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Understanding Embedded - Microcontroller, Microprocessor, FPGA Modules

Embedded - Microcontroller, Microprocessor, and FPGA Modules are fundamental components in modern electronic systems, offering a wide range of functionalities and capabilities. Microcontrollers are compact integrated circuits designed to execute specific control tasks within an embedded system. They typically include a processor, memory, and input/output peripherals on a single chip. Microprocessors, on the other hand, are more powerful processing units used in complex computing tasks, often requiring external memory and peripherals. FPGAs (Field Programmable Gate Arrays) are highly flexible devices that can be configured by the user to perform specific logic functions, making them invaluable in applications requiring customization and adaptability.

Applications of Embedded - Microcontroller,

Details	
Product Status	Active
Module/Board Type	MPU Core
Core Processor	DSTni-EX
Co-Processor	XPort AR
Speed	25MHz
Flash Size	512KB
RAM Size	256KB
Connector Type	RJ45
Size / Dimension	0.57" x 0.72" (14.5mm x 18.3mm)
Operating Temperature	-40°C ~ 85°C
Purchase URL	https://www.e-xfl.com/product-detail/maestro-wireless/xp100200s-05r

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Chapter	Description
9: GPIO Interface	Provides instructions for configuring the three General Purpose I/O pins (CP1-3).
10: Firmware Upgrades	Provides instructions for obtaining the latest firmware and updating the XPort module.
11: Monitor Mode	Provides instructions for accessing and using the command line interface for monitoring the network and diagnosing problems.
12: Troubleshooting	Describes common problems and error messages and how to contact Lantronix Technical Support.
A: Lantronix Technical Support	Provides contact information for Lantronix and other technical support options.
B: Binary to Hexadecimal Conversions	Provides instructions for converting binary numbers to hexadecimals.
C: Compliance	Provides RoHS compliance information.

Additional Documentation

Visit the Lantronix Web site at www.lantronix.com/support/documentation for the latest documentation and the following additional documentation.

Document	Description
XPort Device Server Integration Guide	Provides information about the XPort module hardware, testing the XPort device server using the demonstration board, and integrating the XPort device into your product.
XPort Universal Demo Board Quick Start	Provides the steps for getting the XPort module demonstration board up and running.
XPort Universal Demo Board User Guide	Provides information for using XPort module on the demo board.
DeviceInstaller Online Help	Provides information on using DeviceInstaller to configure IP addresses and locate Lantronix devices on the network.
Com Port Redirector User Guide	Provides information on using the Lantronix Windows-based utility to create secure virtual com port.

IP Address

Every device connected to an IP network must have a unique IP address. This address is used to reference the specific unit. The XPort is automatically assigned an IP address on DHCP-enabled networks, as it is DHCP-enabled by default.

Port Numbers

Every TCP connection and every UDP datagram is defined by a destination IP address and a port number. For example, a Telnet application commonly uses port number 23. A port number is similar to an extension on a phone system.

The unit's serial channel (port) can be associated with a specific TCP/UDP port number. Port number 9999 is reserved for access to the unit's Setup (configuration) Mode window. Ports 0-1024 are reserved as well. For more information on reserved port numbers, see to *Table 7-5. Reserved Port Numbers* on page *50*.

Product Information Label

The product information label on the unit contains the following information about the specific unit:

- Part Number
- Revision
- Manufacturing Date Code
- Country of Origin Manufacturing Location ID
- MAC Address/Serial Number Barcode
- MAC Address/Serial Number*

Subnet Mask	Non-configurable field. Displays the XPort module's current subnet mask. To change the subnet mask, see *Assigning an IP Address* on page *16*.
Gateway	Non-configurable field. Displays the XPort device's current gateway. To change the gateway, see *Assigning an IP Address* on page *16*.
Number of COB partitions supported	Non-configurable field. Displays the number of COB partitions supported.
Number of Ports	Non-configurable field. Displays the number of ports on the XPort module.
TCP Keepalive	Non-configurable field. Displays 1-65s, the XPort device server's TCP keepalive value. The default setting is 45.
Telnet Supported	Non-configurable field. Indicates if Telnet sessions.
Telnet Port	Non-configurable field. Displays the XPort module's port for Telnet sessions.
Web Port	Non-configurable field. Displays the XPort device server's port for Web Manager configuration.
Maximum Baud Rate Supported	Non-configurable field. Displays the XPort module's maximum baud rate. ***Note:*** *the XPort unit may not currently be running at this rate.*
Firmware Upgradeable	Non-configurable field. Displays True, indicating the XPort module's firmware is upgradeable as newer version become available.
Supports Configurable Pins	Non-configurable field. Displays True, indicating configurable pins are available on the XPort device server.
Supports Email Triggers	Non-configurable field. Displays True, indicating email triggers are available on the XPort module.
Supports AES Data Stream	Non-configurable field. Displays True, if the XPort unit (certain part numbers) supports AES encryption.
Supports 485	Non-configurable field. Displays True. XPort module supports the RS-485 protocol.
Supports 921K Baud Rate	Non-configurable field. Displays True. XPort device server supports baud rates up to 921600 bits per second (bps).
Supports HTTP Server	Non-configurable field. Displays True.
Supports HTTP Setup	Non-configurable field. Displays True.
Supports 230K Baud Rate	Non-configurable field. Displays True.
Supports GPIO	Non-configurable field. Displays True, indicating the XPort module supports General Purpose Input Output (GPIO).

4. Configuration Using Web Manager

You must configure the unit so that it can communicate on a network with your serial device. For example, you must set the way the unit will respond to serial and network traffic, how it will handle serial packets, and when to start or close a connection.

The unit's configuration is stored in nonvolatile memory and is retained without power. You can change the configuration at any time. The unit performs a reset after you change and store the configuration.

In this chapter, we describe how to configure the XPort device server using Web Manager, Lantronix's browser-based configuration tool. (For information on using Setup Mode, our command line configuration interface, see *Chapter 5: Configuration via Telnet or Serial Port (Setup Mode).*

Note: *The examples in this section show a typical device. Your device may have different configuration options.*

Accessing Web Manager Using DeviceInstaller

Note: *For more information on DeviceInstaller, see Chapter 3: Using DeviceInstaller.*

1. Run DeviceInstaller and search for the list of available Lantronix device servers.
2. Click on t**he XPort** folder. The list of available XPort modules displays.
3. Expand the list of XPort device servers by clicking the **+** symbol next to the XPort icon.
4. Select the XPort unit by clicking its hardware address.
5. In the right pane, click the **Web Configuration** tab.
6. To view the XPort module's Web Manager in the current DeviceInstaller window, click the **Go** button. To open the Web Manager in a web browser, click the **External Browser** button.

Note: *Alternatively, to open Web Manager, open your web browser and enter the IP address of the XPort device server. (With firmware 1.8 or earlier, your browser must be JAVA-enabled to use Web Manager. (With firmware 6.1.0.0 and later, your web browser does not need to be JAVA-enabled.)*

A dialog box appears to prompt for a **User name** and **Password.**

3. Enter the following (as necessary):

BOOTP	Select Enable to permit the Bootstrap Protocol (BOOTP). server to assign the IP address from a pool of addresses automatically. Enable is the default.
DHCP	Select Enable to permit the Dynamic Host Configuration Protocol (DHCP) to assign a leased IP address to the XPort unit automatically. Enable is the default.
AutoIP	Select Enable to permit the XPort module to generate an IP in the 169.254.x.x address range with a Class B subnet. Enable is the default.
DHCP Host Name	Enter the desired host name for the XPort unit.

Note: *Disabling BOOTP, DHCP, and AutoIP (all three checkboxes) is not advised as the only available IP assignment method will then be ARP or serial port.*

4. When you are finished, click the **OK** button.
5. On the main menu, click **Apply Settings**.

Static IP Address Configuration

You manually assign an IP address to the unit and enter related network settings.

To assign an IP address manually:

1. On the main menu, click **Network**.
2. Select Use the following IP configuration.
3. Enter the following (as necessary):

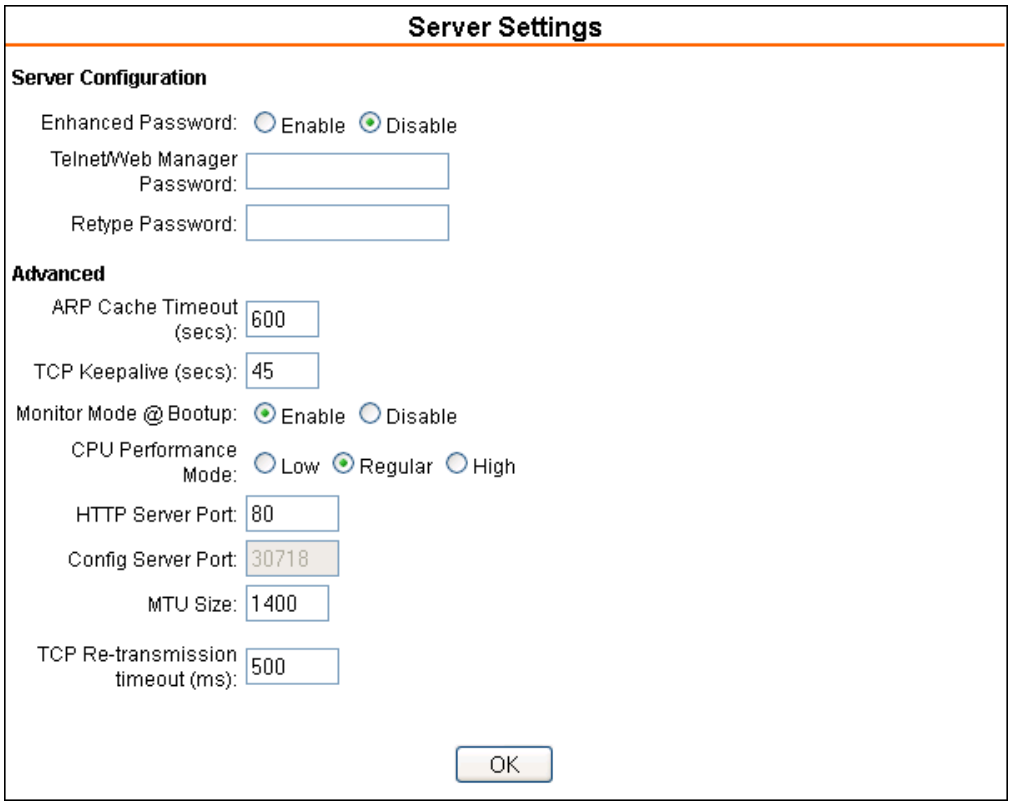
IP Address	If DHCP is not used to assign IP addresses, enter it manually in decimal-dot notation. The IP address must be set to a unique value in the network.
Subnet Mask	A subnet mask defines the number of bits taken from the IP address that are assigned for the host part.
Default Gateway	The gateway address, or router, allows communication to other LAN segments. The gateway address should be the IP address of the router connected to the same LAN segment as the unit. The gateway address must be within the local network.
DNS Server	The DNS server allows the name of a remote machine to be resolved automatically. Enter the IP address of the DNS server. If the device is DHCP enabled, the DHCP server provides the DNS server IP address, which will override this configured value. ***Note:*** *This setting is applicable only in Manual Connection mode.*

4. When you are finished, click the **OK** button.
5. On the main menu, click **Apply Settings**.

Server Configuration

The unit's server values display when you select **Server** from the main menu. The following sections describe the configurable parameters on the Server Settings page.

Figure 4-4. Server Settings



To configure the XPort module's device server settings:

1. On the main menu, click **Server**.
2. Configure or modify the following fields:

Server Configuration

Enhanced Password *Note: We recommend that you always enable the enhanced password setting, and create a strong 16 character password.*	Select whether to enable enhanced password: ◆ **Enable**: selecting this option enables advanced password creation, allowing you to create passwords up to 16 bytes in length. ◆ **Disable**: selecting this option disables advanced password creation, allowing you to create basic passwords up to 4 bytes in length.
Telnet/Web Manager Password	Enter the password required for Telnet configuration and Web Manager access.

Retype Password	Re-enter the password required for Telnet configuration and Web Manager access.

Advanced

ARP Cache Timeout	When the unit communicates with another device on the network, it adds an entry into its ARP table. ARP Cache timeout defines the number of seconds (1-600) before it refreshes this table.
TCP Keepalive	TCP Keepalive time defines how many seconds the unit waits during an inactive connection before checking its status. If the unit does not receive a response, it drops that connection. Enter a value between **0** and **60** seconds. **0** disables keepalive. The default setting is **45**.
Monitor Mode @ Bootup	Select **Disable** to disable entry into the monitor mode using the **'yyy'** or **'xx1'** key sequence at startup. This field prevents the unit from entering monitor mode by interpreting the stream of characters that are received during the device server's initialization at startup.
CPU Performance Mode	Select the XPort device server's performance mode. Higher performance settings require more energy. **Low** is 26 MHz; **Regular** is 48 MHz; **High** is 88 MHz. The default is **Regular**.
HTTP Server Port	This option allows the configuration of the web server port number. The valid range is **1-65535**. The default port is **80**.
Config Server Port	Not applicable for this product.
MTU Size	The Maximum Transmission Unit (MTU) is the largest physical packet size a network can transmit for TCP and UDP. Enter between **512** and **1400** bytes. The default is **1400** bytes.
TCP Re-transmission timeout (ms)	The desired TCP re-transmission timeout value. If the ACK is not received for a packet sent from the XPort device, then the unit will retransmit the data. The valid range is 500-4000 msec.

3. When you are finished, click the **OK** button.
4. On the main menu, click **Apply Settings**.

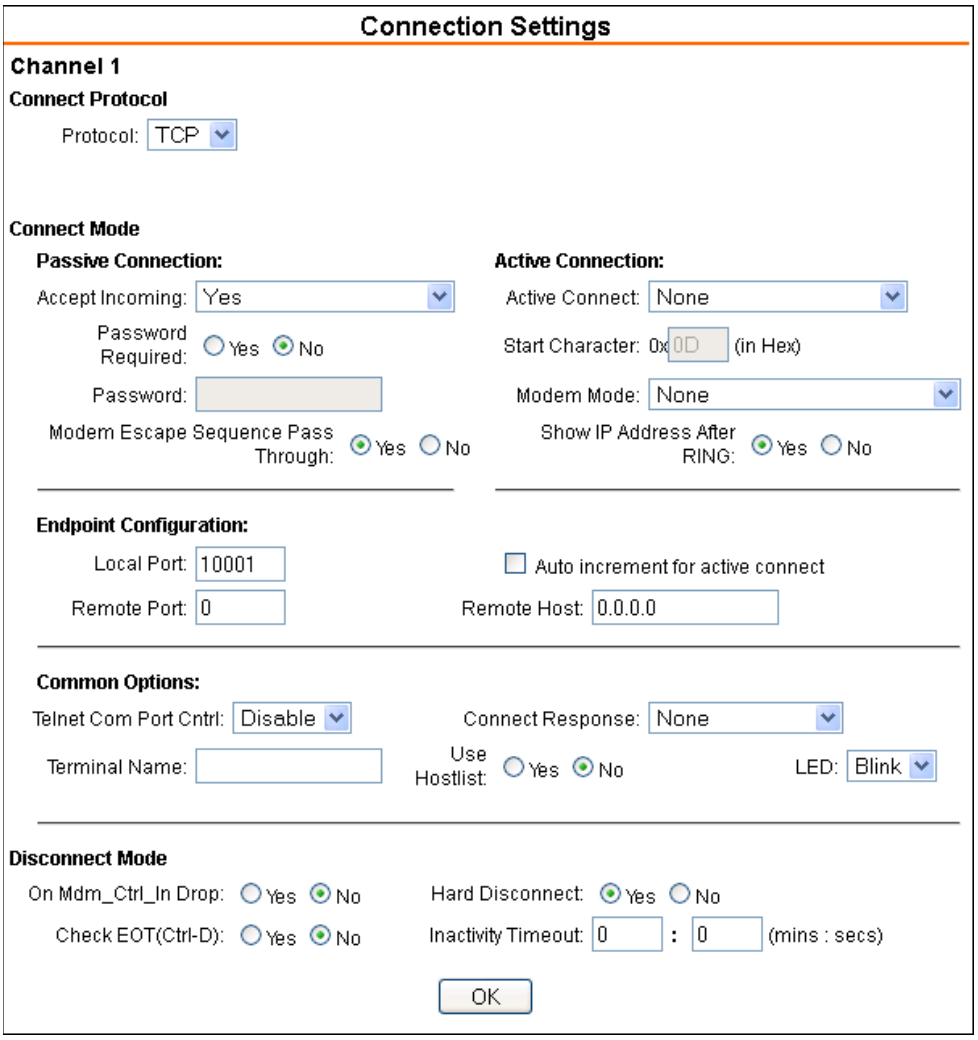
Host List Configuration

The XPort module scrolls through the host list until it connects to a device listed in the host list table. After a successful connection, the unit stops trying to connect to any others. If this connection fails, the unit continues to scroll through the table until the next successful connection.

The host list supports a minimum of 1 and a maximum of 12 entries. Each entry contains an IP address and a port number.

Note: *The host list is disabled for Manual and Modem Mode. The unit does not accept a data connection from a remote device when the hostlist option is enabled.*

Figure 4-7. TCP Connection Settings



To establish a Telnet connection:

1. From the Windows **Start** menu, click **Run** and type the following command, where x.x.x.x is the IP address, and 9999 is the unit's fixed network configuration port number:

   Windows: `telnet x.x.x.x 9999`

   UNIX: `telnet x.x.x.x:9999`

2. Click **OK**. The following information displays.

Figure 5-1. MAC Address

```
MAC address 0080A394616D

Software version V6.10.0.0RC3 (140317) XPTEXE

AES library version 1.8.2.1



Press Enter for Setup Mode
```

3. To enter Setup Mode, **press Enter within 5 seconds**. The configuration settings display, followed by the Change Setup menu.

Figure 5-2. Setup Menu Options

```
Change Setup:

  0 Server

  1 Channel 1

  3 E-mail

  5 Expert

  6 Security

  7 Defaults

  8 Exit without save

  9 Save and exit             Your choice? _
```

4. Select an option on the menu by entering the number of the option in the **Your choice** ? field and pressing **Enter**.

5. To enter a value for a parameter, type the value and press **Enter**, or to confirm a current value, just press **Enter**.

6. When you are finished, save the new configuration (option 9). The unit reboots.

Serial Port Connection

To configure the unit through a serial connection:

1. Connect a console terminal or PC running a terminal emulation program to your unit's serial port.
2. Set the terminal emulator serial port settings to 9600 baud, 8 bits, no parity, 1 stop bit, no flow control.

Note: *The XPort module always uses these serial port settings on boot-up.*

3. Reset the XPort unit by cycling the unit's power (turning the power off and back on). Immediately upon resetting the device, enter three lowercase **x** characters (**xxx**).

Note: *The easiest way to enter Setup Mode is to hold down the **x** key at the terminal (or emulation) while resetting the unit.* ***You must do this within three seconds of resetting the XPort module.***

At this point, the screen display is the same as when you use a Telnet connection. To continue, go to step 4, above, in the section *Telnet Connection*

Exiting Setup Mode

To exit setup mode:

You have two options:

- To save all changes and reboot the device, select option **9 Save and exit** from the Change Setup menu. All values are stored in nonvolatile memory.
- To exit the configuration mode without saving any changes or rebooting, select option **8 Exit without save** from the Change Setup menu.

For example, if the third octet is 0.0.5.0, the AutoIP and BootP options are disabled; only DHCP is enabled. (The value 5 results from adding the binary equivalents of 0 and 2.) This is the most common setting when using DHCP.

Set Gateway IP Address

The gateway address, or router, allows communication to other LAN segments. The gateway address should be the IP address of the router connected to the same LAN segment as the unit. The gateway address must be within the local network. The default is **N** (No), meaning the gateway address has not been set. To set the gateway address, type **Y** and enter the address.

```
Set Gateway IP Address (N) ? Y

Gateway IP addr ( 0) ( 0) ( 0) ( 0)_
```

Netmask: Number of Bits for Host Part

A netmask defines the number of bits taken from the IP address that are assigned for the host part.

```
Netmask: Number of Bits for Host Part (0=default) (0) _
```

Note: *Class A: 24 bits; Class B: 16 bits; Class C: 8 bits*

The unit prompts for the number of host bits to be entered, then calculates the netmask, which appears in standard decimal-dot notation (for example, 255.255.255.0) when the saved parameters display.

Table 6-2. Standard IP Network Netmasks

Network Class	Host Bits	Netmask
A	24	255.0.0.0
B	16	255.255.0.0
C	8	255.255.255.0

Set DNS Server IP Address

The DNS server allows the name of a remote machine to be resolved automatically. The default is **N** (No), indicating the DNS server address has not been set. To set the DNS server address, type **Y**. At the prompt, enter the DNS server address. If the device is DHCP enabled, the DHCP server provides the DNS server IP address, which will override this configured value.

Note: *This setting is applicable only in Manual Connection mode.*

```
Set DNS Server IP addr (N) ? _
```

Change Telnet/Web Manager Password

Setting the Telnet/Web Manager password prevents unauthorized access to the setup menu through a Telnet connection to port 9999 or through web pages. Please protect your device from unauthorized access and follow the instructions below:

- Always select **Y** to enable Telnet/Web Manager password
- Enable the enhanced password setting and create a strong 16-character password. For details, see *Security Settings (Option 6)* on page *69*.

Note: *We do not recommend that you only use the 4-character basic password as it does not offer sufficient security. Using no password is very dangerous.*

```
Change Telnet/Web Manager password (N) ? _
```

DHCP Name

If a DHCP server has automatically assigned the IP address and network settings, you can discover the unit by using the DeviceInstaller network search feature.

There are three methods for assigning DHCP names to the unit.

Default DHCP Name: If you do not change the DHCP name, and you are using an IP of 0.0.0.0, then the DHCP name defaults to CXXXXXX (XXXXXX is the last 6 digits of the MAC address shown on the label on the bottom/side of the unit). For example, if the MAC address is 00-20-4A-12-34-56, then the default DHCP name is C123456. In other words, if you do nothing and leave the IP address set to 0.0.0.0, the UDS1100 will supply the DHCP name Cxxxxxx to the DHCP server, where xxxxxx is the last 6 digits of the MAC address.

Custom DHCP Name: You can create your own DHCP name. If you are using an IP address of 0.0.0.0, then the last option in Server configuration is **Change DHCP device name**. This option allows you to change the DHCP name to an alphanumeric name (LTX in our example). For instance, if you type a 'Y' when asked if you want to change the DHCP name, you will be prompted for a new DHCP name. The example uses "LTX" as the DHCP name sent to the DHCP server, but you can type in anything you want, e.g. "Test_Lab", "Accounting", "Radiology" or any other string you want to use.

```
Change DHCP device name (not set) ? (N) Y

Enter new DHCP device name : LTX
```

Numeric DHCP Name: You can change the DHCP name by specifying the last octet of the IP address. When you use this method, the DHCP name is LTXYY where YY is what you chose for the last octet of the IP address. If the IP address you specify is 0.0.0.12, then the DHCP name is LTX12. This method only works with 2 digit numbers (01-99). For instance, if you specify a two digit number for the last octet of the IP address, leaving the first three octets set to 0, then the DHCP name will be the name you provided with that number appended. I.e. if you specify IP address 0.0.0.43 and change the DHCP name to "Test_Lab" the name the UDS1100 sends to the DHCP server will be "Test_Lab43".

Note that this has no effect on the IP address assigned to the UDS1100 by the DHCP server, it is only a method to add a two-digit number to the DHCP name specified.

Connect Mode Option	7	6	5	4	3	2	1	0
Data Echo & Modem Response (Numeric)			0	1		1	1	1
Data Echo & Modem Response (Verbose)			0	1		1	1	0
Modem Response Only (Numeric)			0	0	1	1	1	1
Modem Response Only (Verbose)			0	0	1	1	1	0

a) Incoming Connection

Never Accept Incoming	Rejects all external connection attempts.
Accept with active Modem Control In	Accepts external connection requests only when the **Modem Control In** input is asserted. Cannot be used with Modem Mode.
Always Accept	Accepts any incoming connection when a connection is not already established. Default setting.

b) Response

Character Response	A single character is transmitted to the serial port when there is a change in connection state: **C** = connected, **D** = disconnected, **N** = host unreachable. The IP address of the host connecting to the CoBos device will be provided when you use verbose mode. This option is overridden when the **Active Start Modem Mode** or **Active Start Host List** is in effect. Default setting is Nothing (quiet).

c) Active Startup

No Active Startup	Does not attempt to initiate a connection under any circumstance. Default setting.
With Any Character	Attempts to connect when any character is received from the serial port.
With active Modem Control In	Attempts to connect when the **Modem Control In** input changes from not asserted to asserted.
With a Specific Start Character	Attempts to connect when it receives a specific start character from the serial port. The default start character is carriage return.

8. Setup Mode: Advanced Settings

Email Settings (Option 3)

Note: *You can change these settings using Telnet, a serial connection, or Web Manager with firmware versions 6.1.0.0 or later. Earlier versions do not allow you to configure email triggers using Web Manager. To configure email settings using DeviceInstaller, see Email Notification in the DeviceInstaller Online Help.*

The unit sends an email to multiple recipients when a specific trigger event occurs. There are three separate triggers, based on any combination of the configurable pins (PIO) when selected as user I/O functions. Optionally, use a two-byte serial string to initiate a trigger.

To configure email configuration settings, select **Email** (option **3**) from the Change Setup menu.

Figure 8-1. Email Settings

```
Mail server (0.0.0.0) ? (000) .(000) .(000) .(000)

Unit name () ?

Domain name () ?

Recipient 1 () ?

Recipient 2 () ?


- Trigger 1

Enable serial trigger input (N) ?

Trigger input1 [A/I/X] (X) ?

Trigger input2 [A/I/X] (X) ?

Trigger input3 [A/I/X] (X) ?

Message () ?

Priority (L) ?

Min. notification interval (1 s) ?

Re-notification interval (0 s) ?


- Trigger 2
```

Note: *Configuring encryption should be done through a local connection to the serial port of the XPort device server, or via a secured network connection. Initial configuration information, including the encryption key, is sent in clear text over the network.*

To configure AES encryption on the XPort module:

```
Enable Encryption (N) Y

Key length in bits (0): 128

Change Keys (N) Y

Enter Keys: **-**-**-**-**-**-**-**-**-**-**-**-**-**-**-**
```

1. When prompted to enable encryption, select **Y**.
2. When prompted, enter the encryption key length. The XPort device server supports 128-, 192-, and 256-bit encryption key lengths.
3. When prompted to change keys, select **Y**.
4. At the **Enter Keys** prompt, enter your encryption key. The encryption keys are entered in hexadecimal. The hexadecimal values are echoed as asterisks to prevent onlookers from seeing the key. Hexadecimal values are 0-9 and A-F.
   - For a 128-bit key length, enter 32 hexadecimal characters.
   - For a 192-bit key length, enter 48 hexadecimal characters.
   - For a 256-bit key length, enter 64 hexadecimal characters
5. Continue pressing **Enter** until you return to the Change Setup menu.
6. From the Change Setup menu, select option **9** to save and exit.

Encryption only applies to the port selected for data tunneling (default 10001), regardless of whether you are using TCP or UDP.

Generally, one of these situations applies:

- Encrypted XPort unit-to-XPort unit communication. Be sure to configure both XPort devices with the same encryption key.
- Third-party application to XPort unit-encrypted communication: XPort module uses standard AES encryption protocols. To communicate successfully, products and applications on the peer side must use the same protocols and the same encryption key as the XPort device server.
- Lantronix Secure Com Port Redirector provides an encrypted connection from Windows-based applications to the XPort module. Information about SCPR is at www.lantronix.com/device-networking/utilities-tools/scpr. A 30-day trial version of SCPR is available.

9. GPIO Interface

Configurable Pins

The *XPort module* has three pins (CP1-3) that you can configure for General Purpose I/O (GPIO).

Note: *You can also configure the pins for serial port control lines, such as hardware control, modem control (CTS, RTS, DTR, and DCD), and diagnostic outputs to LED, using DeviceInstaller.*

You can use these GPIO pins to control devices such as relays, servers, lights, monitor switches, sensors, and even processes such as data transfer.

You can set the functions for the three pins independently and in any combination. The initial directions (input/output) and active levels (active low or high) at boot up can also be configured through 77FE, for example, by using DeviceInstaller.

This chapter describes how the directions, active levels, and states can be dynamically controlled and probed through special port 77F0.

The configurable pins default configuration is:

Function: General Purpose Input

Active Level: Active Low

Features

- TCP and UDP can be used.
- The protocol supports up to 32 GPIO for future products.
- Function configuration can be retrieved.
- Input or output selection can be retrieved and controlled.
- Active low or high selection can be retrieved and controlled.
- Active or inactive selection can be retrieved and controlled.
- 77F0 can be disabled.

Every change of state (active/inactive) requires a command over TCP or UDP, and thus is not very fast. If you use this port for data transfer, the throughput is low, usually up to 1 Kbps.

Control Protocol

The GPIO control protocol is a simple, proprietary protocol.

Command 19h, Set Directions

Send:

2 parameters

Bytes 1-4: Mask

Bit X 1 means the direction for GPIO X will be updated with the value in the second parameter.

0 means the direction for that GPIO will not change.

Bytes 5-8: New Directions

Bit X 1 means GPIO X will become an output.

0 means it will become an input.

Response:

1 parameter

Bytes 1-4: The updated directions

Command 1Ah, Set Active Levels

Send:

2 parameters

Bytes 1-4: Mask

Bit X 1 means the direction for GPIO X will be updated with the value in the second parameter.

0 means the active type for that GPIO will not change.

Bytes 5-8: New Active Levels

Bit X 1 means GPIO X will become active low.

0 means it will become active high.

Response:

1 parameter

Bytes 1-4: Updated active levels

Command 1Bh, Set States

Send:

2 parameters

Bytes 1-4: Mask

Bit X 1 means the state for GPIO X will be updated with the value in the second parameter.

0 means the state for that GPIO will not change.

Bytes 5-8: New States

Bit X 1 means GPIO X will become active.

0 means it will become inactive.

Response:

1 parameter

Bytes 1-4: Updated states

10. Firmware Upgrades

Obtaining Firmware

You can obtain the most up-to-date firmware and release notes for the unit from the Lantronix web site (www.lantronix.com/support/downloads) or by using anonymous FTP (ftp.lantronix.com/pub).

Reloading Firmware

Note: *For details on upgrading to version 6.1.0.0 (or higher) from pre-6.1.0.0, see the XPort module Upgrade Notice on the Lantronix ftp site (ftp.lantronix.com).*

There are several ways to update the unit's internal operational code (*.ROM): using DeviceInstaller (the preferred way), using TFTP, or using the serial port. You can also update the unit's internal Web interface (*.COB) using TFTP or DeviceInstaller.

Here are typical names for those files. Check the Lantronix web site for the latest versions and release notes.

Table 10-1. Firmware Files

ROM File	COB
xpt05_61000.rom	xpt_webm_2005.cob

Please refer to the DeviceInstaller online Help for information about reloading firmware using DeviceInstaller. The other methods are discussed below.

Using TFTP: Graphical User Interface

To download new firmware from a computer:

1. Use a TFTP client to put a binary file to the unit (*.ROM to upgrade the unit's internal operational code and *.COB to upgrade its internal web interface).

Note: *TFTP requires the **.rom** (binary) version of the unit's internal operational code.*

2. In the **TFTP server** field, enter the IP address of the unit being upgraded.
3. Select **Upload** operation and **Binary** format.
4. Enter the full path of the firmware file in the **Local file name** field.
5. In the **Remote file name** field, enter the **current** internal operational code or **WEB1** to **WEB6** for the internal web interface.

12. Troubleshooting

This chapter discusses how you can diagnose and fix errors quickly without having to contact a dealer or Lantronix. It helps to connect a terminal to the serial port while diagnosing an error to view summary messages that may display. When troubleshooting, always ensure that the physical connections (power cable, network cable, and serial cable) are secure.

Note: *Some unexplained errors might be caused by duplicate IP addresses on the network. Make sure that your unit's IP address is unique.*

When troubleshooting the following problems, make sure that the XPort module is powered up. Confirm that you are using a good network connection.

Problems and Error Messages

Problem/Message	Reason	Solution
When you issue the **ARP –S** command in Windows, the "ARP entry addition failed: 5" message displays.	Your currently logged-in user does not have the correct rights to use this command on this PC.	Have someone from your IT department log you in with sufficient rights.
When you attempt to assign an IP address to the unit by the ARP method, the "Press Enter to go into Setup Mode" error "(described below) message displays. Now when you Telnet to the device server, the connection fails.	When you Telnet to port 1 on the device server, you are only assigning a temporary IP address. When you Telnet into port 9999 and do not press **Enter** quickly, the device server reboots, causing it to lose the IP address.	Telnet back to Port 1. Wait for it to fail, then Telnet to port 9999 again. Make sure you press **Enter** quickly.
When you Telnet to port 9999, the "Press Enter to go into Setup Mode" message displays. However, nothing happens when you press **Enter**, or your connection is closed.	You did not press **Enter** quickly enough. You only have 5 seconds to press **Enter** before the connection is closed.	Telnet to port 9999 again, but press **Enter** as soon as you see the "Press Enter to go into Setup Mode" message.
When you Telnet to port 1 to assign an IP address to the device server, the Telnet window does not respond for a long time.	You may have entered the Ethernet address incorrectly with the ARP command.	Confirm that the Ethernet address that you entered with the ARP command is correct. The Ethernet address may only include numbers 0-9 and letters A-F. In Windows and usually in Unix, the segments of the Ethernet address are separated by dashes. In some forms of Unix, the Ethernet address is segmented with colons.