About Access EtherLinX/4

Access EtherLinX/4 enables service providers to offer differentiated data networking or VPN services to multi-tenant building and business customers. Residing at the customer premises or at the service provider POP, *Access EtherLinX/4* provides a VLAN-based Layer 2 entry point to the MAN fiber network, trunking, differentiating and separating customer traffic. Featuring SNMP management, bandwidth control, QoS, traffic prioritization and multicast pruning (using IGMP v1, v2), it is an ideal solution for delivering Ethernet-based services to customers quickly and cost-effectively. *Access EtherLinX/4* also features Telnet, and firmware upgrading through serial configuration or Telnet via a TFTP server. *Access EtherLinX/4* includes one Uplink port (either 100Base-FX fiber or 10/100 twisted pair), four secure 10/100 twisted pair Ethernet downlink ports[1] (for connecting users/LANs) and an internal AC power supply.

Installing Access EtherLinX/4

Access EtherLinX/4 comes ready to install. To install *Access EtherLinX/4*, make sure the unit is placed on a suitable flat surface. Attach the cables between the *Access EtherLinX/4* and each device that will be interconnected, then plug the unit into a reliable, filtered power source. All features, such as *FiberAlert* and *Auto-Negotiation,* are software-configurable. Refer to the help file for configuration information.

About FiberAlert

Access EtherLinX/4 includes the advanced troubleshooting feature, *FiberAlert,* which minimizes the problems associated with the loss of one strand of fiber. If a strand is unavailable, *Access EtherLinX/4* notes the loss of link. The device will then stop transmitting data and the link signal 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 where a cable fault is located. Please refer to the Help File for *FiberAlert* configuration information.

Auto-Negotiation, Duplex Mode and Speed

The twisted pair ports on *Access EtherLinX/4* auto-negotiate for speed and duplex mode. This device also provides the option of selectively advertising or forcing the speed and duplex mode. If the device has a fiber Uplink port, it does not auto-negotiate; it always operates at 100 Mbps Full-Duplex. Configure features via the management software. Please refer to the help file for more information.

Auto-Negotiation

Access EtherLinX/4 ships from the factory with *Auto-Negotiation* enabled on the twisted pair ports. In this mode, the twisted pair port negotiates for speed and duplex.

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[1] Downlink ports are isolated from one another (i.e. there is no communication between downlink ports).

Forcing the Speed and Duplex Mode

The twisted pair downlink ports on *Access EtherLinX/4* 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

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, it is recommended that you use Selective Advertising, rather than Force Mode, when connecting to devices that ONLY auto-negotiate.

AutoCross Feature for Twisted Pair Connection

All twisted pair ports on *Access EtherLinX/4* include *AutoCross,* a feature which automatically selects between a crossover workstation or pass-through/repeater hub connection depending on the connected device. Note that a MDI/MDIX button is not required.

About iView²

iView² is a cross-platform network management application for IMC Networks intelligent networking devices. It features a graphic user interface (GUI) and gives network managers the ability to monitor and control IMC Networks' products from virtually any 32-bit Windows platform. *iView²* can also function as a snap-in module for many SNMP applications. Refer to the help files for *iView²* and *Access EtherLinX/4* for information regarding configuring and managing your *Access EtherLinX/4*.

A BOUT I CONFIG

iConfig is an in-band configuration utility created by IMC Networks that lets users quickly and easily complete the first stages of SNMP configuration for IMC Networks SNMP-manageable devices. Tasks *iConfig* can perform include:

- setting the IP address, subnet mask and default gateway
- defining the community strings and SNMP traps

In addition to the above functions, *iConfig* offers an authorized IP address system and access restriction to MIB groups supported by IMC Networks manageable devices. These extra layers of security are purely optional and do not affect SNMP compatibility in any way.

iConfig can also be used to upload new versions of the system software and new MIB information. It also offers diagnostic capabilities for faster resolution of technical support issues. *iConfig* version 1.3 or above MUST be used for PROM updates. *HubControl32* and previous versions of *iConfig* will not work. *iConfig* works with the following platforms:

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

iConfig can be found on the *iView²* CD, or you can download it from the IMC Networks Web site (**http://www.imcnetworks.com/tech/techsup.asp**). For information regarding the use of *iConfig*, refer to the *iConfig* help file.

SNMP Management

SNMP management and *iConfig* are always through the Uplink port of *Access EtherLinX/4*. This provides a higher level of security because end-users cannot access management, alter settings, etc.

Bandwidth Control

Access EtherLinX/4 includes bandwidth control functionality. Please refer to the help file for software configuration information

Assigning IP Information

In order for *Access EtherLinX/4* to allow for SNMP-management, the unit must be assigned IP configuration information (e.g., IP address, subnet mask, etc.) using **iConfig** via *iView²*; the **unit's serial port or DHCP** (*Dynamic Host Control Protocol*). In addition to assigning an IP address and subnet mask, the former two methods will also allow you to create community strings, assign access rights, configure traps and more. However, *iConfig* offers more options than serial port configuration (e.g., you can select *which* traps to assign with *iConfig*). After assigning *Access EtherLinX/4* an IP address, you can use *iView²* or another SNMP-compatible Network Management System (NMS) to remotely configure, monitor and manage *Access EtherLinX/4*.

A BOUT S ERIAL P ORT C ONFIGURATION

Although *Access EtherLinX/4* does not include a DB-9 serial port, you can use the supplied RJ-45 to DB-9 adapter on Downlink Port 4 to allow for serial port configuration. This adapter uses an IBM-compatible DB-9 serial connector.

To connect *Access EtherLinX/4* to your terminal/computer, use a straight-through (pin-to-pin) cable. (If your computer/terminal has a COM port using a connection not compatible with a DB-9 connector, use the pin connection chart [below] for reference in making a cable.) Make sure the cable length is under 50 ft. (15.24 m). Plug one end of the cable into the DB-9 connector on *Access EtherLinX/4* and the other into the appropriate port on your computer/terminal. Set your computer/terminal for VT-100 emulation. The serial port on the computer/terminal should be set for: **38.4K baud**, **8 data bits**, **1 stop bit**, **no parity** and **no flow control**.

S ERIAL A DAPTER P IN C ONNECTION		
RJ-45 Pin #	**DB-9 Pin #**	**Function**
5	2	Transmit (OUT)
7	3	Receive (IN)
8	5	Ground
1-4, 6	1, 4, 6 - 9	Reserved

Main Configuration Screen

After running through an initial self test, the screen will display the following message: "*Press <Enter> for Device Configuration.*" Press **Enter** to be taken to the main configuration screen. Here you will find several displays:

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
   Server IP Addr
   New Prom File

Current Values — *displays values currently in use*.
   IP Address (IP address of SNMP agent)
   Subnet Mask (mask to define IP subnet agent is connected to)
   Default Gateway (default router for IP traffic outside subnet)
   Server IP Addr
   New Prom File

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
   D   = Enable/disable DHCP
   E   = End Session
   Space = Device Specific Configuration (Tasks, CleanDB, Download, Date, VLAN, Reboot and Memory) options available here (see pages 6-7).

N O T E
You must reboot after making any modifications to the Saved Values or your changes will not take effect. To reboot, type the word "**Reboot**" (no quote marks) at the prompt on the main configuration screen, or turn the chassis power OFF then ON again.

N O T E
Because a Delete key is not available on VT-100 terminal emulators; use the **F2** key.

Assigning TCP/IP Information

To modify the Saved Parameter Values (i.e., assign IP address and subnet mask), press I. You will be instructed to enter the IP address and sub-net mask for the connected device. Press **Enter** after each. You may also assign a default gateway, if desired (press **Enter** to skip). When finished, press **Enter**, then type "**Reboot**" for changes to take effect. The Saved Values and Current Values should now both display the changes made (e.g., new IP address and subnet mask).

Creating Community Strings

The purpose of community strings is to add a level of security to a network. The default community string is named "public" and has read/write access. IMC Networks recommends deleting Public, then adding necessary custom communities strings such as one with read-only access (for general use), the

other with read/write access (for the administrator). To create a new community string, go to the main configuration screen and press **C**. Enter the name of the new community (up to 16 characters, no spaces) and press **Enter**. Then type one of the following to assign the community string's access rights:

   • **R** = read-only access   • **W** = read/write access   • **Enter** = abort

Press **Enter**. When finished, press **Enter**, then type "**Reboot**" for changes to take effect. The Saved Values and Current Values should now both display the changes made (e.g., new IP address and subnet mask).

Deleting Community Strings

To delete all community strings and start over, press **U**. You will then be asked, "Are you sure you want to delete all future strings?" Press **Y** to proceed, **N** to abort. Press **Enter**.

This function will delete ALL community strings. If you want to be able to selectively delete community strings, use *iConfig* to configure your device.

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**. You will then be asked to "Enter a New IP Address." Type the IP address of the destination device and press **Enter**. Then type the name of the community string (that teh destination device has been configured to accept) and press **Enter**. This function enables ALL of the traps the device is capable of. If you want to be able to selectively activate and de-activate traps, use *iConfig* to configure your device. Supported traps are Enterprise specific and include: Link Down, Link Up, Cold Start, Warm Start and Authentication Failure.

Removing Trap Destinations

To remove all trap destinations, press **K**. You will then be asked if you really want to remove all trap destinations. Press **Y** to continue. Press **N** to abort. Press **Enter**.

Password Protection

You can password protect the serial configuration process by pressing **P** from the main configuration screen. You will be asked to enter a password. (***NOTE:** Passwords are case sensitive*.) Enter your password (spaces are NOT allowed) and press **Enter**. You will then be asked for your password whenever you log on or off. To remove password protection, select **P** and instead of entering a password, press **Enter**. Should you forget the password, use *iConfig* to access the back-up copy of the PROM, then reburn the flash PROM (or contact IMC Networks technical support for assistance).

Ending Your Session

Be sure to press **E** before disconnecting the cable in order to stop the continuous stream of data to the serial port.

Device-Specific Configuration

CONFIGURING VLAN IDs

LANs consist of devices that are grouped within a certain physical proximity. Virtual LANs (VLANs) allow devices that are in different LANs to communicate with each other as if they were part of the same LAN. *Access EtherLinX/4* is VLAN compatible; it has the ability to accept traffic containing 802.1q VLAN tags on the Uplink port and direct that traffic to the twisted pair downlink ports or to management basedon VLAN ID.

To configure VLAN IDs, press the Space Bar when in the Command List section of the Main Configuration screen (serial configuration). VLAN is an available option. Type **VLAN** and press **Enter** to be taken to the *VLAN Configuration* screen.
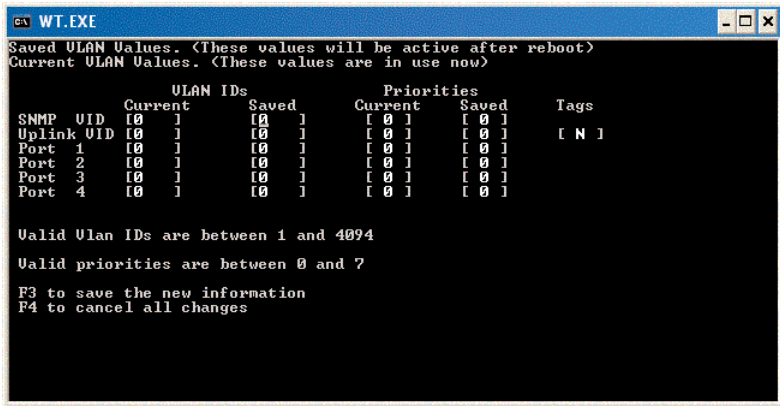
To enable VLAN functionality, type **Y** (Yes) under Tags for the Uplink port, then assign a separate VLAN ID for the Uplink port, each of the twisted pair downlink ports and for management. Valid VLAN IDs are 1 to 4,094. Only the Uplink can be enabled to forward tagged traffic.

To disable VLAN functionality, type **N** (No) under Tags for the Uplink port.

BASE VLAN PRIORITY

The Uplink port has two outgoing queues; one for high priority traffic and one for low priority traffic. Via *iView²*, you can set a Base VLAN Priority to designate what will be high priority and low priority. If the Base VLAN Priority is 4, 0-3 are low priority and 4-7 are high priority. If you change the Base VLAN Priority to 3, 0-2 are low priority and 3-7are high priority. In the *VLAN Configuration* screen (shown above), enter a Priority (0 - 7) for each port and SNMP, if desired.

DOWNLOADING FILES

Access EtherLinX/4 allows you to download firmware from a central server via TFTP protocol. This download can be initiated via serial configuration or Telnet session. Make sure the IP Address and the name of the file you wish to download are correct in the Current Values section of the Main Configuration screen. If this information is not correct, make changes in the (see page 4). To download a file, press the Space Bar when in the Command List section of the Main Configuration screen (serial configuration). 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 you wish to download. Press **Enter** to start downloading the file.

ADDITIONAL DEVICE-SPECIFIC OPTIONS

Access EtherLinX/4 also includes the following device-specific options:

- **tasks:** Displays the Task List
- **cleandb:** Reboot with clean database
  This removes all information in the database except IP address of device
- **date:** Displays the PROM build date
- **Reboot:** Reboots the unit
- **Memory:** Displays the memory useage

Press the Space Bar when in the Command List section of the Main Configuration screen (serial configuration/Telnet session), type the name of the action you want to do (as shown above) and press **Enter.**

USING TELNET

Assign the *Access EtherLinX/4* an IP address **BEFORE** using a Telnet session (see page 3 for Assigning IP Information). All configuration that can be done via the serial port can also be performed using Telnet. Use only one Telnet session at a time. Do not use an RS-232 serial session and a Telnet session at the same time.

ABOUT DHCP

There is a DHCP client in the *Access EtherLinX/4*. By default, the DHCP client is disabled. If a DHCP server is present on the network, the DHCP client will 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 *Access EtherLinX/4* chassis. Once the new IP address is received, *Access EtherLinX/4* will reboot so that the new IP address will take effect. See the *About Serial Port Configuration* section for Enable/Disable information. If there is no DHCP server on the network, use *iConfig* or serial configuration to manually set the IP addresses.

LED Indicators

Access EtherLinX/4 features diagnostic LEDs. The LED functions are:

POWER (on back of unit)
- Glows green when POWER is on**.**

UPLINK and DOWNLINK (1 - 4)
LNK/ACT
- Glows green when link is established on port.
- Blinks green during data activity on port.

FDX/COL
- Glows yellow when port is operating in Full-Duplex.
- Blinks yellow when collisions occur on port.

General Information

I M C N ETWORKS T ECHNICAL S UPPORT

TEL:	(949) 465-3000; (800) 624-1070 (in the U.S and Canada); +32-16-550880 (Europe)
FAX:	(949) 465-3020
E-Mail:	techsupport@imcnetworks.com
Web:	www.imcnetworks.com

S PECIFICATIONS

Environmental

Operating Temperature: 32° - 122° F (0° - 50° C)

Storage Temperature: 0° - 160° F (-20° - 70° C)

Humidity: 5 - 95% (non-condensing)

Power Consumption (typical): 1.5A

Throughput

Up to full wire speed on all ports except the fourth Downlink (this port also functions as a serial port).

Questions or Comments about this manual? Contact **techdocs@imcnetworks.com**.
Visit **www.mediaconverter.com** for a complete overview of media conversion products available from IMC Networks.

ISO 9001 REGISTERED

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