlert

The IE Managed Miniature Media Converter includes the troubleshooting features FX/TX LinkLoss and FiberAlert. These features are enabled and monitored using the Management software. When a fault occurs on the fiber segment, FX/TX LinkLoss detects the fault and passes this information to the twisted pair segment. This will display a loss-of-link signal on the remote twisted pair device.

FiberAlert minimizes the problems associated with the loss of one strand of fiber. If a “receive” strand is unavailable, the IE Managed Miniature Media Converter notes the lost link and will stop transmitting data and the link signal on the fiber-optic link until a signal or link pulse is received. The result is that the link LED on both sides of the fiber connection will go out, indicating a fault somewhere in the fiber loop. Using FiberAlert, a local site administrator is notified of a fault and can quickly determine the location of a cable fault.

WARNING:

Enabling FiberAlert at both ends of a fiber line will cause that fiber line to lock-up when a failure condition occurs.

NOTE: FX/TX LinkLoss and FiberAlert events can appear as link errors to users who are unaware of the presence of these features.

Loopback Testing

The IE Managed Miniature Media Converter includes Loopback testing functionality, which loops back all frames arriving on the optics port (except for the device’s management traffic). When in Loopback mode, the IE Managed Miniature Media Converter drops the link on the twisted pair port.

Another form of Loopback testing, called Src/Dest (Source/Destination) Address Swap, swaps the frame’s MAC Address. This is set from the Unit screen in the serial/Telnet session or from iView². (This can cause a frame with a multicast source address to be created, which violates the IEEE standard. Select only clear multicast bits.) For more information, see the Unit Control Settings section or consult the iView² online help.

Serial Configuration/Telnet Session

The following are instructions for serial configuration (including VLAN configuration) and using Telnet sessions. Information about DHCP and iView² is also provided at the end of this section.

To log onto the unit through the serial port, connect a PC to the IE Managed Miniature Media Converter using the included adapter. Set the computer for VT-100 emulation, with the following settings: **38.4K baud, 8 data bits, 1 stop bit, no parity, no flow control.**

Enter the User Name and Password as admin (which is the default setting), when connecting through Telnet/Hyperterminal. A new User Name and Password should be set after signing on the first time.

Assign the IE Managed Miniature Media Converter an IP address before using a Telnet session (*the default IP address is 10.10.10.10*). All configurations performed using the serial port can also be performed using Telnet. Multiple accounts can be assigned with individual names and passwords.

Each account can be assigned one of the following authority roles:

- **User**
This role can only see status, change a password, and reboot.
- **Operator**
This role can perform User role functions and change settings.
- **Administrator**
This role can perform Operator role functions, add/delete accounts, and use the “cleandb” command.

NOTE: Account access through the Serial port is at the Administrator level. Only the administrator level account is available on the serial port. User rights only allow viewing of status/settings but not changing of settings.

Main Configuration Screen

Press Enter, at the prompt, to display the main configuration screen.

The following displays are available:

- Saved Values (displays changes made during current session)
 - IP Address (must be assigned during initial configuration)
 - Subnet Mask (must be assigned during initial configuration)
 - Default Gateway (default router for IP traffic outside subnet)
 - Server IP Addr (for the TFTP server)
 - New Prom File (firmware file name)
- Current Values (displays values currently in use)
 - IP Address (IP address of SNMP agent)
 - Subnet Mask (mask to define IP subnet)
 - Default Gateway (default router for IP traffic outside subnet)
 - Server IP Addr (for the TFTP server)
 - New Prom File (firmware file name)

NOTE: Reboot the IE Managed Miniature Media Converter for changes to take effect. To reboot, type *reboot* at the prompt on the main configuration screen, or power cycle the chassis. If a Delete key is not available, use the F2 key. Any changes to the configuration may result in a momentary loss of connection.

```

Saved Values. (These values will be active after reboot)
IP Address      - 192.168.10.202
Subnet Mask     - 255.255.255.0           DHCP is Not Active
Default Gateway - 192.168.10.253
Server IP Addr  - 192.168.10.207
New Prom File   - 722-00a0.bin

Current Values. (These values are in use now)
IP Address      - 192.168.10.202
Subnet Mask     - 255.255.255.0
Default Gateway - 192.168.10.253
Server IP Addr  - 196.168.10.207
New Prom File   - 722-00a0.bin

Community String: public      Access:  r/w
V1 Trap Destination: 255.255.255.255  Community String: backplane
V2 Trap Destination: 255.255.255.255  Community String: backplane

Press I to enter new saved parameter values. Press P to change password.
Press T to enter new Trap Destination. Press K to remove All Trap Destinations.
Press C to enter new Community String. Press U to remove All Community Strings.
Press E to End session. Type REBOOT to reboot unit. Press D for DHCP On/Off.
Press Space Bar for additional commands.

```

Command List

- I** = Enter New Saved Parameter Values
- P** = Change Password
- T** = New Trap Destination
- K** = Remove ALL Trap Destinations
- C** = New Community String
- U** = Delete ALL Community Strings
- E** = End Session
- Reboot**= Reboots the IE Managed Miniature Media Converter
- D** = Enable/disable DHCP
- Space**= Device Specific Configuration Options

Assigning TCP/IP Information

To modify the Saved Parameter Values (i.e., assign IP address and subnet mask), press I. Then, enter the IP address and subnet mask for the connected device, pressing Enter after each. A default gateway can also be assigned, or press Enter to skip. When finished, press Enter, then type reboot for changes to take effect. The Current Values can only be saved and acted on after the IE Managed Miniature Media Converter has been successfully rebooted.

Password Protection for Serial Port Connections

Password protection is provided for the serial configuration process by pressing P on the main configuration screen. Enter a password, keeping in mind that passwords are case-sensitive and must not exceed eight characters or include spaces, and press Enter. This password will be requested whenever logging on. To remove password protection, select P and, instead of entering a password, press Enter. If a password becomes lost, contact Black Box Technical Support.

Assigning Trap Destinations

Traps are sent by the manageable device to a management PC when a certain event takes place. To enter a trap destination, press T. At the “Enter a New IP Address.” prompt, enter the appropriate IP address and press Enter. Then, type the name of the community string (that the destination device has been configured to accept) and press Enter. This function enables ALL of the device traps. To individually activate and deactivate traps, use iConfig for configuration. Supported traps include: Link Down, Link Up, Cold Start, Warm Start, and Authentication Failure.

Removing Trap Destinations

To remove all trap destinations, press K. Press Y to continue to confirm or N to abort. Then, press Enter. To selectively remove community strings, use iConfig to configure the device.

Creating Community Strings

Community strings add a level of security to a network. The default community string is named “public” and has read/write access. “Public” should be replaced with custom communities strings such as one with read-only access (for general use), the other with read/write access (for the administrator).

Steps:

1. Type **C** on the main configuration screen.
2. Enter the name of the new community (up to 16 characters, no spaces) and press **Enter**.
3. Type one of the following to assign the community string’s access rights:
 - **R** = read-only access
 - **W** = read/write access
 - **Enter** = abort
4. After entering **R** or **W**, press **Enter**.
5. To finish, press **Enter**, and reboot.

Deleting Community Strings

To delete all community strings, perform the following:

1. Press **U**. The “**Are you sure you want to delete all future strings?**” prompt displays.
2. Press **Y** to proceed, **N** to abort.
3. Press **Enter**.

This function will delete ALL community strings. To selectively delete community strings, use iConfig to configure the device.

Ending the Session

Be sure to press E to end a serial port or Telnet/HyperTerminal session, before disconnecting the cable. This will stop the continuous stream of data to the serial port.

Rebooting the Unit

To reboot the IE Managed Miniature Media Converter, type **reboot**.

Enabling/Disabling DHCP

To toggle DHCP on the IE Managed Miniature Media Converter between enable and disable, press **D**.

Additional Device-Specific Commands

The IE Managed Miniature Media Converter also includes the following device-specific options.

To access these options, perform the following:

1. Press the **space bar** when in the Command List section of the Main Configuration screen (serial configuration/Telnet session).
2. Type the name of the action (shown below) and press **Enter**.
 - **port** - Displays and changes port settings, such as duplex status and speed.
 - **unit** - Displays and changes the unit's settings, such as flow control, FiberAlert, and loopback.
 - **config** - Allows VLAN and transparency mode configurations.
 - **reboot** - Reboots the unit and clears all internal counters.
 - **cleandb** - Reboots the unit with a clean database. This removes all information from the database and sets the unit to factory defaults.
 - **ifStats** - Displays Ethernet statistics
 - **rmStats** - Displays RMON statistics
 - **version** - Displays the unit's serial number and build date
 - **security** - Allows ARP request configuration. This setting is only for very unique configurations and should not be adjusted.
 - **download** - Downloads firmware via the TFTP protocol
 - **sysname** - Allows modification of the units system name, not to exceed 16 characters.
 - **accounts** - Allows the addition of new users.

Command	Description
port	Display And Change Port Settings
unit	Display And Change Unit Settings
config	Set mode of operation
reboot	Reboot Unit
cleandb	Reboot With Clean Database
ifstats	Display Port Statistics
rmstats	Display Port RMON Statistics
version	Show Firmware Version
security	Configure Non-Standard Network Settings
download	File Download
sysname	Change SysName
accounts	Add or Delete Username/Password Accounts

Port Configuration

```

----- Port Status Values -----
Link Status      Optics      Data
Link Status     Up          Down
Link Lost Cntr  0          0
Duplex Status   Full       Half
Port Speed     100 Mbits  10 Mbits

Partner Capable Flw -100-  --10-  Flw -100-  --10-
                N  N  N  N  N  N  N  N  N  N  N
                FDX HDX FDX HDX      FDX HDX FDX HDX

----- Port Control Settings -----
                                Data
Port Enable                    Enabled
Admin Status                   Up
Port Speed Ctrl                Autoneg.
Advertise Ctrl                 Advert All
Advertise FlowC               Adv Flow
Force FlowCtrl                Flow Auto
Unit FlowControl              Dis. FlowC

Use Arrow Keys To Move Cursor. Press Space Bar To Change Value.
Press RETURN To Set New Value. Press Q Or F4 To Exit.

```

Serial/Telnet sessions display port status as well as allowing configuration of some port features. Type port and press Enter to be taken to the Port screen. From this screen, view the port speed, duplex and link status.

The Port screen contains the following commands:

Port Enable - Enable/Disable the port (Select Enable to enable the port).

Admin Status - Set Administration level (Select UP to enable the port).

Both **Port Enable** and **Admin Status** must be enabled to enable the port.

Port Speed Ctrl - Set the port manually or for Auto-Negotiation.

Advertise Ctrl - This is the Selective Advertising feature. Selective Advertising, when used in combination with Auto-Negotiation, advertises the configured speed and duplex mode for the twisted pair ports. Auto-Negotiation must be enabled for Selective Advertising.

NOTE: Selective Advertising must be used when connecting to a device that Auto-Negotiates and a specific speed and duplex mode is desired.

Advertise FlowC and **Force FlowCtrl** - This is the Flow Control feature.

- When using Flow Control functionality on any port, enable Global Flow Control. Then, configure each port individually.
- When using Auto-Negotiation and Flow Control, set Advertise FlowC to Advertise Flow and set Force FlowCtrl to Flow Auto.
- Set Advertise FlowC to No Flow to disable Flow Control on a given port.
- When using Flow Control and Force Mode on a given port, set Advertise FlowC to Advertise Flow and set Force FlowCtrl to Frc FlowCt.

Unit FlowControl - This enables/disables Flow Control functionality on the unit and must be enabled for Flow Control to function on any port.

Unit Control Settings

Serial/Telnet sessions display unit status as well as allowing configuration of some of the IE Managed Miniature Media Converter features. Type unit and press Enter to be taken to the Unit screen. From this screen, view the settings for Flow Control, FiberAlert, LoopBack, Maximum Frame Size, and 802.1p Base Priority.

```
----- Unit Control Settings -----
Unit FlowControl      Disable FlowControl Globally
Unit FiberAlert       No FiberAlert or Linkloss Enabled
Unit LoopBack         No LoopBack, Normal Traffic Mode
Unit Max FrameSz      Oversized Frames:          1916
802.1p Base Pri       Base Priority                4
```

Use the arrow keys to navigate and the space bar to change the values on this screen.

These settings include:

- Unit FlowControl** Enable/Disable FlowControl.
- Unit FiberAlert** Enable/Disable FiberAlert.
- Unit LoopBack** Enable/Disable the various LoopBack testing modes.
- Unit Max FrameSz** Set the maximum Frame Size to pass through the ports: 1518, 1522, 1536, or 1916.
- 802.1p Base Pri** Set the level of 802.1p base priority (3 or 4).

The IE Managed Miniature Media Converter has two outgoing queues; one for high priority traffic and one for low priority traffic. If the Base VLAN Priority is 4 for example, 0-3 are low priority and 4-7 are high priority. If the Base VLAN Priority is changed to 3, 0-2 are low priority and 3-7 are high priority.

Operational Mode Configuration

As referenced in Product Applications, there are six modes of operation that can be configured through the Serial/Telnet session. All of the modes of operation will block management traffic on the data port.

The configuration screen is accessed by typing **config** and pressing **Enter** from the Additional Commands screen.

Mode One - Default

This default mode is designed to pass untagged traffic only. Press **F4** to return to the Additional Device-Specific Commands screen.

```
Transparent Mode - the unit passes all traffic between Data and Optics except
management traffic. If management traffic is Untagged, Untagged packets will
not be passed. If Tagged, traffic with a management VLAN ID will not be passed
```

```
Default Mode - the unit passes only Untagged Packets.
```

```
The unit is currently in Default Mode.
```

```
Enter Y for Transparent Mode, N for no Transparent Mode or <enter> to
move to other options [ N ]
```

Mode Two - Transparency with Untagged Management

This mode is designed to pass all tagged and extra-tagged customer traffic unchanged and must be managed using untagged traffic only. It does not add or remove tags.

Select **Y** on the initial config screen. From the Transparent Mode Setup screen, select **N** in the fields shown below.

```
TRANSPARENT MODE SETUP
```

```
Is a VLAN tag required on Management packets? [ N ]
```

```
Do you want to enter the Extra Tag mode? Enter Y for Extra Tagging.
Enter N if you do not want Extra Tags [ N ]
```

Mode Three - Transparency with Tagged Management

This mode will pass all tagged and untagged customer traffic. Management traffic must be tagged. It does not add or remove tags.

Select Y on the initial config screen. From the Transparent Mode Setup screen, select Y and enter the Management Tag, as shown below.

```
TRANSPARENT MODE SETUP

Is a VLAN tag required on Management packets? [ Y ]
The Management Tag is [111 ]
Management Priority is [ 4 ]

Do you want to enter the Extra Tag mode? Enter Y for Extra Tagging.
Enter N if you do not want Extra Tags [ N ]
```

Mode Four - Transparency with Extra Tagging (or Q-in-Q)

This mode is designed to either pass all customer traffic with the defined extra tag (Q-in-Q) or add and remove the defined extra tag (Q-in-Q) on all customer traffic. Management traffic can be tagged or untagged.

Select **Y** on the initial config screen. Then, select **Y** when asked to select Extra Tags. When setting this operation mode, the question “Are Extra Tags left on the Data Port” should be answered **NO** for the remote IE Managed Miniature Media Converter and **YES** for the host connection.

```
TRANSPARENT MODE SETUP

Is a VLAN tag required on Management packets? [ Y ]
The Management Tag is [111 ]
Management Priority is [ 4 ]

Do you want to enter the Extra Tag mode? Enter Y for Extra Tagging.
Enter N if you do not want Extra Tags [ Y ]
The Data Tag is [ 0 ]
Data Priority is [ 0 ]
Are Extra Tags left on the Data Port? [ N ]
```

Mode Five - VLAN Filter

This mode is designed to only pass traffic with any of the 32 tags that have been identified in the user-defined table. No untagged traffic can pass and management traffic must be tagged. No tags are added or removed from the traffic. Select N on the initial config screen. Then, setup the VLAN screen, as shown in below.

VLAN IDs can be any number between 1 and 4,094.

Saved VLAN Values (Active after reboot) . Current VLAN Values (Active now) .					
Ports	VLAN IDs		Priorities		Tags
	Current	Saved	Current	Saved	
Optics	[0]	[0]	[0]	[0]	[Y]
Data	[0]	[0]	[0]	[0]	[Y]
Management Vlan					
SNMP	[111]	[111]	[4]	[4]	
Data VLANs (Optics <----> Data)					
VLAN 1	[0]	[0]	VLAN 12	[0]	[0]
VLAN 2	[0]	[0]	VLAN 13	[0]	[0]
VLAN 3	[0]	[0]	VLAN 14	[0]	[0]
VLAN 4	[0]	[0]	VLAN 15	[0]	[0]
VLAN 5	[0]	[0]	VLAN 16	[0]	[0]
VLAN 6	[0]	[0]	VLAN 17	[0]	[0]
VLAN 7	[0]	[0]	VLAN 18	[0]	[0]
VLAN 8	[0]	[0]	VLAN 19	[0]	[0]
VLAN 9	[0]	[0]	VLAN 20	[0]	[0]
VLAN 10	[0]	[0]	VLAN 21	[0]	[0]
VLAN 11	[0]	[0]	VLAN 22	[0]	[0]
VLAN 12	[0]	[0]	VLAN 23	[0]	[0]
VLAN 13	[0]	[0]	VLAN 24	[0]	[0]
VLAN 14	[0]	[0]	VLAN 25	[0]	[0]
VLAN 15	[0]	[0]	VLAN 26	[0]	[0]
VLAN 16	[0]	[0]	VLAN 27	[0]	[0]
VLAN 17	[0]	[0]	VLAN 28	[0]	[0]
VLAN 18	[0]	[0]	VLAN 29	[0]	[0]
VLAN 19	[0]	[0]	VLAN 30	[0]	[0]
VLAN 20	[0]	[0]	VLAN 31	[0]	[0]
VLAN 21	[0]	[0]	VLAN 32	[0]	[0]
VLAN 22	[0]	[0]			
Valid Vlan IDs are between 1 and 4094. Valid priorities are between 0 and 7. Type S or F3 to save the changes. Type Q or F4 to quit and cancel changes.					

Mode Six - Port VLAN

This mode tags all customer traffic received by the copper port going to the fiber port, un-tagging traffic conversely. This tag is entered as the Data VLAN tag with the optical Tags selected as “YES” to indicate it is added at the egress of the optical port.

Select N on the initial config screen. Then, setup the VLAN screen, as shown below.

Saved VLAN Values (Active after reboot) . Current VLAN Values (Active now) .					
Ports	VLAN IDs		Priorities		Tags
	Current	Saved	Current	Saved	
Optics	[0]	[0]	[0]	[0]	[Y]
Data	[0]	[0]	[0]	[0]	[N]
Management Vlan					
SNMP	[111]	[111]	[4]	[4]	
Data VLANs are used only if Tags are enabled on both the Optics and Data Ports.					

The table below displays how the settings are entered.

	<i>VLAN</i>	<i>Priority</i>	<i>Tags</i>
<i>Optical</i>			<i>Yes</i>
<i>Data</i>	<i>Tag2</i>	<i>4</i>	<i>No</i>
<i>Mgmt (SNMP)</i>	<i>Tag1</i>	<i>1</i>	<i>Yes</i>

reboot

Entering reboot will save settings and reboot the IE Managed Miniature Media Converter.

cleandb

Entering cleandb reboots the unit with its database cleaned depending on the option selected. Users are presented with two, sequential options, first to reset all SNMP settings and, second, to reset all of the unit's configurations to default. Enabling the first option presents the second. Resetting the unit to factory default values (option two) will delete all custom IP and VLAN settings.

Viewing Port Statistics

To view port statistics on the IE Managed Miniature Media Converter, enter ifstats. This will open a screen displaying information on packets received and transmitted as defined by MIB-II standard RFC 1213.

Pressing the Space Bar will refresh the data on the screen.

MIB-II Var	OPTICS	DATA
PhysAddress	000029020024	000029020024
AdminStatus	1	1
OperStatus	1	2
LastChange	84	84
InOctets	309276	0
InUcastPkts	95	0
InNUcastPkts	2275	0
InDiscards	0	0
InErrors	0	0
InUnknownProt	0	0
OutOctets	38888	289514
OutUcastPkts	73	2284
OutNUcastPkts	431	2272
OutDiscards	0	0
OutErrors	0	0

Viewing Port RMON Statistics

To view port RMON (Remote MONitoring) statistics on the IE Managed Miniature Media Converter, enter `rmstats`. This will display RMON information on packets received as defined in RFC 2819 for RMON.

Pressing the Space Bar will refresh the data on the screen.

RMON Counter	OPTICS	DATA
DropEvents	0	0
Octets	301252	0
Pkts	2315	0
BroadcastPkts	0	0
MulticastPkts	2222	0
CRCAIalignErrors	0	0
UndersizePkts	0	0
OversizePkts	0	0
Fragments	0	0
Jabbers	0	0
Collisions	0	0
Pkts64Octets	732	0
Pkts65to127	1123	0
Pkts128to255	280	0
Pkts256to511	180	0
Pkts512to1023	0	0
Pkts1024toMAX	0	0

Version

Entering **version** will display the version of the firmware operating the IE Managed Miniature Media Converter.

NOTE: In the examples shown, ports are referred to as how they appear on the unit itself. Some screens may show TX and FX for the port titles. In this case, TX = DATA port and FX = OPTICS port.

Setting Security

Security settings on the IE Managed Miniature Media Converter are reserved for non-standard configurations. Most users won't utilize this screen. Security configuration should only be utilized when non-standard networking equipment is being employed. Enter **Y** to set new security settings or any other key to abort.

The next screen that appears will configure ARP settings, such as the destination address of ARP messages along with Ethernet Types. Enter the new data, then press **S** to save the settings or **Q** to quit.

Downloading Files

Firmware for the IE Managed Miniature Media Converter can be downloaded from a central server via TFTP protocol. Initiate this download via serial configuration or Telnet session. To download a file, type `download` and press Enter to be taken to the Download a file screen. This screen displays the IP Address of the TFTP server and the name of the file to be downloaded.

The TFTP server should be open. Make sure the IP Address and the name of the file are correct in the Current Values section of the Main Configuration screen. These are changed by entering I from the Main Configuration screen. Press Enter to start downloading the file.

Changing the System Name

To change the MIB name of the IE Managed Miniature Media Converter as it appears on the network, type **sysname** and press **Enter**. Enter a new name, not exceeding 16 characters in length.

Managing Telnet or iConfig Access

Access to the IE Managed Miniature Media Converter can be managed by typing accounts and pressing **Enter** from the command screen.

On the screen that appears, press **A** to add a user, entering the user's information in the appropriate fields. To delete a user, press **D** for the user selected. Pressing any other button will exit this screen.

```
***** Current list of users who can login to this unit *****
```

UserName	Access Rights
Tech1	Operator
admin	Administrator
user2	User

NOTE: User rights only allow viewing of status/settings but not changing of settings.

About DHCP

A DHCP client is built into the IE Managed Miniature Media Converter and disabled by default. If a DHCP server is present on the network, enable the DHCP client to initiate a dialogue with the server during the boot up sequence. The server will then issue an IP address, Default Gateway and Subnet mask to the IE Managed Miniature Media Converter. Once the new IP address is received, the IE Managed Miniature Media Converter will reboot for the new IP address to take effect. If there is not a DHCP server on the network, disable DHCP and use iConfig or serial configuration to manually set the IP addresses.

DHCP servers give out lease times; devices renew their leases based on the administrator-specified time. If a device cannot renew its lease, and the lease expires, the device will be given the IP address 10.10.10.10 and reboot. If an IP address is already assigned to the device, and DHCP is then enabled, that original IP address is saved. When DHCP is disabled, the saved IP address will be reinstated and the device will reboot.

Using iView²

iView² is management software, providing network management in an easy to use GUI. Once iView² is installed on a network management PC, using a Windows operating system, access iView² through the Start menu.

NOTE: Windows SNMP services must be installed to receive traps.



The left side of the iView² screen will display the devices on the network. Click the connection for the IE Managed Miniature Media Converter to open its iView² screen. When configuring the IE Managed Miniature Media Converter as a standalone unit, only the IE Managed Miniature Media Converter will appear.



A navigation bar on the top of the screen displays the options for configuring the IE Managed Miniature Media Converter connection.



These options include the following:

- **Host** Displays the configuration screen for the Host connection.
- **Remote** Displays the configuration screen for the Remote connection. This will show the IE Managed Miniature Media Converter configuration information. Information on this screen is provided on the following page.

NOTE: The Host and Remote buttons will not appear when configuring the IE Managed Miniature Media Converter alone. In this setup, a "Configuration" button will appear with the same settings.

- **Bandwidth** - Displays the Bandwidth Limitation Settings.
- **Port Desc** - Displays a screen for setting port descriptions. Each name should not exceed 32 characters or include any spaces.
- **Tables** - Displays a screen for viewing statistics tables regarding network performance.
- **Advanced** - Displays the IE Managed Miniature Media Converter advanced settings.
- **Agent Info** - Information about the SNMP Management software is displayed here.
- **Refresh** - To refresh the iView² settings on any screen, click this button.

The Configuration/Remote Screen

Depending on whether the IE Managed Miniature Media Converter is being set up as a standalone or in a Host/Remote connection, the Configuration or Remote buttons will show a screen for configuring the IE Managed Miniature Media Converter settings.

In addition to allowing setting changes on the IE Managed Miniature Media Converter, settings on the ports can also be changed from the Configuration/Remote screen.

Remote Configuration
Refresh

Unit Detail

Description: IP Address: **192.168.10.195**

Base VLAN Priority: Set

Priorities below this number will be considered low priority
Priorities equal to this number and above will be considered high priority

Broadcast Storm: % Set

Maximum broadcast packet rate allowed in percent of total line speed.
Possible values are 1 to 20%. Suggested value: 1%. A value of 0% means no broadcast storm protection.

Global Flow Control: Set

Max Frame Size: Set

Data Port

Status: Speed/Duplex Setting:

Selective Advertising:

* Selective Advertising only applies when Speed/Duplex is set to Auto Negotiate

Save Changes

Flow Control Settings

(If based on Auto Negotiate)

Save Changes

Optics Port

Status: Speed/Duplex Setting:

FiberAlert - LinkLoss: Set

Fiber Type:

Loop Back: Set

Flow Control Settings

Save Changes

The Agent Info Screen

Information about the SNMP Agent software managing the IE Managed Miniature Media Converter is contained on this screen.



Refresh



SNMP Agent Information

BIOS Date	06/28/06
Build Date	2006/10/12 13:53
Version	mfl_u143
IP Address	192.168.10.195
Up Time	0:0:0:37.74
Serial Number	00000653
Mfg. Date	0622

Specifications

Operating Temperature

-31° to 158° F (-35° to 70° C) in DC power configuration

32° to 122° F (0° to 50° C) in AC or PoE power configuration

Storage Temperature

-49° to 185° F (-45° to 85° C)

Humidity

5 to 95% (non-condensing)

Electrical

- AC Wall Adapter: 100 to 240 \pm 10% VAC input, 5 VDC output
- DC Input Voltage: 750 mA@5 V to 75 mA@50 VDC
- IEEE 802.3af Power over Ethernet

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European Directive 2002/96/EC (WEEE) requires that any equipment that bears this symbol on product or packaging must not be disposed of with unsorted municipal waste. This symbol indicates that the equipment should be disposed of separately from regular household waste. It is the consumer's responsibility to dispose of this and all equipment so marked through designated collection facilities appointed by government or local authorities. Following these steps through proper disposal and recycling will help prevent potential negative consequences to the environment and human health. For more detailed information about proper disposal, please contact local authorities, waste disposal services, or the point of purchase for this equipment.



