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LANTRONIX®



XPort®
Device Server
User Guide

Part Number 900-270
Revision R January 2018

Intellectual Property

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Operation of this equipment in a residential area is likely to cause interference, in which case the user, at his or her own expense, will be required to take whatever measures may be required to correct the interference.

Note: *Changes or modifications to this device not explicitly approved by Lantronix will void the user's authority to operate this device.*

Revision History

Date	Rev.	Firmware	Comments
January 2007	A		Initial release
May 2007	B		Added information about product support for RS485.
August 2007	C		Added XChip Direct information.
November 2003	C		Revised for version 1.6 of the firmware.
April 2004	D		Information to support XPort-03.
August 2004	E		Added XPort-485 functionality. Updated common settings for all models.
October 2004	F		Updates.
March 2005	G		Added reference documentation.
January 2006	H	6.3	Revised for version 6.1 of the firmware.
August 2007	I	6.5	Added XChip information.
August 2008	J	6.6	Revised for version 6.6 of the firmware.
September 2009	K		Updated for XPort-04; removed XPort-01 references.
June 2010	L	6.7	Minor technical corrections, Lantronix address updated; DeviceLinx and XPort trademark information updated.
May 2012	M	6.8	Updated for 6.8 release. Added information for advanced password support and removed XChip information.
February 2013	N	6.9.0.2	Updated part number and MAC address information. Updated Web Manager and DeviceInstaller content.
August 2014	O	6.10.0.0	Updated for version 6.10 of the firmware. New monitor mode command to show full firmware release version.
November 2014	P	6.10.0.1	New security settings command for 77FEh Access Mode. New monitor mode command to show flash write counts.
January 2018	R		Updated enhanced password security information.

For the latest revision of this product document, please check our online documentation at www.lantronix.com/support/documentation.

If you use a previous version of the firmware, go to the Lantronix FTP site at <ftp://ftp.lantronix.com/pub> to find the earlier documentation.

Table of Contents

Intellectual Property _____	2
Warranty _____	2
Contacts _____	2
Disclaimer _____	2
Revision History _____	3
List of Figures _____	9
List of Tables _____	9
1. Using This Guide	10
Purpose and Audience _____	10
Chapter Summary _____	10
Additional Documentation _____	11
2. Introduction	12
Capabilities _____	12
Applications _____	12
Protocol Support _____	13
Configuration Methods _____	13
Addresses and Port Numbers _____	13
Hardware Address _____	13
IP Address _____	14
Port Numbers _____	14
Product Information Label _____	14
3. Using DeviceInstaller	16
Installing DeviceInstaller _____	16
Assigning an IP Address _____	16
Accessing the XPort Module Using DeviceInstaller _____	17
Viewing the Current Configuration _____	17
4. Configuration Using Web Manager	20
Accessing Web Manager Using DeviceInstaller _____	20
Network Configuration _____	22

Network Mode _____	22
Automatic IP Address Configuration _____	22
Static IP Address Configuration _____	23
Ethernet Configuration _____	24
Server Configuration _____	25
Server Configuration _____	25
Advanced _____	26
Host List Configuration _____	26
Retry Settings _____	27
Host Information _____	27
Channel 1 Configuration _____	27
Serial Settings _____	28
Connection Settings - UDP _____	34
Email Configuration _____	35
Recipients _____	36
Trigger Configuration _____	36
Conditions _____	36
Message Properties _____	37
Configurable Pin Settings _____	37
Configurable Pin Functions _____	38
Apply Settings _____	38
Apply Defaults _____	38
5. Configuration via Telnet or Serial Port (Setup Mode) _____	40
Accessing Setup Mode _____	40
Telnet Connection _____	40
Serial Port Connection _____	42
Exiting Setup Mode _____	42
6. Setup Mode: Server Configuration _____	43
Server Configuration (Option 0) _____	43
IP Address _____	43
Set Gateway IP Address _____	44
Netmask: Number of Bits for Host Part _____	44
Set DNS Server IP Address _____	44
Change Telnet/Web Manager Password _____	45
DHCP Name _____	45

Enable DHCP FQDN Option _____	46
7. Setup Mode: Channel Configuration	47
Channel 1 (Option 1) _____	47
Baudrate _____	48
I/F (Interface) Mode _____	49
RS-232 _____	49
RS-485 2-Wire and RS-422 4-Wire _____	49
Flow _____	50
Port Number _____	50
Connect Mode _____	51
a) Incoming Connection _____	52
b) Response _____	52
c) Active Startup _____	52
d) Datagram Type _____	55
e) Modem Mode _____	55
Send the Escape Sequence (+++) in Modem Mode _____	57
Show IP addr after 'RING' _____	58
Auto Increment Source Port _____	58
Remote IP Address _____	58
Remote Port _____	58
DisConnMode _____	59
Flush Mode (Buffer Flushing) _____	60
Pack Control _____	60
Packing Interval _____	61
Trailing Characters _____	61
Send Characters _____	61
DisConnTime (Inactivity Timeout) _____	62
Send Characters _____	62
Telnet Terminal Type _____	62
Channel (Port) Password _____	62
8. Setup Mode: Advanced Settings	63
Email Settings (Option 3) _____	63
Mail Server _____	64
Unit Name _____	64
Domain Name _____	65

Recipient 1 _____	65
Recipient 2 _____	65
Trigger 1 _____	65
Trigger 2 _____	66
Trigger 3 _____	66
Expert Settings (Option 5) _____	66
TCP Keepalive time in seconds _____	67
ARP Cache Timeout in Seconds _____	67
CPU Performance _____	67
Disable Monitor Mode at bootup _____	68
HTTP Port Number _____	68
SMTP Port Number _____	68
RS-485 TX Enable Active Level _____	68
MTU Size _____	68
TCP Re-transmission Timeout _____	69
Enable alternate MAC _____	69
Ethernet Connection Type _____	69
Security Settings (Option 6) _____	69
Disable SNMP _____	70
SNMP Community Name _____	70
Disable Telnet Setup _____	70
Disable TFTP Firmware Upgrade _____	70
Disable Port 77FE (Hex) _____	70
77FEh Access Mode _____	71
Disable Web Server _____	71
Disable Web Setup _____	71
Disable ECHO Ports _____	71
Enable Encryption _____	71
Enable Enhanced Password _____	73
Disable Port 77F0 (Hex) _____	73
Default Settings (Option 7) _____	73
Channel 1 Configuration Defaults _____	73
Expert Settings Defaults _____	74
Security Settings Defaults _____	74
Email Settings _____	75

9. GPIO Interface	76
Configurable Pins _____	76
Features _____	76
Control Protocol _____	76
Guidelines _____	77
Commands _____	77
Examples _____	80
10. Firmware Upgrades	81
Obtaining Firmware _____	81
Reloading Firmware _____	81
Using TFTP: Graphical User Interface _____	81
Using TFTP: Command Line Interface _____	82
Recovering the Firmware Using the Serial Port and DeviceInstaller _____	83
11. Monitor Mode	84
Entering Monitor Mode Using the Serial Port _____	84
Entering Monitor Mode Using the Network Port _____	84
Monitor Mode Commands _____	84
12. Troubleshooting	87
Problems and Error Messages _____	87
A: Lantronix Technical Support	90
B: Binary to Hexadecimal Conversions	91
Converting Binary to Hexadecimal _____	91
Conversion Table _____	91
Scientific Calculator _____	91
C: Compliance	93
RoHS, REACH and WEEE Compliance Statement _____	93

List of Figures

Figure 2-1. Product Label _____	15
Figure 4-1. Web Manager Login Window _____	21
Figure 4-2. Lantronix Web Manager _____	21
Figure 4-3. Network Settings _____	22
Figure 4-4. Server Settings _____	25
Figure 4-5. Hostlist Settings _____	27
Figure 4-6. Channel Serial Settings _____	28
Figure 4-7. TCP Connection Settings _____	31
Figure 4-8. UDP Connection Settings _____	34
Figure 4-9. Email Settings _____	35
Figure 4-10. Email Trigger Settings _____	36
Figure 4-11. Configurable Pins Settings _____	37
Figure 4-12. Apply Settings and Apply Defaults _____	39
Figure 5-1. MAC Address _____	41
Figure 5-2. Setup Menu Options _____	41
Figure 7-1. Serial Port Parameters _____	47
Figure 7-2. Apply Settings and Apply Defaults _____	54
Figure 8-1. Email Settings _____	63
Figure 8-2. Expert Settings _____	66
Figure 8-3. Security Settings _____	69

List of Tables

Table 6-1. BootP/DHCP/AutoIP options _____	43
Table 6-2. Standard IP Network Netmasks _____	44
Table 7-3. Interface Mode Options _____	50
Table 7-4. Flow Control Options _____	50
Table 7-5. Reserved Port Numbers _____	50
Table 7-6. Connect Mode Options _____	51
Table 7-7. Manual Connection Address Example _____	53
Table 7-8. Modem Mode Messages _____	55
Table 7-9. Modem Mode Commands _____	57
Table 7-10. Disconnect Mode Options _____	59
Table 7-11. Flush Mode Options _____	60
Table 7-12. Pack Control Options _____	61

1. Using This Guide

Purpose and Audience

This user guide covers these Lantronix® DeviceLinx® XPort® device server modules:

Model	Part Numbers
XPort-03	XP1001000-03R XP1002000-03R XP100200S-03R
XPort-04	XP1001000-04R XP1002000-04R XP100200S-04R
XPort-05	XP1001000-05R XP1002000-05R XP100200S-05R

It provides the information needed to configure, use, and update the XPort firmware and is intended for OEMs and system integrators who are embedding the XPort module in their end product designs.

Chapter Summary

The remaining chapters in this guide include:

Chapter	Description
2: Introduction	Describes the main features of the XPort module and the protocols it supports.
3: Using DeviceInstaller	Provides information for getting your unit up and running, using DeviceInstaller to assign an IP address.
4: Configuration Using Web Manager	Details using the Web Manager to set parameters such as port and server properties.
5: Configuration via Telnet or Serial Port (Setup Mode)	Provides instructions for accessing Setup Mode (command line interface) using a Telnet connection through the network or a terminal or terminal emulation program through the serial port.
6: Setup Mode: Server Configuration	Details the network (server) settings
7: Setup Mode: Channel Configuration	Details the serial port settings.
8: Setup Mode: Advanced Settings	Details email, expert, and security settings and explains how to reset the unit to factory default values.

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.

2. Introduction

This chapter summarizes the XPort device server's features and the basic information needed to get started.

Capabilities

The XPort device server has the following capabilities:

- ◆ Connects devices through a TCP data channel or through a Telnet connection to computers or to another device server. The XPort module also supports UDP datagrams.
- ◆ Contains a web [HTTP] server allowing presentation of custom content and easy configuration through a browser.
- ◆ Has three programmable I/O pins used to monitor or control attached devices.

Applications

The XPort device server connects serial devices such as those listed below to Ethernet networks using the IP protocol family.

- ◆ ATM machines
- ◆ CNC controllers
- ◆ Data collection devices
- ◆ Environmental sensors
- ◆ Universal Power Supply (UPS) management units
- ◆ Telecommunications equipment
- ◆ Data display devices
- ◆ Security alarms and access control devices
- ◆ Handheld instruments
- ◆ Modems
- ◆ Time/attendance clocks and terminals

Protocol Support

The XPort device server uses the Internet Protocol (IP) for network communications. It uses the Transmission Control Protocol (TCP) to assure that no data is lost or duplicated, and that everything sent to the connection arrives correctly at the target.

Supported protocols include:

- ◆ ARP, UDP, TCP, ICMP, Telnet, TFTP, AutoIP, DHCP, HTTP, and SNMP for network communications and management.
- ◆ TCP, UDP, and Telnet for connections to the serial port.
- ◆ TFTP for firmware and web page updates.
- ◆ IP for addressing, routing, and data block handling over the network.
- ◆ User Datagram Protocol (UDP) for typical datagram applications in which devices interact with other devices without maintaining a point-to-point connection.
- ◆ SMTP for email transmission.

Configuration Methods

For the unit to operate correctly on a network, it must have a unique IP address on the network. There are three basic methods for logging into the device server to assign an IP address and configure the unit:

DeviceInstaller: Assign an IP address and view the current XPort module configuration using a Graphical User Interface (GUI) on a PC attached to a network. See 3 [Using DeviceInstaller](#).

Web Manager: Through a web interface, configure the XPort and its settings using the XPort module's Web Manager. See 4 [Configuration Using Web Manager](#)

Serial & Telnet Ports: There are two approaches to accessing Serial Mode. Make a Telnet connection to the network port (9999) or connect a terminal (or a PC running a terminal emulation program) to the unit's serial port. See Chapter [Chapter 5: Configuration via Telnet or Serial Port \(Setup Mode\)](#).

Addresses and Port Numbers

Hardware Address

You need to know the unit's hardware address (also known as a MAC address). It is on the product label, in one of the following formats depending on the model of your XPort unit:

Hardware Address for XPort-05: 00-80-A3-____-____-____

Hardware Address for XPort-03 and XPort-04: 00-20-4A-____-____-____

Note: Make note of the MAC address. It is needed to locate the XPort module using DeviceInstaller.

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.

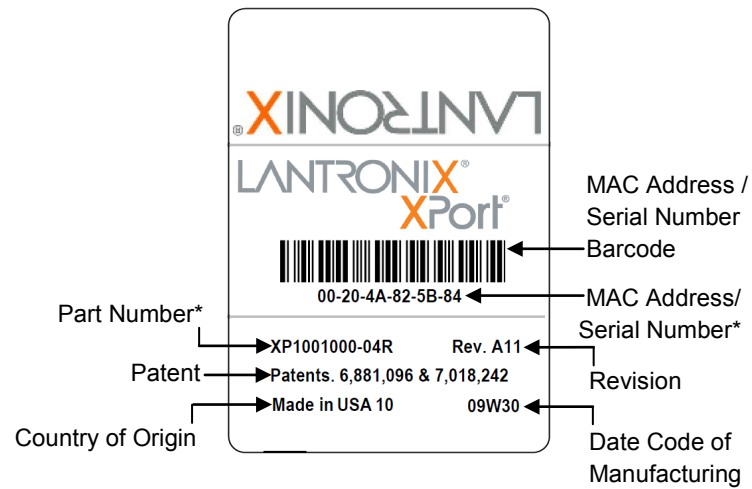
The unit's serial channel (port) can be associated with a specific TCP/UDP port number. Port number 9999 is reserved for access to the unit's Setup (configuration) Mode window. Ports 0-1024 are reserved as well. For more information on reserved port numbers, see to [Table 7-5. Reserved Port Numbers](#)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

Figure 2-1. Product Label



Note: The Part Number* and MAC Address/Serial Number* on the product label will vary according the unit model (XPort-03, XPort-04 or XPort-05).

3. Using DeviceInstaller

This chapter covers the steps for getting the XPort device server online and viewing its current configuration.

Note: *DeviceInstaller* is a free utility program provided by Lantronix that discovers, configures, upgrades, and manages Lantronix Device Servers. It can be downloaded from the Lantronix website at www.lantronix.com/support/downloads.

For instructions on using *DeviceInstaller* to configure the IP address and related settings or for more advanced features, see the *DeviceInstaller Online Help*.

Installing DeviceInstaller

To install DeviceInstaller:

1. Download the latest version of DeviceInstaller from <http://www.lantronix.com/downloads>.
2. Run the executable to start the installation process.
3. Respond to the installation wizard prompts. (If prompted to select an installation type, select **Typical**).

Assigning an IP Address

The unit's IP address must be configured before it can work correctly on a network. You have several options for assigning an IP to your unit. We recommend that you manually assign the IP address over the network using DeviceInstaller.

Note: To use a serial connection instead of an Ethernet connection to configure the device, see [5 Configuration via Telnet or Serial Port \(Setup Mode\)](#) on page 42.

The unit's IP address is normally set to 0.0.0.0 at the factory. The hardware address is on the product label. The unit is DHCP enabled as the default.

To assign an IP address manually:

1. Click **Start**→**All Programs**→**Lantronix**→**DeviceInstaller 4.3**→**DeviceInstaller**. If your PC has more than one network adapter, a message displays. Select an adapter and click **OK**.

Note: *If the unit already has an IP address (e.g., DHCP has assigned an IP address), click the **Search** icon and select the unit from the list of Lantronix device servers on the local network.*

2. Click the **Assign IP**  icon.

3. If prompted, enter the hardware address (on the product label) and click **Next**.
4. Select Assign a specific IP address and click Next.
5. Enter the **IP address**. The **Subnet mask** displays automatically based on the IP address; if desired, you may change it. On a local network, you can leave the **Default gateway** blank (all zeros). Click **Next**.
6. Click the **Assign** button and wait several seconds until a confirmation message displays. Click **Finish**.
7. Select the device from the main window list and select **Ping** from the **Tools** menu. The Ping Device dialog box shows the IP address of the selected unit.
8. From the **Tools** menu, click the **Ping** button. The results display in the Status window. Click the **Clear Status** button to clear the window so you can ping the device again.

Note: If you do not receive “Reply” messages, make sure the unit is properly attached to the network and that the IP address assigned is valid for the particular network segment you are working with. If you are not sure, check with your systems administrator.

9. Click the **Close** button to close the dialog box and return to the main window.

Accessing the XPort Module Using DeviceInstaller

1. Click **Start→All Programs→Lantronix→DeviceInstaller 4.4→DeviceInstaller**.
2. Click the **XPort** folder. The list of available Lantronix XPort devices displays.
3. Expand the list of XPort modules by clicking the **+** symbol next to the XPort icon. Select the XPort unit by clicking on its IP address to view its configuration.

Viewing the Current Configuration

DeviceInstaller provides a view of the unit's configuration.

To view the unit's current settings:

1. Follow the instructions above to locate the XPort module.
2. In the right pane, click the **Device Details** tab. The current XPort device configuration displays:

Name	Configurable field. A name that identifies the XPort module. Double-click the field, type in the value, and press Enter to complete. This name is not visible on other PCs or laptops using DeviceInstaller.
-------------	--

DHCP Device Name	<p>Non-configurable field. Displays the name associated with XPort module's current IP address, if the IP address was obtained dynamically.</p> <p>To change the DHCP device name, see Configuration Using Web Manager or Configuration via Telnet or Serial Port (Setup Mode).</p>
Group	<p>Configurable field. A group name to categorize the XPort device server.</p> <p>Double-click the field, type in the value, and press Enter to complete. This group name is not visible on other PCs or laptops using DeviceInstaller.</p>
Comments	<p>Configurable field. Information about the XPort module.</p> <p>Double-click the field, type in the value, and press Enter to complete. This description or comment is not visible on other PCs or laptops using DeviceInstaller.</p>
Device Family	<p>Non-configurable field. Displays the XPort module's device family as XPort device server.</p>
Type	<p>Non-configurable field. Displays the device type as XPort-03/04 or XPort-05 device servers.</p>
ID	<p>Non-configurable field. Displays the XPort module's ID embedded within the box.</p>
Hardware Address	<p>Non-configurable field. Displays the XPort unit's hardware (or MAC) address.</p>
Firmware Version	<p>Non-configurable field. Displays the firmware currently installed on the XPort module.</p>
Extended Firmware Version	<p>Non-configurable field. Displays the full version nomenclature of the firmware.</p>
Online Status	<p>Non-configurable field. Displays the XPort device's status as online, offline, unreachable (the XPort module is on a different subnet), or busy (the XPort device server is currently performing a task).</p>
IP Address	<p>Non-configurable field. Displays the XPort module's current IP address. To change the IP address, see Assigning an IP Address on page 16.</p>
IP Address was Obtained	<p>Displays "Dynamically" if the XPort module automatically received an IP address (e.g., from DHCP). Displays "Statically" if the IP address was configured manually. If the IP address was assigned dynamically, the following fields appear:</p> <ul style="list-style-type: none"> ◆ Obtain via DHCP with value of True or False. ◆ Obtain via BOOTP with value of True or False. ◆ Obtain via RARP with value of True or False ◆ Obtain via Auto IP with value of True or False

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

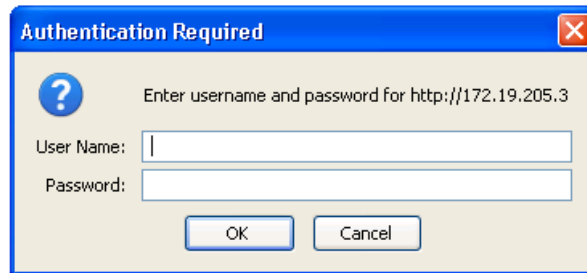
Note: For more information on DeviceInstaller, see [Chapter 3: Using DeviceInstaller](#).

1. Run DeviceInstaller and search for the list of available Lantronix device servers.
2. Click on the **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**.

Figure 4-1. Web Manager Login Window



7. Perform one of the following:

- If no Telnet password has been defined, leave both fields blank and click **OK**.
- If a Telnet password has been defined, leave the username blank, type in the password, and then click **OK**.

The Web Manager displays.

Note: We recommend that you always use the enhanced password setting and create a strong 16 character password. See [Security Settings \(Option 6\)](#) on page 69.

Figure 4-2. Lantronix Web Manager

Product Information	
Firmware Version:	V6.10.0.1
Build Date:	23-Oct-2014
Network Settings	
MAC Address:	00-80-A3-94-61-6E
Network Mode:	Wired
DHCP HostName:	< None >
IP Address:	172.19.100.65
Default Gateway:	172.19.0.1
DNS Server:	172.19.1.1
MTU:	1400
Line settings	
Line 1:	RS232, 9600, 8, None, 1, None.

The main menu is in the left pane of the Web Manager window.

Network Configuration

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

Figure 4-3. Network Settings

Network Mode

1. Click **Network** from the main menu.
2. Note the following:

Network Mode	Wired Only is the only choice. It enables the Ethernet network connectivity.
--------------	---

Automatic IP Address Configuration

An IP address can be assigned automatically. You then enter related network settings.

To assign an IP address automatically:

1. On the main menu, click **Network**.
2. Select Obtain IP address automatically.

- 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.

- When you are finished, click the **OK** button.
- 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:

- On the main menu, click **Network**.
- Select Use the following IP configuration.
- 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.

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

Ethernet Configuration

You must specify the speed and direction of data transmission.

To specify how data will be transmitted:

1. On the main menu, click **Network**.
2. Enter the following (as necessary):

Auto Negotiate

With this option, the Ethernet port auto-negotiates the speed and duplex with the hardware endpoint to which it is connected. This is the default.
--

If this option is not selected, the complete the fields that become available:
--

◆ Speed: The speed of data transmission. The default is 100 Mbps.
--

◆ Duplex: The direction of data transmission. The default is Full.

3. When you are finished, click the **OK** button.
4. 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

Server Settings

Server Configuration

Enhanced Password: Enable Disable

Telnet/Web Manager Password:

Retype Password:

Advanced

ARP Cache Timeout (secs):

TCP Keepalive (secs):

Monitor Mode @ Bootup: Enable Disable

CPU Performance Mode: Low Regular High

HTTP Server Port:

Config Server Port:

MTU Size:

TCP Re-transmission timeout (ms):

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

<p>Enhanced Password</p> <p><i>Note:</i> We recommend that you always enable the enhanced password setting, and create a strong 16 character password.</p>	<p>Select whether to enable enhanced password:</p> <ul style="list-style-type: none"> ♦ 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.
<p>Telnet/Web Manager Password</p>	<p>Enter the password required for Telnet configuration and Web Manager access.</p>