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LANTRONIX®

UDS1100

Device Server User Guide

Part Number 900-417
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Revision History

Date	Rev.	Comments
February 2006	A	Initial document.
June 2006	B	Changes to operating and storage temperatures.
April 2007	C	Updated to add UDS1100-POE version.
August 2008	D	Updated for firmware v6.6 .
August 2012	E	Updated for firmware v6.8.
December 2012	F	Updated operating temperature range.
June 2015	G	Updated for firmware version 6.11.0.0.
December 2017	H	Updated enhanced password information.

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1: Using This Guide

Purpose and Audience

This guide provides the information needed to configure, use, and update the Lantronix® UDS1100 device server. It is for system administrators and those responsible for installing and maintaining the UDS.

Chapter Summary

The remaining chapters in this guide include:

Chapter	Description
2: Introduction	Describes the main features of the UDS and the protocols it supports.
3: Installation of UDS1100	Provides information for installing your unit and getting it up and running using DeviceInstaller or a serial port connection.
4: Using DeviceInstaller	Instructions for viewing the current configuration using DeviceInstaller.
5: Configuration Using Web-Manager	Details using the Web-Manager to set parameters such as port and server properties.
6: 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.
7: Setup Mode: Server Configuration	Details the network (server) settings
8: Setup Mode: Channel Configuration	Details the serial port settings.
9: Setup Mode: Advanced Settings	Details expert and security settings and explains how to reset the unit to factory default values.
10: Firmware Upgrades	Provides instructions for obtaining the latest firmware and updating the UDS.
11: Monitor Mode	Provides instructions for accessing and using the command line interface to monitor the network and diagnose problems.
A: Troubleshooting and Contact Information	Describes common problems and error messages and how to contact Lantronix Technical Support.
B: Connections and Pinouts	Provides descriptions and illustrations of connection hardware.
C:Technical Specifications	Lists technical specifications for the UDS.
D: Mounting Brackets	Provides drawings and dimensions of the unit's mounting brackets.

Chapter	Description
E: Alternative Ways to Assign an IP Address	Provides detailed information about using DHCP, AutoIP, BOOTP ARP, and Telnet to assign an IP address.
F: Binary to Hexadecimal Conversions	Provides instructions for converting binary values to hexadecimals.
G: Compliance	Provides Lantronix 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
UDS1100 Quick Start	Provides the steps for getting the UDS1100 up and running.
DeviceInstaller Online Help	Provides instructions for using the Windows-based utility to configure the UDS1100 and other Lantronix device servers.
"Live" Tutorials on the Lantronix Web Site (English)	Explain and demonstrate assigning an IP address to the UDS and setting up the UDS and Com Port Redirector. See http://ltxfaq.custhelp.com/app/answers/detail/a_id/1119.
Com Port Redirector User Guide	Provides information on using the Windows-based utility to create a virtual com port.

2: Introduction

The UDS1100 is a single-port device server that provides a quick, simple, and cost-effective way to bring the advantages of data accessibility and remote management to devices not currently connected to a network.

Applications

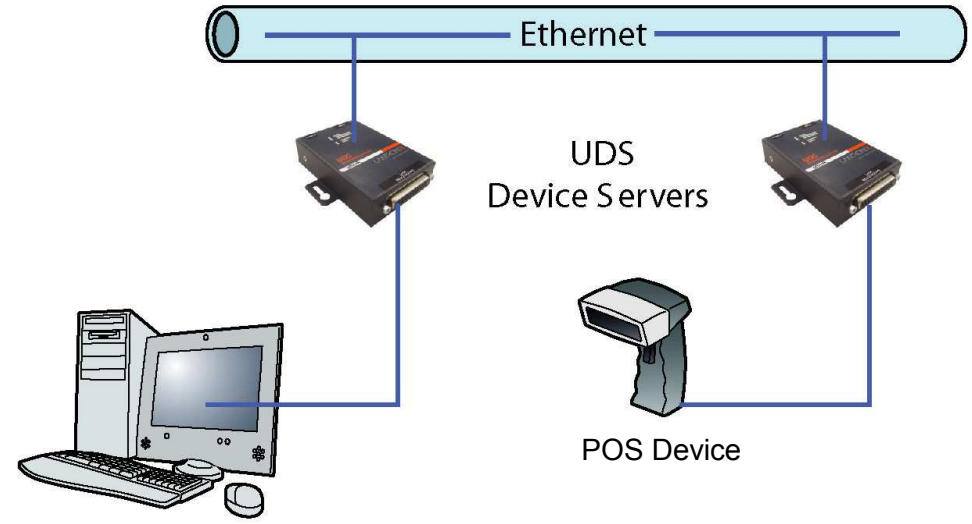
The UDS family of Device Servers allows serial devices, such as those listed below, to connect and communicate over Ethernet networks using the IP protocol family (TCP for connection-oriented stream applications and UDP for datagram applications).

- Security alarms
- Access control devices
- Fire control panels
- Time/attendance clocks and terminals
- ATM machines
- Data collection devices
- RFID readers
- Universal Power Supply (UPS) management units
- Telecommunications equipment
- Data display devices
- Virtually any asynchronous RS-232, RS422, or RS485 device

Application Examples

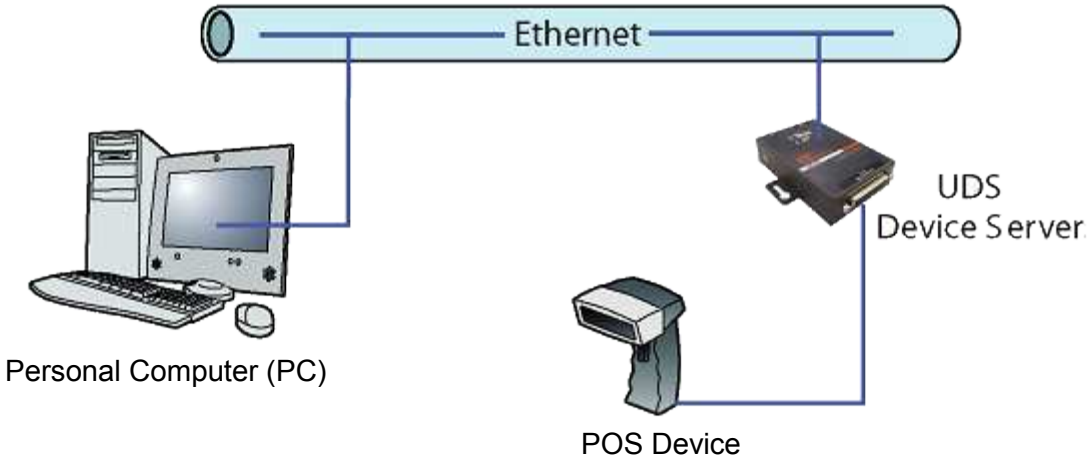
Using a method called serial tunneling, the UDS encapsulates serial data into packets and transports them over Ethernet. Using two UDS units, connected by a network, virtual serial connections can extend across a facility or around the world.

Figure 2-1. Serial Tunneling Example



The Com Port Redirector software available for download at www.lantronix.com/support/downloads simplifies the integration process by extending the functionality of COM-port-based Windows™ applications. Virtual COM ports, mapped to remote device servers on the network, can replace direct serial connections.

Figure 2-2. Direct TCP/IP or Redirector Configuration



Note: *For step-by-step instructions on configuring the UDS for serial tunneling or for use with the Com Port Redirector, see UDS Configuration Tutorials on the Lantronix web site: www.lantronix.com/support.*

Protocol Support

The UDS uses the Internet Protocol (IP) for network communications and 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/IP, TCP, BOOTP, ICMP, Telnet, TFTP, AutoIP, DHCP, HTTP, and SNMP for network communications.
- TCP, UDP, and Telnet for connections to the serial port.
- TFTP for firmware 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 a point-to-point connection.

Additional Features

Modem Emulation: In modem emulation mode, the UDS can replace dial-up modems. The unit accepts modem AT commands on the serial port and then establishes a network connection to the end device. This arrangement leverages network connections and bandwidth to eliminate dedicated modems and phone lines.

Built-in Web Server: The UDS includes a built-in web server for configuring the unit and displaying operating and troubleshooting information on the attached links to online support.

Configuration Methods

After installation, the UDS requires configuration. 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 UDS and assigning IP addresses and other configurable settings:

DeviceInstaller: Configure the IP address and other network settings on the UDS using a Graphical User Interface (GUI) on a PC attached to a network. (See *4: Using DeviceInstaller*.)

Web-Manager: Through a web browser, configure the UDS settings using the Lantronix Web-Manager. (See *5: Configuration Using Web-Manager*.)

Serial and Telnet Ports: Use Setup Mode, a command line interface. There are two approaches to accessing Setup Mode: making a Telnet connection to the network port (9999) or connecting a terminal (or a PC running a terminal emulation program) to the unit's serial port. See *6: Configuration via Telnet or Serial Port (Setup Mode).*

Product Information Label

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

- Bar code
- Part Number
- Revision
- Manufacturing Date Code
- Serial number

Figure 2-3. Product Label

3: Installation of UDS1100

This chapter describes how to install your UDS1100 and get it up and running in the shortest possible time.

Package Contents

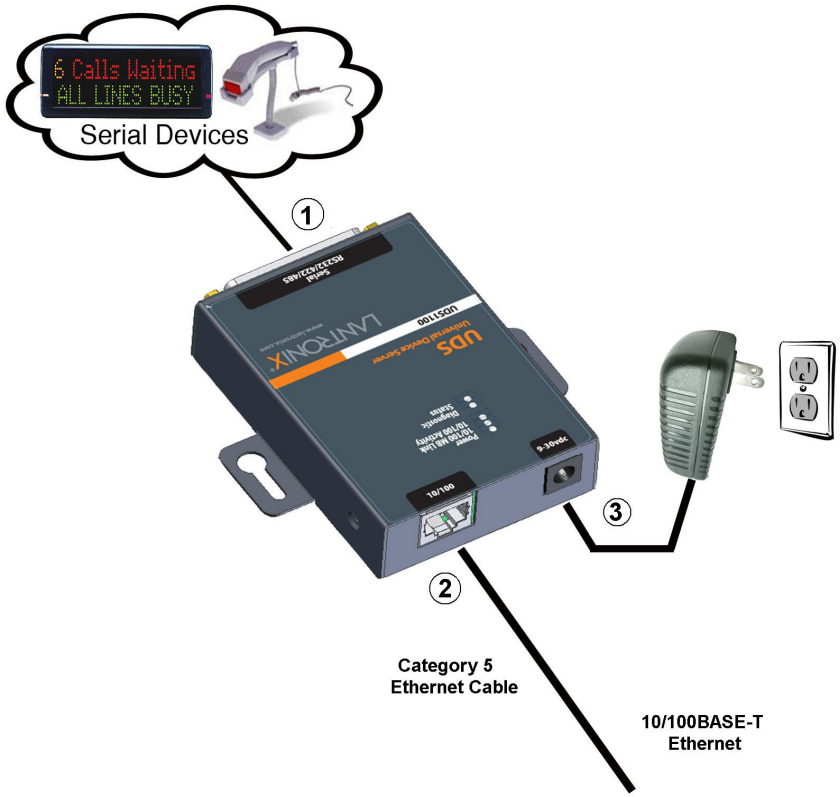
Verify and inspect the contents of the UDS1100 package using the following list. If any item is missing or damaged, contact your place of purchase immediately.

- UDS1100
- Six-foot DB9F-to-DB25M modem cable (P/N 500-163)
- Power supply (non Power Over Ethernet (POE) units only)
- Quick Start Guide

Installing the UDS

Figure 3-1. UDS1100-POE Version Connected to Serial Device and Network

Figure 3-2. Standard UDS1100 Connected to Serial Device and Network



To install the unit:

Complete the following steps in order. Refer to the numbers in the figure above.

Note: *See the sections that follow for details about connectors and pinouts.*

1. Connect a serial device to your unit.
2. Connect an Ethernet cable to the RJ45 port.
3. For the UDS1100-POE version, power is supplied to your unit over the Ethernet interface using an 802.3af POE-compliant power source such as a POE mid-span or POE Ethernet switch.
4. For non-POE UDS1100 unit, supply power to your unit using the power supply that was included in the packaging.

   Note: *The required input voltage for the non-POE UDS1100 is 9-30 VDC (center +) or 10-24 VAC (1.5W maximum power required).*

5. Supply power to the serial device.

Note: *If you encounter a problem, please see LEDs for diagnostic information.*

Required Information

Before configuring the UDS, have the following information available:

Hardware Address

Take note of the unit's hardware address (also known as the Ethernet or MAC address). It is on the product label (see *Product Information Label*).

Hardware Address: 00 – 20 - 4a - _____ - _____ - _____

OR

Hardware Address: 00 – 80 - A3 - _____ - _____ - _____

Note: Make note of the MAC address. It is needed to locate the UDS1100 module using DeviceInstaller.

IP Address

The UDS must have a unique IP address on your network. This address references the specific unit. By default, the unit is DHCP-enabled and automatically assigned an IP address on DHCP-enabled networks. If you are assigning a static IP address, the systems administrator generally provides the IP address, subnet mask, and gateway.

Note: *The factory default IP address is 0.0.0.0 to enable DHCP, BOOTP, and AutoIP. When the units boots, it sends a DHCP broadcast to try and get an IP address. If it receives no reply from a DHCP server, the UDS tries BOOTP. If the UDS does not receive a response from BOOTP, it reverts to an AutoIP address.*

IP Address: _____ - _____ - _____ - _____

Subnet Mask: _____ - _____ - _____ - _____

Gateway: _____ - _____ - _____ - _____

You have several options for assigning an IP address and related network settings to your unit. This chapter provides information about using the DeviceInstaller (graphical user interface) and serial port login (command line interface) methods.

Note: *For information about other methods of assigning the IP address, such as DHCP, AutoIP, ARP, and Telnet, see E: Alternative Ways to Assign an IP Address.*

4: Using DeviceInstaller

This chapter covers the steps for getting the UDS1100 device server online and for viewing its current configuration.

Note: *The DeviceInstaller™ application 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/support/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. 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→Programs → Lantronix→DeviceInstaller 4.4 →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 attached to the network properly and 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.

Adding the Unit to the Manage List

Now add the unit to the list of similar Lantronix devices on the network so you can manage and configure it. To perform this step, click the **Search** icon .

DeviceInstaller locates the unit and adds it to the list. Now you can manage (configure) the unit so it works with the serial device on the network.

Accessing the UDS1100 Using DeviceInstaller

1. Click **Start→Programs → Lantronix→DeviceInstaller→DeviceInstaller.**
2. Click the UDS1100 folder. The list of available Lantronix UDS1100 devices displays.
3. Expand the list of UDS1100s by clicking the **+** symbol next to the UDS1100 icon. Select the UDS1100 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 UDS1100.
2. In the right pane, click the **Device Details** tab. The current UDS1100 configuration displays:

Name	Configurable field. A name that identifies the UDS1100. 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	Non-configurable field. Displays the name associated with UDS1100's current IP address, if the IP address was obtained dynamically. To change the DHCP device name, see Configuration Using Web-Manager or Configuration via Telnet or Serial Port (Setup Mode).
Group	Configurable field. A group name to categorize the UDS1100. 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.
Comments	Configurable field. Information about the UDS1100. 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.
Device Family	Non-configurable field. Displays the UDS1100's device family as UDS.
Type	Non-configurable field. Displays the device type as UDS1100.
ID	Non-configurable field. Displays the UDS1100's ID embedded within the box.
Hardware Address	Non-configurable field. Displays the UDS1100's hardware (or MAC) address.
Firmware Version	Non-configurable field. Displays the firmware currently installed on the UDS1100.
Extended Firmware Version	Non-configurable field. Displays the full version nomenclature of the firmware.
Online Status	Non-configurable field. Displays the UDS1100's status as online, offline, unreachable (the UDS1100 is on a different subnet), or busy (the UDS1100 is currently performing a task).
IP Address	Non-configurable field. Displays the UDS1100's current IP address. To change the IP address, see *Assigning an IP Address*.
IP Address was Obtained	Non-configurable field. Displays "Dynamically" if the UDS1100 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: ◆ **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 UDS1100's current subnet mask. To change the subnet mask, see *Assigning an IP Address*.
Gateway	Non-configurable field. Displays the UDS1100's current gateway. To change the gateway, see *Assigning an IP Address*.

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 UDS1100.
TCP Keepalive	Non-configurable field. Displays the UDS1100's TCP keepalive value. The value is in the range **1-65s**, and the default setting is **45**.
Telnet Supported	Non-configurable field. Indicates if Telnet sessions are permitted. Displays **True**.
Telnet Port	Non-configurable field. Displays the UDS1100's port for telnet sessions.
Web Port	Non-configurable field. Displays the UDS1100's port for Web-Manager configuration.
Maximum Baud Rate Supported	Non-configurable field. Displays the UDS1100's maximum baud rate. ***Note:*** *The UDS1100 may not currently be running at this rate.*
Firmware Upgradeable	Non-configurable field. Displays **True**, indicating the UDS1100's firmware is upgradeable as newer version become available.
Supports Configurable Pins	Non-configurable field. Displays **False**.
Supports Email Triggers	Non-configurable field. Displays **False**.
Supports AES Data Stream	Non-configurable field. Displays **False.**
Supports 485	Non-configurable field. Displays **True.** UDS1100 supports the RS-485 protocol.
Supports 921K Baud Rate	Non-configurable field. Displays **False**. UDS1100 supports baud rates up to 230 Kbaud.
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**. UDS1100 supports a baud rate of 230400.
Supports GPIO	Non-configurable field. Displays **False**, indicating the UDS1100 does not support General Purpose Input Output (GPIO).

Next Step

Now that the UDS has an IP address and other initial settings, you can configure it.

1. Double-click the unit in the list. Details about the unit display.
2. You have the following options:

- To configure the unit using a Web browser, click the **Web Configuration** tab. The Lantronix Web-Manager window displays in your browser. Continue with *5: Configuration Using Web-Manager*.

  Note: *To assign Expert and Security settings, you must use the Setup Mode window in a Telnet session.*

- To configure the unit using a Telnet session, click the **Telnet Configuration** tab. The Setup Mode window displays. Continue with *6: Configuration via Telnet or Serial Port (Setup Mode)*.

Assigning the IP Address: Serial Port Login

To assign the IP address and other network settings using a serial connection:

1. Connect a console terminal or a PC running a terminal emulation program to the unit's serial port. The default serial port settings are **9600 baud, 8 bits, no parity, 1 stop bit, no flow control**.
2. To enter Setup Mode, cycle the unit's power (power off and back on). After power-up, the self-test begins and the red Diagnostic LED starts blinking. **You have one second** to enter three lowercase **x** characters.

   Note: *The easiest way to enter Setup Mode is to hold down the **x** key at the terminal (or emulation) while powering up the unit.*

3. Select **0** (Server Configuration) and follow the prompts until you get to **IP address**.
4. Enter the new IP address, subnet mask, and gateway (if applicable).
5. Do one of the following:
   - Continue with *5: Configuration via Telnet or Serial Port (Setup Mode).*
   - Select **9** to save and exit Setup Mode. The unit performs a power reset.

5: Configuration Using Web-Manager

You must configure the unit so 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 UDS1100 using Web-Manager, Lantronix's browser-based configuration tool. (For information on using Setup Mode, our command line configuration interface, see *6: 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 UDS1100 Using DeviceInstaller

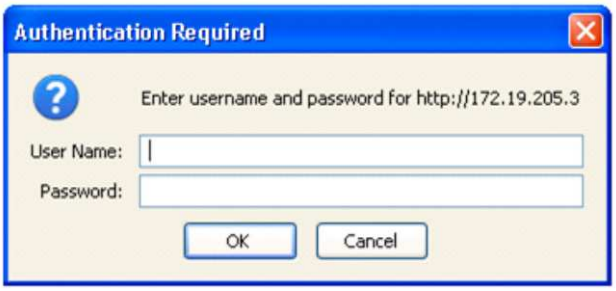
Note: *For more information on DeviceInstaller, see Using DeviceInstaller.*

1. Run DeviceInstaller and search for the list of available Lantronix device servers.
2. Click on the UDS folder. The list of available UDS products display.
3. Expand the list of UDS1100s by clicking the + symbol next to the UDS1100 icon.
4. Select the UDS1100 unit by clicking its hardware address.
5. In the right pane, click the Web Configuration tab.
6. To view the UDS1100'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 UDS1100.*

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

Figure 5-1. Web-Manager Login Window

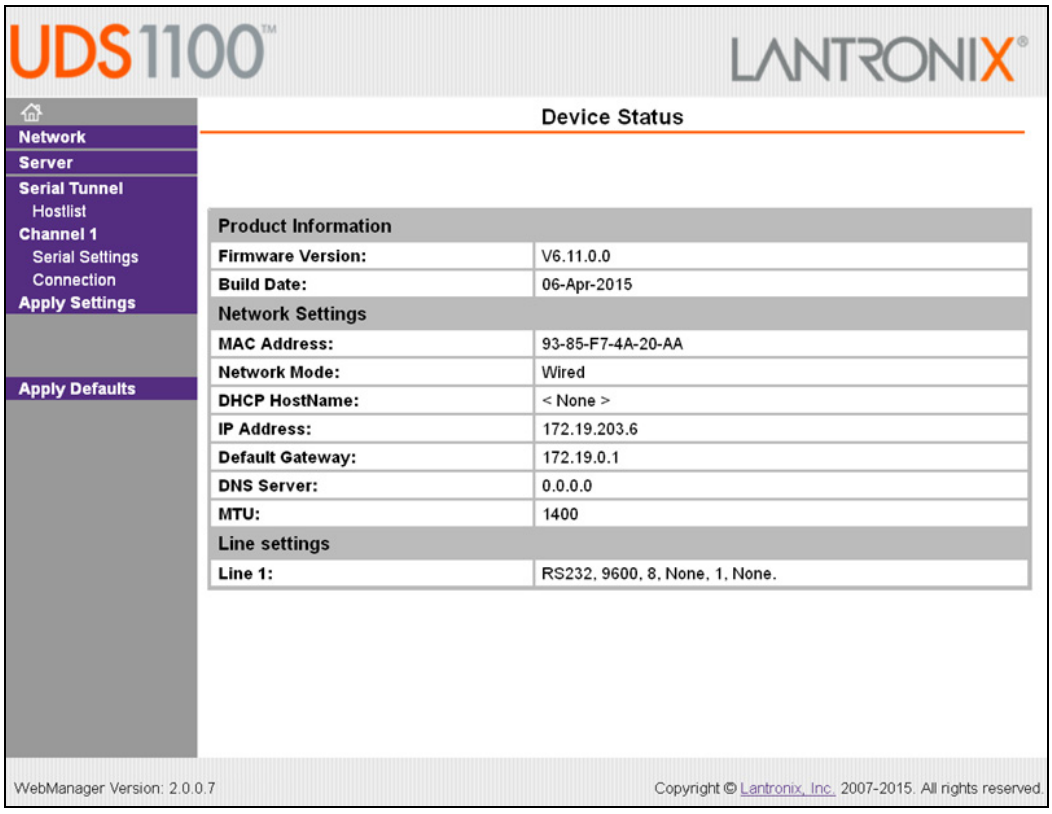


7. Perform one of the following:
   - If no Telnet password has been defined, leave both fields blank and click **OK**.
   - If a Telnet password has been defined, leave the username blank, type in the password, and then click **OK**.

   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 61*.

Figure 5-2. Lantronix Web-Manager

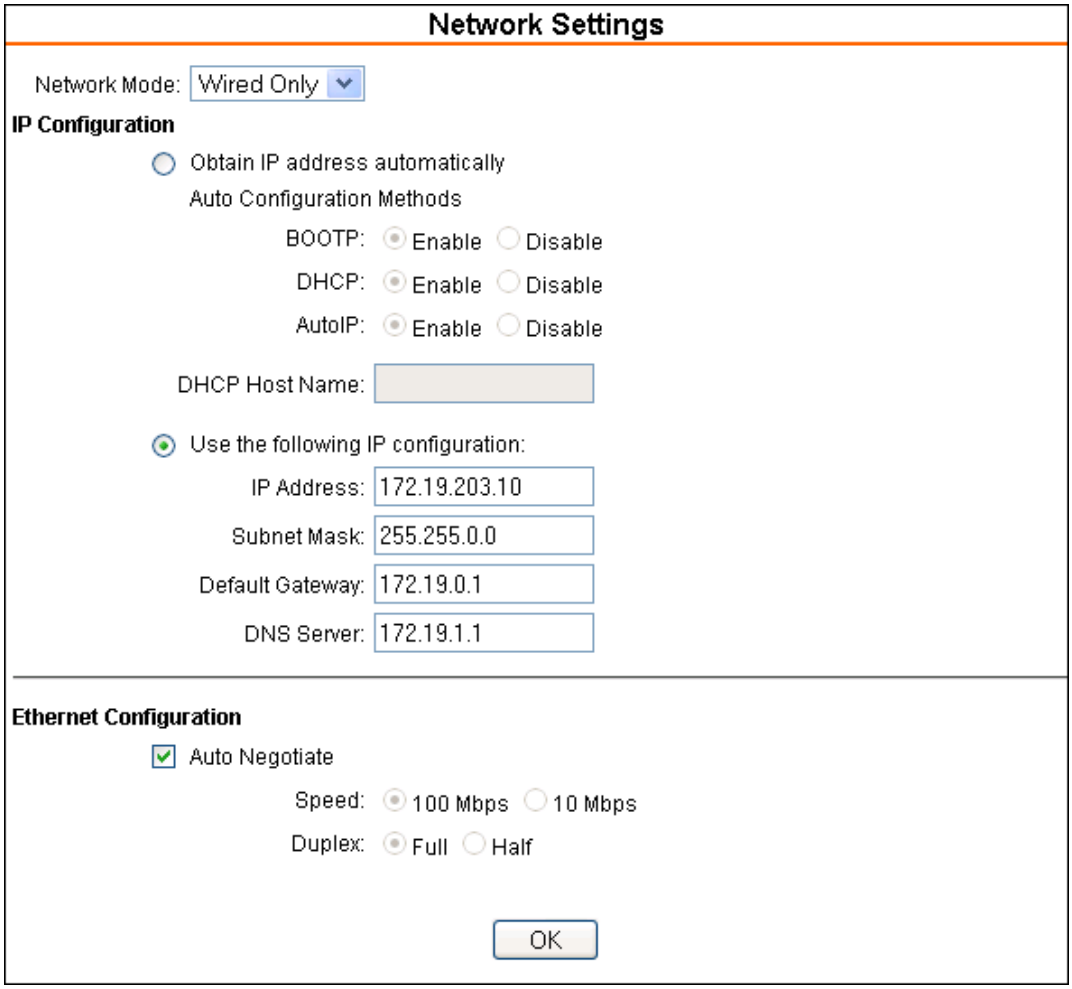


The main menu is in the left pane of the Web-Manager window.

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 5-3. Network Settings



Network Mode

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

Network Mode	For the UDS1100, **Wired Only** is the only choice. It enables the Ethernet network connectivity.