



UDS200 User Guide



Copyright & Trademark

© 2004, 2007 Lantronix. All rights reserved. No part of the contents of this book may be transmitted or reproduced in any form or by any means without the written permission of Lantronix. Printed in the United States of America.

Ethernet is a trademark of XEROX Corporation. UNIX is a registered trademark of The Open Group. Windows 95, Windows 98, Windows 2000, and Windows NT are trademarks of Microsoft Corp. Netscape is a trademark of Netscape Communications Corporation.

Contacts

Lantronix Corporate Headquarters

15353 Barranca Parkway
Irvine, CA 92618, USA
Phone: 949-453-3990
Fax: 949-453-3995

Technical Support

<http://www.lantronix.com/support>

Sales Offices

For a current list of our domestic and international sales offices, go to the Lantronix web site at www.lantronix.com/about/contact.

Disclaimer & Revisions

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: *This product has been designed to comply with the limits for a Class A digital device pursuant to Part 15 of FCC Rules. These limits are designed to provide reasonable protection against such interference when operating in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy, and if not installed and used in accordance with this guide, may cause harmful interference to radio communications.*

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

The information in this guide may change without notice. The manufacturer assumes no responsibility for any errors that may appear in this guide.

Date	Rev.	Comments
4/03	A	Initial Document
6/04	B	Reorganized, added application examples
10/04	C	Updated
12/07	D	Corrected warranty page and technical support information

Contents

Figures	6
Tables	6
1: Using This Guide	7
Purpose and Audience _____	7
Chapter Summary _____	7
Additional Documentation _____	8
2: Introduction	9
Applications _____	9
Application Examples _____	9
Protocol Support _____	10
Additional Features _____	11
Configuration Methods _____	11
Product Information Label _____	11
3: Getting Started	12
Installing the UDS200 _____	12
Required Information _____	13
Hardware Address _____	13
IP Address _____	13
Assigning the IP Address and Related Network Settings _____	14
DeviceInstaller _____	14
Serial Port Login _____	15
4: Configuring the UDS Using Web Manager	16
Accessing Web Manager _____	16
Configuring the UDS _____	18
5: Configuring the UDS Using Telnet or the Serial Port	20
Using a Telnet Connection _____	20
Using the Serial Port _____	22
Server Configuration (Network Configuration) _____	22
IP Address _____	22
Set Gateway IP Address _____	23
Netmask _____	23
Change Telnet configuration password _____	23

DHCP Naming _____	23
Channel 1 Configuration (Serial Port Settings) _____	24
Baudrate _____	24
I/F (Interface) Mode _____	24
Flow _____	25
Port Number _____	25
Connect Mode _____	26
Manual Connection _____	27
Remote IP Address _____	30
Remote Port _____	30
Disconnect Mode _____	31
Flush Mode _____	31
Pack Control _____	32
Disconnect Time (Inactivity Timeout) _____	33
Send Characters _____	33
Telnet Terminal Type _____	33
Channel (Port) Password _____	33
Expert Settings _____	33
TCP Keepalive time in s _____	34
ARP Cache timeout in s _____	34
Security Settings _____	34
Disable SNMP _____	34
SNMP Community Name _____	34
Disable Telnet Setup _____	35
Disable TFTP Firmware Upgrade _____	35
Disable Port 77FE (Hex) _____	35
Disable Web Setup _____	35
Disable ECHO Ports _____	35
Enable Enhanced Password _____	35
Factory Default Settings _____	36
Channel 1 and Channel 2 Configuration Defaults _____	36
Expert Settings Defaults _____	36
Security Settings Defaults _____	36
Exiting Configuration Mode _____	36
6: Updating Firmware _____	37
Obtaining Firmware _____	37
Reloading Firmware _____	37
Using DeviceInstaller _____	37
Using TFTP _____	38

Using Another Unit _____	39
Using the Serial Port _____	39
7: Using Monitor Mode	41
Entering Monitor Mode Using the Serial Port _____	41
Entering Monitor Mode Using the Network _____	41
Using Monitor Mode Commands _____	42
8: Troubleshooting and Technical Support	43
LEDs _____	43
Problems and Error Messages _____	44
Technical Support _____	47
9: Technical Specifications	49
10: Connections and Pinouts	50
UDS200 Serial Ports _____	50
Serial Connector Pinouts _____	50
Network Port _____	51
Ethernet Connector Pinouts _____	51
Null-Modem Cable _____	51
A: Alternative Ways to Assign an IP Address	53
DHCP _____	53
AutoIP _____	53
BOOTP _____	54
ARP and Telnet _____	54
B: Binary to Hexadecimal Conversions	55
Converting Binary to Hexadecimal _____	55
Conversion Table _____	55
Scientific Calculator _____	56
Connect Mode Options _____	57
Disconnect Mode Options _____	60
Flush Mode (Buffer Flushing) Options _____	62
Interface Mode Options _____	67
Pack Control Options _____	67
Declaration of Conformity	69
Warranty	70
Index	71

Figures

Figure 2-1. Application Examples	10
Figure 2-2. Sample Hardware Address.....	11
Figure 3-1. UDS200 Connected to Serial Device and Network.....	12
Figure 4-1. Web Browser Login	16
Figure 4-2. UDS Configuration Guidelines Page	17
Figure 4-3. Lantronix Web Manager	18
Figure 4-4. Server Properties Configuration on the Web Browser	19
Figure 5-1. Network Login Using Telnet	20
Figure 5-2. Setup Mode Window	21
Figure 5-3. Network Configuration	22
Figure 5-4. Server Configuration Option	24
Figure 5-5. Channel 1 Configuration.....	24
Figure 5-6. Hostlist Option	28
Figure 5-7. Expert Settings Options.....	33
Figure 5-8. Security Settings.....	34
Figure 6-1. TFTP Dialog Box	38
Figure 6-2. Sending Firmware to another Unit.....	39
Figure 6-3. Firmware Upgrade Screen Display.....	39
Figure 7-1. Entering Monitor Mode Using the Network.....	41
Figure 10-1. Serial Interface.....	50
Figure 10-2. DB9 Male RS232 Serial DTE Connector.....	50
Figure 10-3. Network Interface	51
Figure 10-4. RJ45 Ethernet Connector	51
Figure 10-5. Null-Modem Cable (Lantronix Part No. 500-164)	52

Tables

Table 5-1. Netmask Examples	23
Table 5-2. Interface Mode Options	25
Table 5-3. Common Interface Mode Settings	25
Table 5-4. Flow Control Options	25
Table 5-5. Connect Mode Options	26
Table 5-6. Manual Connection Address Example	27
Table 5-7. Modem Mode Commands	30
Table 5-8. Disconnect Mode Options	31
Table 5-9. Flush Mode Options	31
Table 5-10. Pack Control Options	32
Table 7-1. Monitor Mode Commands	42
Table 7-2. Command Response Codes	42
Table 8-1. UDS200 LEDs	44
Table 8-2. Problems and Error Messages	44

1: Using This Guide

Purpose and Audience

This guide provides the information needed to configure, use, and update the UDS200 device server. It is for system administrators and those responsible for installing and maintaining the UDS200.

Chapter Summary

The remaining chapters in this guide include:

2: Introduction	Describes the main features of the UDS200 and the protocols it supports.
3: Getting Started	Provides information for installing your unit and getting it up and running.
4: Configuring the UDS Using Web Manager	Provides instructions for accessing Web Manager and using it to configure settings for the UDS.
5: Configuring the UDS Using Telnet or the Serial Port	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. Details the settings that you must configure.
6: Updating Firmware	Provides instructions for obtaining the latest firmware and updating the UDS200.
7: Using Monitor Mode	Provides instructions for accessing and using the command line interface to monitor the network and diagnose problems.
8: Troubleshooting and Technical Support	Describes common problems and error messages and how to contact Lantronix Technical Support.
9: Technical Specifications	Lists technical specifications for the UDS200.
10: Connections and Pinouts	Provides descriptions and illustrations of connection hardware.
A: Alternative Ways to Assign an IP Address	Provides detailed information about using DHCP, AutoIP, BOOTP ARP, and Telnet to assign an IP address.
B: Binary to Hexadecimal	Provides instructions on converting binary values to hexadecimal and tables listing all configuration options in hexadecimal notation.

Additional Documentation

The following guide is available on the product CD or the Lantronix Web site:

www.lantronix.com.

DeviceInstaller User
Guide

Provides instructions for using the Windows-based utility to
configure the UDS and other Lantronix device servers. (CD and
web site)

2: Introduction

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).

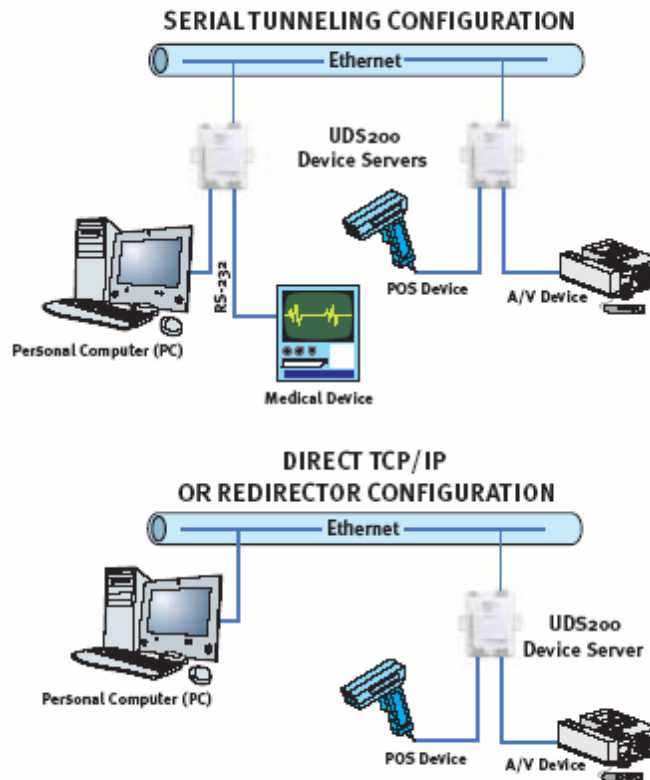
- ◆ Security alarms
- ◆ Access control devices
- ◆ Fire control panels
- ◆ Time/attendance clocks and terminals
- ◆ ATM machines
- ◆ Data collection devices
- ◆ RFID readers
- ◆ Universal Power Supply (UPS) management units
- ◆ Telecommunications equipment
- ◆ Data display devices
- ◆ Virtually any asynchronous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

Application Examples

Using a method called serial tunneling, the UDS200 encapsulates serial data into packets and transports them over Ethernet. Using two UDS200 units, connected by a network, virtual serial connections can extend across a facility or around the world.

The Com Port Redirector software included on the product CD 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 2-1. Application Examples



Note: For step-by-step instructions on configuring the UDS for serial tunneling or for use with the Com Port Redirector, access the UDS Configuration Tutorials using Web Manager. (See [Accessing Web Manager.](#))

Protocol Support

The UDS200 uses the Internet Protocol (IP) for network communications and the Transmission Control Protocol (TCP) to assure that no data is lost or duplicated, and everything sent to the connection arrives correctly at the target.

Other protocols supported are:

- ◆ ARP, UDP, TCP, 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 maintaining a point-to-point connection.

Additional Features

Modem Emulation: In modem emulation mode, the UDS200 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, leveraging network connections and bandwidth to eliminate dedicated modems and phone lines.

Built-in Web Server: The UDS200 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 UDS200 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 UDS200 and assigning IP addresses and other configurable settings:

DeviceInstaller: Configure the IP address and other network settings on the UDS200 using a Graphical User Interface (GUI) on a PC attached to a network. See *DeviceInstaller* on page 14.)

Web Manager: Through a web interface, configure the UDS200 settings using the Lantronix Web Manager. (See [4: Configuring the UDS Using Web Manager](#).)

Serial and Telnet Ports: 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 [5: Configuring the UDS Using Telnet or the Serial Port](#).)

Product Information Label

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

- ◆ Bar code
- ◆ Serial number
- ◆ Product ID (name)
- ◆ Product description
- ◆ Hardware address (also referred to as Ethernet or MAC address)

The first three bytes of the hardware address are fixed and read 00-20-4A, identifying the unit as a Lantronix product. The fourth, fifth, and sixth bytes are unique numbers assigned to each unit.

Figure 2-2. Sample Hardware Address

00-20-4A-14-01-18 or 00:20:4A:14:01:18
--

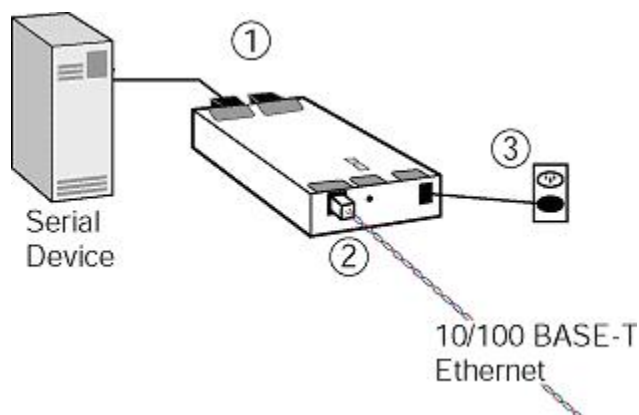
3: Getting Started

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

Installing the UDS200

The following diagram shows a properly installed unit:

Figure 3-1. UDS200 Connected to Serial Device and Network



To install the unit, complete the following steps in order. Refer to the numbers in the previous figure.

1. Connect a serial device to your unit. See [10: Connections and Pinouts](#) for more information about what kinds of device attachments the unit supports.
2. Connect an Ethernet cable to the 10/100 port.
3. Supply power to your unit using the power supply that was included in the packaging.

Note: The required input voltage is 9-30 VDC or 9-24 VAC (2W maximum).

4. Supply power to the serial device.

Note: If you encounter a problem, please see [LEDs](#) on page 43 for diagnostic information.

Required Information

Hardware Address

Take note of the unit's hardware address (also known as the MAC or Ethernet address). It is on the product label, in the format: 00-20-4a-XX-XX-XX, where the XXs are unique numbers assigned to the product (see [Product Information Label](#) on page 11).

Hardware Address: 00-20-4a-____-____-____

IP Address

The UDS must have a unique IP address on your network. This address references the specific unit. By default, the device 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 to your unit. This chapter provides information about using the DeviceInstaller (graphical user interface) and serial port login (command line interface) methods.

Note: For more information other methods of assigning IP addresses, such as DHCP, AutoIP, ARP and Telnet, see [A: Alternative Ways to Assign an IP Address](#).

Assigning the IP Address and Related Network Settings

This section describes two ways to assign the IP address and related network settings quickly:

- ◆ DeviceInstaller
- ◆ Serial Port Login

DeviceInstaller

Note: The *DeviceInstaller User Guide* and the *DeviceInstaller online help* provide more detailed information on using *DeviceInstaller*.

Installing DeviceInstaller

To use the DeviceInstaller utility, you first install it from the product CD.

1. Insert the product CD into your CD-ROM drive. The Lantronix UDS10/UDS100 DeviceInstaller window displays.
2. If the CD does **not** launch automatically:
 - a) Click the **Start** button on the Task Bar and select **Run**.
 - b) Enter your CD drive letter, colon, backslash, **deviceinstaller.exe** (e.g., **E:\deviceinstaller.exe**).
3. Click the **DeviceInstaller** button. The installation wizard window displays.
4. Respond to the installation wizard prompts. (When prompted to select an installation type, select **Typical**.)

Assigning the IP Address and Network Class

1. Click the **Start** button on the Task Bar and select **Programs → Lantronix → DeviceInstaller → DeviceInstaller**. The DeviceInstaller window displays.
2. Click the **Assign IP** icon. The **Assign IP Address** window displays.
3. Enter the **Hardware or Ethernet** address of the device.
4. Select **Assign a specific IP address** to assign a static IP address to the device, or select **Obtain an IP address automatically** to enable BOOTP, DHCP, or Auto IP on the device.
5. Click **Next**.
6. Enter an IP address, subnet mask, and gateway for the device. Enter this information in **XXX.XXX.XXX.XXX** format.
7. Click **Next**.
8. Click the **Assign** button to finalize the IP assignment.

Adding the Unit to the Manage List

Now add the unit to the list of similar Lantronix devices on the network so that 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 that it works with the serial device on the network.

Methods of Configuring the UDS

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

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

- ◆ To configure the unit using a Web browser, click the **Web** icon. The Lantronix Web Manager window displays in your browser. Continue with [4: Configuring the UDS Using Web Manager](#).
- ◆ To configure the unit using a Telnet session or the serial port, click the **Telnet** icon. The Setup Mode window displays. Continue with [5: Configuring the UDS Using Telnet or the Serial Port](#).

Serial Port Login

To assign the IP address and other network settings using a serial connection, follow these steps:

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: Configuring the UDS Using Telnet or the Serial Port](#).
 - ◆ Select **9** to save and exit Setup Mode. The unit performs a power reset.

4: Configuring the UDS Using Web Manager

You must configure the UDS so that it can communicate on a network with your serial device. For example, you must set the way the unit responds to serial and network traffic, handles serial packets, and starts and closes connections.

This chapter gives an overview of the procedure for using Web Manager to configure a UDS. This is the easiest and preferred method.

The unit's configuration is stored in nonvolatile memory (NVRam) and is retained without power. You can change the configuration at any time. The unit performs a reset after the configuration has been changed and stored.

Note: When configuring the UDS200, note that it does not support 2 stop bits for port 2.

Accessing Web Manager

If your unit already has an IP address, you can log into it using a standard Web browser with Java enabled.

Note: You can also access Web Manager by clicking the **Web** icon on the DeviceInstaller "Manage List" window (see [Methods of Configuring the UDS](#) on page 15.)

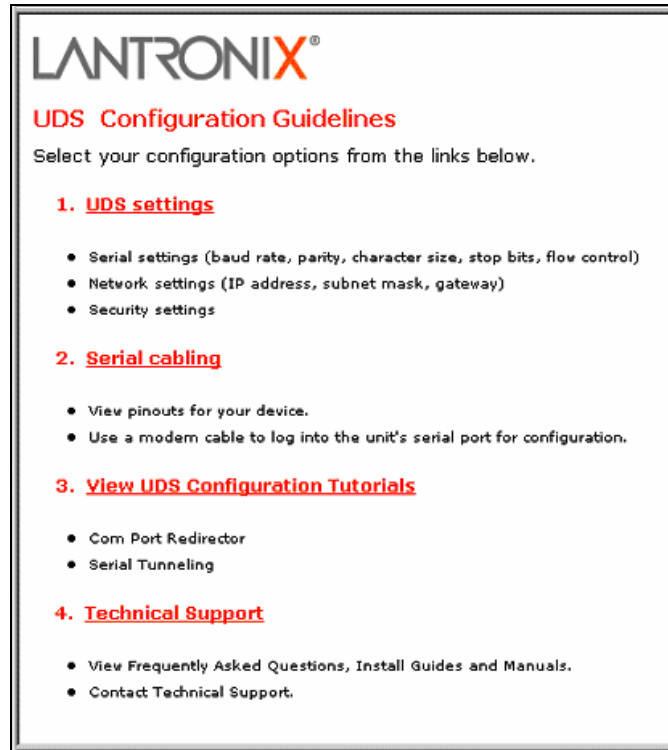
1. Type the unit's IP address into the Web browser's URL (Address/Location) field.

Figure 4-1. Web Browser Login



2. When the UDS Configuration Guidelines Page displays, select one of the four links:

Figure 4-2. UDS Configuration Guidelines Page



- ◆ **UDS settings** opens a configuration window to configure the UDS200, as shown in Figure 4-3.
- ◆ **Serial cabling** lets you view pinouts for the UDS serial port.
- ◆ **View UDS Configuration Tutorials** provides step-by-step instructions for configuring serial tunneling and the Com Port Redirector.
- ◆ **Technical Support** lets you download the latest firmware for your UDS and view documentation.

Figure 4-3. Lantronix Web Manager

LANTRONIX®

If page does not load install the latest Java Runtime Environment from www.java.com.

Web Manager
Version 3.50

Menu

Unit Configuration

Server Properties

Port Properties

Factory Settings1

Factory Settings2

Update Settings

Select Channel

Channel1

Channel2

Selected Channel : 1

Serial Port Settings

Serial Protocol: RS232

Speed: 9600

Character Size: 8

Parity: None

Stopbit: 1

Flow Control: None

Connect Mode Settings

UDP Datagram Mode: Disable

UDP Datagram Type:

Change Address Table

Incoming Connection: Accept unconditional

Autostart: Nothing (quiet)

Startup: Autostart

Dedicated Connection

Configuring the UDS

To configure the unit using a Web browser, select **UDS Settings** on the UDS Configuration Guidelines page and perform the following steps.

1. Use the menu (pushbuttons) to navigate to sub-pages where you can configure server settings.

Note: Explanations of all parameters are in [5: Configuring the UDS Using Telnet or the Serial Port](#).

2. When you are finished, click the **Update Settings** button to save your settings.

For example, to enter server properties:

1. Click the **Server Properties** button. The Server Properties section of the Web page displays.
2. Confirm or enter values for:
 - ◆ IP Address
 - ◆ Subnet Mask
 - ◆ Gateway Address

Figure 4-4. Server Properties Configuration on the Web Browser

The screenshot shows a web browser interface for configuring the UDS200. On the left is a 'Menu' sidebar with buttons for 'Unit Configuration', 'Server Properties' (which is highlighted in orange), 'Port Properties', 'Expert Settings', 'Security', 'Factory Settings1', 'Factory Settings2', 'Update Settings', 'Channel1', and 'Channel2'. The main area is titled 'Server Properties' and contains four configuration fields: 'IP Address' with the value '172.19.23.55', 'Subnet Mask' with '255.255.0.0', 'Gateway Address' with '172.19.0.11', and 'Telnet Password' with four masked characters 'xxxx'.

Server Properties	
IP Address	172.19.23.55
Subnet Mask	255.255.0.0
Gateway Address	172.19.0.11
Telnet Password	xxxx

3. In the **Telnet Password** field, enter a password to prevent unauthorized access to the Setup Mode using a Telnet connection to port 9999. The password is limited to four characters. (An enhanced password setting of 16 characters is available under Security Settings in Setup Mode.)

Note: No password is required to access the Setup Mode window using a serial connection.

4. Click the **Update Settings** button.

5: Configuring the UDS Using Telnet or the Serial Port

You must configure the UDS 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.

As an alternative to using Web Manager, configure the UDS using a series of prompts referred to as Setup Mode, accessed through a Telnet or a serial port connection. Once you access the screen, the configuration procedure is identical.

The unit's configuration is stored in nonvolatile memory (NVRam) and is retained without power. You can change the configuration at any time. The unit performs a reset after the configuration has been changed and stored.

This chapter provides instructions on using Setup Mode and detailed explanations of the configuration settings.

Note: When configuring the UDS200, note that it does not support 2 stop bits for port 2.

Using a Telnet Connection

To configure the unit over the network, establish a Telnet connection to port 9999.

Note: You can also establish a Telnet connection by clicking the **Telnet** icon on the DeviceInstaller "Manage List" window (see [Methods of Configuring the UDS](#) on page 15.)

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.

Figure 5-1. Network Login Using Telnet

```
telnet x.x.x.x 9999
```

Note: Be sure to include a space between the IP address and 9999.

2. Click **OK**. To remain in Setup Mode, you must press **Enter** within 5 seconds.

The configuration settings display, followed by the Change Setup menu.

Figure 5-2. Setup Mode Window

```

*** Lantronix Device Server ***
MAC address 00204A022532

Press Enter to go into Setup Mode

*** basic parameters
Hardware: Ethernet TPI
IP addr 172.19.238.4, no gateway set, netmask 255.255.000.000

*** Security
SNMP is          enabled
SNMP Community Name: public
Telnet Setup is  enabled
TFTP Download is enabled
Port 77FEh is    enabled
Web Server is    enabled
ECHO is          disabled
Enhanced Password is disabled

*** Channel 1
Baudrate 115200, I/F Mode 4C, Flow 02
Port 10001
Remote IP Addr: --- none ---, Port 00000
Connect Mode : C0
Disconn Mode : 00
Flush Mode : 00

*** Channel 2
Baudrate 38400, I/F Mode 4C, Flow 00
Port 10002
Remote IP Addr: --- none ---, Port 00000
Connect Mode : C0
Disconn Mode : 00
Flush Mode : 00

*** Expert
TCP Keepalive   : 45s
ARP cache timeout: 600s

Change Setup:
 0 Server configuration
 1 Channel 1 configuration
 2 Channel 2 configuration
 5 Expert settings
 6 Security
 7 Factory defaults
 8 Exit without save
 9 Save and exit

Your choice ? _

```

3. Select an option on the menu by entering the number of the option at the **Your choice ?** prompt and pressing **Enter**.
4. To enter a value for a parameter, type the value and press **Enter**, or to confirm a current value, just press **Enter**.
5. When you are finished, save the new configurations (option **9**). The unit reboots.

Using the Serial Port

For local configuration, you can connect a terminal or a PC running a terminal emulation program to the unit's serial port (channel 1). Configure the terminal (or emulation) for 9600 baud, 8-bit, no parity, 1 stop bit, and no flow control.

1. Cycle the unit's power (power off and back on). After power-up, the self-test begins and the diagnostic and status LEDs start blinking.
2. Type three lowercase **x** characters (**xxx**) **within one second** after powering up in order to start the configuration mode. The Setup Mode window displays. (See the example in [Using a Telnet Connection](#).)

Note: The easiest way to enter Setup Mode is to hold down the **x** key on your keyboard while powering up the unit.

3. Select an option on the menu by entering the number of the option at the **Your choice ?** prompt and pressing **Enter**.
4. To enter a value for a parameter, type the value and press **Enter**, or to confirm a default value, just press **Enter**.
5. When you are finished, save the new configuration (option **9**). The unit reboots.

Server Configuration (Network Configuration)

Type **0** at the **Your choice ?** prompt and press **Enter**. Current values display in parentheses. The rest of this section describes the configurable settings within the Server configuration menu.

Figure 5-3. Network Configuration

```
Change Setup:
0 Server configuration
1 Channel 1 configuration
2 Channel 2 configuration
5 Expert settings
6 Security
7 Factory defaults
8 Exit without save
9 Save and exit          Your choice ? 0

IP Address : (172) .(019) .(023) .(055)
Set Gateway IP Address (Y) Y
Gateway IP addr (172) .(019) .(000) .(011)
Netmask: Number of Bits for Host Part (0=default) (16)
Change telnet config password (N) N
```

IP Address

The IP address must be set to a unique value in your network. If the IP address has not been assigned by DHCP, enter it manually. Enter each octet, pressing **Enter** after each.

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.

Netmask

A netmask defines the number of bits taken from the IP address for the host section. The host section is the part of the IP address that is specific to the UDS.

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

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

Table 5-1. Netmask Examples

Netmask	Host Bits
255.255.255.252	2
255.255.255.248	3
255.255.255.240	4
255.255.255.224	5
255.255.255.192	6
255.255.255.128	7
255.255.255.0	8
255.255.254.0	9
255.255.252.0	10
255.255.248.0	11
...	...
255.128.0.0	23
255.0.0.0	24

Change Telnet configuration password

Setting the Telnet configuration password prevents unauthorized access to Setup Mode using a Telnet connection to port 9999 or using Web pages. The password is limited to 4 characters. An enhanced password setting of 16 characters is available under Security Settings for Telnet access only.

Note: No password is required to access the Setup Mode using a serial connection.

DHCP Naming

A DHCP name is a unique identifier used for managing multiple DHCP hosts on a network. Your unit ships with a default DHCP name of Cxxxxxx, where xxxxxx is the last six digits of the Mac address.

You can change the DHCP name (up to eight characters) when configuring the server in Setup Mode. Change the DHCP name to LTXdd, where 0.0.0.dd is the IP

address assigned (dd should be a number between 1 and 99). For example, if the IP address is set to 0.0.0.5, the resulting DHCP name is LTX05.

If you give the unit an IP of 0.0.0.0, you then have the option to assign an 8-character DHCP name.

Figure 5-4. Server Configuration Option

```
Change DHCP device name (LTRX) ? (N) Y
Enter new DHCP device name : LTRXYES
```

Channel 1 Configuration (Serial Port Settings)

Note: Some fields require entries in hexadecimal notation. A simple way to convert a binary number to a hexadecimal is to use a scientific calculator, such as the one available in Windows. For more information, see [B: Binary to Hexadecimal Conversions](#).

Select **1** from the Change Setup menu to define how the serial port responds to network and serial communications.

The rest of this section describes the configurable settings within the Channel configuration menu. Current values display in parentheses.

Figure 5-5. Channel 1 Configuration

```
Change Setup:
0 Server configuration
1 Channel 1 configuration
2 Channel 2 configuration
5 Expert settings
6 Security
7 Factory defaults
8 Exit without save
9 Save and exit          Your choice ? 1

Baudrate (9600) ?
I/F Mode (4C) ?
Flow (00) ?
Port No (10001) ?
ConnectMode (C0) ?
Remote IP Address : (000) .(000) .(000) .(000)
Remote Port (0) ?
DisConnMode (00) ?
FlushMode (00) ?
DisConnTime (00:00) ? :
SendChar 1 (00) ?
SendChar 2 (00) ?
```

Baudrate

The unit and attached serial device, such as a modem, must agree on a speed or baud rate to use for the serial connection. Valid baud rates are 300, 600, 1200, 2400, 4800, 9600 (default), 19200, 38400, 57600, and 115200 bits per second.

I/F (Interface) Mode

The Interface (I/F) Mode is a bit-coded byte that you enter in hexadecimal notation.

Note: To look up hex values, see [B: Binary to Hexadecimal](#).

The following table displays available I/F Mode options:

Table 5-2. Interface Mode Options

I/F Mode Option	Bit 7	6	5	4	3	2	1	0
RS-232C							0	0
RS-422/485							0	1
RS-485 2-wire							1	1
7 Bit					1		0	
8 Bit					1		1	
No Parity			0		0			
Even Parity			1		1			
Odd Parity			0		1			
1 Stop bit		0		1				
2 Stop bit		1		1				

The following table demonstrates how to build some common Interface Mode settings:

Table 5-3. Common Interface Mode Settings

Common I/F Mode Setting	Binary	Hex
RS-232C, 8-bit, No Parity, 1 stop bit	0100 1100	4C
RS-232C, 7-bit, Even Parity, 1 stop bit	0111 1000	78
RS-485 2-Wire, 8-bit, No Parity, 1 stop bit	0100 1111	4F
RS-422, 8-bit, Odd Parity, 1 stop bit	0101 1101	5D

Flow

Flow control sets the local handshake method for stopping serial input/output. Use the following table to select flow control options:

Table 5-4. Flow Control Options

Flow Control Option	Hex
No flow control	00
XON/XOFF flow control	01
Hardware handshake with RTS/CTS lines	02
XON/XOFF pass characters to host	05

Port Number

The Port Number setting represents the source port number in TCP connections. It is the number that identifies the channel for remote initiating connections. To send data to channel 1, send TCP/UDP packets to this port number.

The default settings are 10001 for port 1 and 10002 for port 2. The range is 1-65535, except for the following reserved port numbers:

Table 4-5. Reserved Port Numbers

Port Numbers	Reserved for
1 – 1024	Reserved (well known ports)
9999	Telnet setup
30718	Reserved (77FEh)

Warning: We recommend that you not use the reserved port numbers for this setting as incorrect operation may result.

Use port 0 for the outgoing local port to change with each connection. The port range is 50,000 to 59,999. Each subsequent connection increments the number by 1. (When the port number reaches 59999, it wraps around to 50000.)

Only use the automatic port increment feature to initiate a connection using TCP. Set the port to a non-zero value when the unit is in a passive mode or when you are using UDP instead of TCP.

Connect Mode

Connect Mode defines how the unit makes a connection, and how it reacts to incoming connections over the network. Enter Connect Mode options in hexadecimal notation.

Note: To look up hex values, see [B: Binary to Hexadecimal](#).

Table 5-5. Connect Mode Options

Connect Mode Option	Bit 7	6	5	4	3	2	1	0
Incoming Connection								
Never accept incoming	0	0	0					
Accept incoming with DTR	0	1	0					
Accept unconditional	1	1	0					
Response								
Nothing (quiet)					0			
Character response (C=conn, D=disconn, N=unreachable)					1			
Startup								
No active startup					0	0	0	0
With any character					0	0	0	1
With active DTR					0	0	1	0
With a specific start character					0	0	1	1
Manual connection					0	1	0	0
Autostart					0	1	0	1
Hostlist	0	0	1	0				
Datagram Type								
Directed UDP					1	1	0	0
Modem Mode								
Full Verbose					1	0	1	1
Without Echo					0	0	1	1
Numeric modem result codes					1	0	1	1

Manual Connection

The UDS attempts to connect when directed by a command string received from the serial port. The first character of the command string must be a **C** (ASCII 0x43), and the last character must be either a carriage return (ASCII 0x0D) or a line feed (0x0A). No blanks or space characters may be in the command string. Between the first and last command string characters must be a full or partial destination IP address and may include a destination port number.

The IP address must be in standard dot-decimal notation and may be a partial address, representing the least significant 1, 2, or 3 bytes of the remote IP address. A period is required between each pair of IP address numbers.

If present, the port number must follow the IP address, be a decimal number in the range 1-65535, and be preceded by a forward slash (ASCII 0x2F). The slash separates the IP address and the port number. If you omit the port number from a command string, the internally stored remote port number starts a connection.

If a command string contains a partial IP address, the UDS interprets the command string as the least significant bytes of the IP address and uses the internally stored remote IP address to provide the most significant bytes of the IP address.

If the IP address entered is 0.0.0.0/0, the device server enters Monitor Mode.

For example, if the remote IP address already configured in the unit is 129.1.2.3, then an example command string would be C3/7. (This would connect to 129.1.2.3 and port 7.) You may also use a different ending for the connection string. For example, C50.1/23 would connect you to 129.1.50.1 and port 23.

Table 5-6. Manual Connection Address Example

Command String	Result if remote IP is 129.1.2.3 and remote port is 1234
C121.2.4.5/1	Complete override; connection is started with host 121.2.4.5, port 1
C5	Connect to 129.1.2.5, port 1234
C28.10/12	Connect to 129.1.28.10, port 12

Autostart (Automatic Connection): If you enable autostart, the unit automatically connects to the remote IP address and remote port specified.

Datagram Type: When you select this option, the unit prompts for the datagram type. Enter **01** for directed or broadcast UDP.

Hostlist: If you enable this option, the Lantronix unit scrolls through the hostlist until it connects to a device listed in the hostlist table. Once it connects, the unit stops trying to connect to any others. If this connection fails, the unit continues to scroll through the table until it connects to another IP in the hostlist. Only Channel 1 supports the hostlist option.

Figure 5-6. Hostlist Option

```

Change Setup:
0 Server configuration
1 Channel 1 configuration
2 Channel 2 configuration
5 Expert settings
6 Security
7 Factory defaults
8 Exit without save
9 Save and exit          Your choice ? 1

Baudrate (9600) ?
I/F Mode (4C) ?
Flow (00) ?
Port No (10001) ?
ConnectMode (C0) ?25

Hostlist :

No Entry !

Change Hostlist ? (N) Y
01. IP address : (000) 172.(000) 19.(000) 23.(000) 11      Port : (0) ?23
02. IP address : (000) .(000) .(000) .(000)

Hostlist :
01. IP : 172.019.023.011  Port : 00023

Change Hostlist ? (N) N

Hostlist Retrycounter (3) ?
Hostlist Retrytimeout (250) ?
DisConnMode (00) ?
FlushMode (00) ?
DisConnTime (00:00) ? :
SendChar 1 (00) ?
SendChar 2 (00) ?

```

To use the hostlist option, follow these steps:

1. To enable the hostlist, enter a Connect Mode of 0x20 (**2X**). The menu shows you a list of current entries already defined in the product.
2. To delete, modify, or add an entry, select **Yes**. If you enter an IP address of 0.0.0.0, that entry and all others after it are deleted.
3. After completing the hostlist, repeat the previous step if necessary to edit the hostlist again.
4. For **Retrycounter**, enter the number of times the Lantronix unit should try to make a good network connection to a hostlist entry that it has successfully ARPed.
5. For **Retrytimeout**, enter the number of seconds the unit should wait before failing an attempted connection.

Modem (Emulation) Mode: In Modem Mode, the unit presents a modem interface to the attached serial device. It accepts AT-style modem commands, and handles the modem signals correctly.

Normally there is a modem connected to a local PC and a modem connected to a remote machine. A user must dial from the local PC to the remote machine, accumulating phone charges for each connection. Modem Mode allows you to replace modems with UDS units, and to use an Ethernet connection instead of a phone call. By not having to change communications applications, you avoid potentially expensive phone calls.

To select Modem Mode, set the Connect Mode to **C6** (no echo), **D6** (echo with full verbose), or **D7** (echo with 1-character response).

Note: *If the unit is in Modem Mode, and the serial port is idle, the unit still accepts network TCP connections to the serial port if Connect Mode is set to **C6** (no echo), **D6** (echo with full verbose), or **D7** (echo with 1-character response).*

- ◆ **Echo:** Refers to the echo of all of the characters entered in command mode; it does not mean to echo data that is transferred. Quiet Mode (no echo) refers to the modem not sending an answer to the commands received (or displaying what was typed).
- ◆ **Full Verbose:** The unit echoes modem commands and responds to a command with a message string.
- ◆ **1-Character Response:** The unit echoes modem commands and responds to a command with a single character response.

To disconnect a connection using Modem Mode commands:

1. Ensure the following:
 - ◆ There must be a 1-second guardtime (no data traffic) before sending +++.
 - ◆ There must not be a break longer than 1 second between +s.
 - ◆ There must be another 1-second guardtime after the last + is sent.
2. When the unit acknowledges with an **OK** to indicate that it is in command mode, enter **ATH** and press **Enter**. The command is echoed if echo is enabled. **ATH** is acknowledged by another **OK**.

Table 5-7. Modem Mode Commands

Modem Mode Command	Function
ATDTx.x.x.x,pppp or ATDTx.x.x.x/pppp	Makes a connection to an IP address (x.x.x.x) and a remote port number (pppp).
ATDTx.x.x.x	Makes a connection to an IP address (x.x.x.x) and the remote port number defined within the unit.
ATD0.0.0.0	Forces the unit into Monitor Mode if a remote IP address and port number are defined within the unit.
ATD	Forces the unit into Monitor Mode if a remote IP address and port number are not defined within the unit.
ATDx.x.x.x	Makes a connection to an IP address (x.x.x.x) and the remote port number defined within the unit.
ATH	Hangs up the connection (Entered as +++ATH).
ATDTx.x.x.x,pppp or ATDTx.x.x.x/pppp	Makes a connection to an IP address (x.x.x.x) and a remote port number (pppp).
ATS0=n	Enables or disables connections from the network going to the serial port: n=0 disables the ability to make a connection from the network to the serial port. n=1-9 enables the ability to make a connection from the network to the serial port. n>1-9 is invalid.
ATEn	Enables or disables character echo and responses: n=0 disables character echo and responses. n=1 enables character echo and responses.
ATVn	Enables 1-character response or full verbose: n=0 enables 1-character response. n=1 enables full verbose.

Note: The unit only recognizes these AT commands as single commands like ATE0 or ATV. It does not recognize; compound commands such as ATE0V1. All other AT commands with Modem Mode set to full verbose acknowledge with an OK, but the unit takes no action.

Remote IP Address

This is the destination IP address used with an outgoing connection.

Remote Port

The remote TCP port number must be set for the unit to make outgoing connections. This parameter defines the port number on the target host to which a connection is attempted.

Note: To connect an ASCII terminal to a host using the unit for login purposes, use the remote port number **23** (Internet standard port number for Telnet services).

Disconnect Mode

This option determines the conditions under which the unit causes a network connection to terminate. In DisConnMode, DTR drop either drops the connection or is ignored.

Note: To look up hex values, see [B: Binary to Hexadecimal](#).

Table 5-8. Disconnect Mode Options

Disconnect Mode Option	Bit 7	6	5	4	3	2	1	0
Disconnect with DTR drop	1							
Ignore DTRa	0							
Telnet mode and terminal type setup ¹		1						
Channel (port) password ²				1				
Hard disconnect ³					0			
Disable hard disconnect					1			
State LED off with connection ⁴								1
Disconnect with EOT (^D) ⁵			1					

1. The UDS sends the "Terminal Type" upon an outgoing connection.
2. A password is required for a connection to the serial port from the network.
3. The TCP connection closes even if the remote site does not acknowledge the disconnection.
4. When there is a network connection to or from the serial port, the state LED turns off instead of blinking.
5. When Ctrl D or Hex 04 is detected, the connection is dropped. Both Telnet mode and Disconnect with EOT must be enabled for Disconnect with EOT to function properly. Ctrl D is only detected going from the serial port to the network.

Flush Mode

Flush Mode (buffer flushing) controls line handling and network buffers with connection startup and disconnect. You can select between two different packing algorithms.

Note: To look up hex values, see [B: Binary to Hexadecimal](#).

Available Flush Mode options are:

Table 5-9. Flush Mode Options

Function	Bit 7	6	5	4	3	2	1	0
Input Buffer (Serial to Network)								
Clear with active connection (from serial)				1				
Clear with passive connection (from network)				1				
Clear with disconnect			1					
Output Buffer (Network to Serial)								
Clear with active connection (from serial)							1	
Clear with passive connection (from network)						1		
Clear with disconnect					1			
Alternate Packing Algorithm (Pack Control)								
Enable		1						

Pack Control

Two firmware-selectable packing algorithms define how and when the unit sends packets to the network. The standard algorithm is optimized for applications in which the unit is used in a local environment, allowing for very small delays for single characters while keeping the packet count low. The alternate packing algorithm minimizes the packet count on the network and is especially useful in applications in a routed Wide Area Network (WAN). Adjusting settings in this mode can economize the network data stream.

Pack control settings are enabled in Flush Mode. Set Pack Control to **00** if specific functions are not needed.

Note: To look up hex values, see [B: Binary to Hexadecimal](#).

Table 5-10. Pack Control Options

Option	Bit 7	6	5	4	3	2	1	0
Idle Time								
Force transmit: 12ms							0	0
Force transmit: 52ms							0	1
Force transmit: 250ms							1	0
Force transmit: 5sec							1	1
Trailing Characters								
None							0	0
One							0	1
Two							1	0
Send Characters								
2-Byte Send Character Sequence								1
Send Immediately After Send chars								1

Idle Time: Idle time to "Force transmit" defines how long the unit waits before sending accumulated characters. This wait period is between characters. If there is an idle period between characters equal to the Force transmit set, the UDS packages the serial data currently in the buffer and sends it to the network.

Trailing Characters: In some applications, CRC, Checksum, or other trailing characters follow the end-of-sequence character. This option helps to adapt frame transmission to the frame boundary.

Send Characters:

- ◆ If **2-Byte Send Character Sequence** is enabled, the unit interprets the sendchars as a 2-byte sequence. If this option is not enabled, the unit interprets them independently.
- ◆ If **Send Immediately After Send Characters** is not set, any characters already in the serial buffer are included in the transmission after the unit finds a "transmit" condition. With this option, the unit sends immediately after recognizing the transmit condition (sendchar or timeout).

Note: A transmission might occur if status information needs to be exchanged or an acknowledgment needs to be sent.

Disconnect Time (Inactivity Timeout)

Use Disconnect Time to set an inactivity timeout. The unit drops the connection if there is no activity on the serial line before the set time expires. Enter time in the following format: mm:ss, where m is the number of minutes and s is the number of seconds. To disable the inactivity timeout, enter **00:00**. Range is 0 (disabled) to 5999 seconds (99 minutes, 59 seconds). The default is 0.

Send Characters

Enter up to two characters in hexadecimal representation for the SendChar settings. If the unit receives a character on the serial line that matches one of these characters, it sends the character immediately, along with any awaiting characters, to the TCP connection. This action minimizes the response time for specific protocol characters on the serial line (for example, ETX, EOT). Setting the first SendChar to **00** disables the recognition of the characters. Alternatively, the unit can interpret two characters as a sequence (see [Pack Control](#) on page 32).

Telnet Terminal Type

This parameter displays only if the terminal type option is enabled in Disconnect Mode. If this option is enabled, use the terminal name for the Telnet terminal type. Enter only one name.

If the terminal type option is enabled, the unit also reacts to the EOR (end of record) and binary options used for applications like terminal emulation to IBM hosts.

Channel (Port) Password

This parameter displays only if the channel (port) password option is enabled in Disconnect Mode. If the option is enabled, set a password on the serial port.

Expert Settings

Note: Change these settings using Telnet or serial connections only, not Web Manager.

Caution: Only an expert should change these parameters. These changes have serious consequences.

Figure 5-7. Expert Settings Options

```
Change Setup:
0 Server configuration
1 Channel 1 configuration
2 Channel 2 configuration
5 Expert settings
6 Security
7 Factory defaults
8 Exit without save
9 Save and exit          Your choice ? 5

These parameters are for experts only
which definitely know the consequences of the changes.

TCP Keepalive time in s (1s - 65s; 0s=disable):  (45) ?
ARP Cache timeout in s (1s - 600s) :  (600) ?
```

TCP Keepalive time in s

This option defines how many seconds the unit waits during a silent connection before checking to see whether the currently connected network device is still on the network. If the unit does not receive a response, it drops that connection.

ARP Cache timeout in s

When the unit communicates with another device on the network, it adds an entry into its ARP table. The ARP Cache timeout option defines the number of seconds (1-600) the unit waits before timing out an entry in this table.

Security Settings

Change these settings using Telnet or serial connections only, not Web Manager.

Note: We recommend that you set security over the dedicated network or over the serial setup. If you set security over the network (Telnet 9999), someone else could capture these settings.

Caution: Disabling both Telnet Setup and Port 77FE prevents users from accessing the Setup Mode from the network.

Figure 5-8. Security Settings

```
Change Setup:
0 Server configuration
1 Channel 1 configuration
2 Channel 2 configuration
5 Expert settings
6 Security
7 Factory defaults
8 Exit without save
9 Save and exit          Your choice ? 6

Disable SNMP <N> N
SNMP Community Name <public>:
Disable Telnet Setup <N> N
Disable TFTP Firmware Update <N> N
Disable Port 77FEh <N> N
Disable Web Server <N> N
Disable ECHO ports <Y> Y
Enable Enhanced Password <N>
```

Disable SNMP

This setting disables the SNMP protocol on the unit to prevent SNMP management software from communicating with the UDS.

SNMP Community Name

This option changes the SNMP community name on the unit. This allows for ease of management, and possibly some security. If someone tries to violate security but

does not know what community to connect to, that person is unable to obtain the SNMP community information from the unit. The default is **public**.

Disable Telnet Setup

Caution: *Disabling both Telnet Setup and Port 77FE prevents users from accessing Setup Mode from the network.*

This setting defaults to the N (No) option. The Y (Yes) option disables access to Setup Mode by Telnet (port 9999). It only allows access locally using Web Manager and the serial port of the unit.

Disable TFTP Firmware Upgrade

This setting defaults to the N (No) option. The Y (Yes) option disables TFTP for network firmware upgrades. With this option, firmware upgrades can be performed only by using a *.hex file over the serial port of the unit.

Disable Port 77FE (Hex)

Caution: *Disabling both Telnet Setup and Port 77FE prevents users from accessing the Setup Mode from the network.*

DeviceInstaller, Web Manager, and custom programs use Port 77FE to configure the unit remotely. If required, disable this capability for security purposes.

The default setting is the N (No) option, which enables remote configuration. As a result, configure the unit by using DeviceInstaller, Web Manager, Telnet, or serial configuration.

The Y (Yes) option disables remote configuration and Web Manager.

Note: *the Y (Yes) option disables many of the GUI tools for configuring the unit, including Web Manager.*

Disable Web Setup

The Y (Yes) option disables the use of Web Manager. It disables browser-initiated sessions to port 80 on the UDS and configuration using HTTP. Port 80 is closed.

Disable ECHO Ports

Port 7 accepts Telnet and UDP connections. Whatever data is sent to this port is echoed back to the sender. This setting disables the use of the echo server that is built into the unit.

Enable Enhanced Password

This setting defaults to the N (No) option, which permits a 4-character password that protects the Setup Mode using Telnet and Web Manager. The Y (Yes) option allows an extended security password of 16-characters for protecting Telnet access.

Factory Default Settings

Select **7** to reset the unit's serial port to the factory default settings. The server configurations (IP address information) remain unchanged. The specific settings that this option changes are in the following list:

Channel 1 and Channel 2 Configuration Defaults

Baudrate	9600
I/F Mode	4C (1 stop bit, no parity, 8 bit, RS-232C)
Own TCP port number	10001
Connect Mode	C0 (always accept incoming connection; no active connection startup)
Hostlist retry counter	3
Hostlist retry timeout	250 (msec)
Start character	0x0D (CR)
All other settings	0

Expert Settings Defaults

TCP keepalive	45 (seconds)
ARP cache timeout	600 (seconds)

Security Settings Defaults

SNMP	Enabled
SNMP community name	public
Telnet setup	Enabled
TFTP download	Enabled
Port 77FEh	Enabled
Web Server	Enabled
ECHO	Disabled
Encryption	Disabled
Enhanced password	Disabled

Exiting Configuration Mode

To exit Setup Mode:

- ◆ To save all changes and reboot, select **9**. All values are stored in nonvolatile memory.
- ◆ To exit the configuration mode without saving changes or rebooting, select **8**.

6: Updating Firmware

Obtaining Firmware

You can obtain the most up-to-date firmware and release notes for the unit from the Lantronix Web site (<http://www.lantronix.com/>) or by using anonymous FTP (<ftp://ftp.lantronix.com/>).

Reloading Firmware

There are several ways to update the unit's internal operational code (**U200*.ROM** or **U200*.HEX**): using DeviceInstaller (the preferred way), TFTP, another unit, or a serial port. You can also update the unit's internal Web interface (**CBXW*.COB**) using TFTP or DeviceInstaller.

Using DeviceInstaller

After downloading the firmware to your computer, you can use DeviceInstaller to install it.

1. Download the updated firmware files from www.lantronix.com or <ftp://ftp.lantronix.com/> and store them in a subfolder on your computer.
2. Click the **Start** button on the Task Bar and select **Programs → Lantronix → DeviceInstaller → DeviceInstaller**. The DeviceInstaller window displays.
3. Click the **Search the network for devices** icon. The Search Network window displays.
4. Once located by DeviceInstaller, highlight the device in the device list and click the **Upgrade** button (which displays after you select the device). Select a custom installation by specifying the individual files and clicking **Next**.
5. Click the **Browse** button to select the location of the firmware file to load, and then click **Next**.
6. Select **Do not copy or replace any files** and click **Next**.

Note: *This option upgrades the firmware file (.ROM file) only, not the Web Manager files (.COB).*

7. Click **Next** again. The status of the upgrade displays in the window.
8. After the upgrade completes, click **Close**.

Using TFTP

Note: If you are running Windows NT or higher, you can simply enter the following command at the command prompt:

TFTP -i IP address of UDS PUT source file name destination file name

It is easiest to issue the command from the same directory as the one where the firmware files are located.

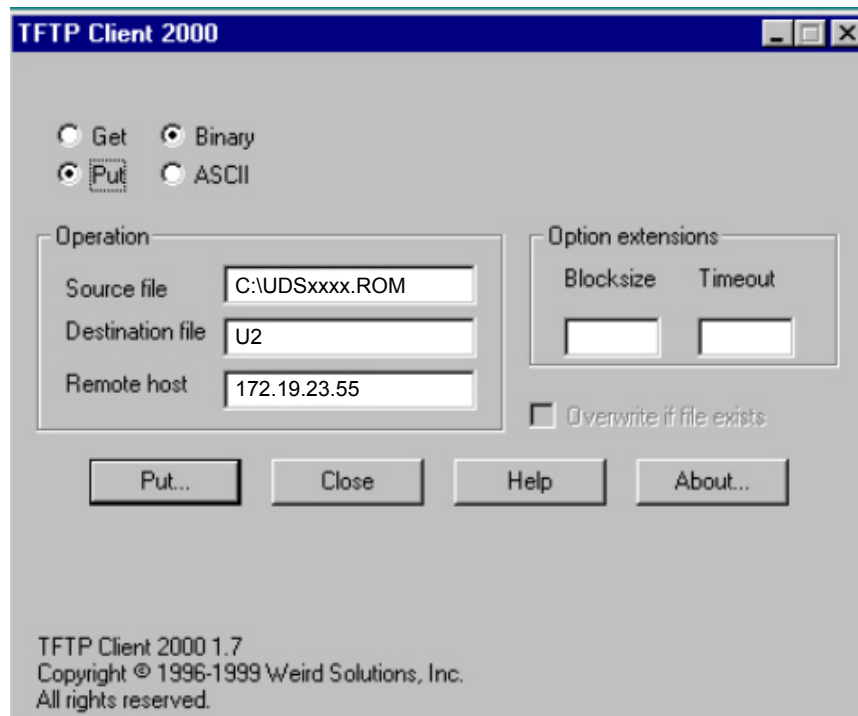
To download new firmware using a TFTP client:

1. Use a TFTP client to send a binary file (**UDS*.ROM**) to the unit to upgrade the unit's internal operational code, and **cbx***.cob** to upgrade its internal Web interface).

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

2. Make sure the **Put** and **Binary** options at the top of the window are selected.
3. Enter the full path of the firmware file in the **Source File** field.
4. In the **Destination File** field, type **U2** for the internal operational code and **WEB6** for the internal Web interface.
5. In the **Remote Host** field, enter the IP address of the unit.
6. Click the **Put** button to transfer the file to the unit.

Figure 6-1. TFTP Dialog Box



The unit performs a power reset after the firmware has been loaded and stored.

Using Another Unit

To distribute firmware to another unit over the network:

1. Enter the host unit's Monitor Mode (see [Entering Monitor Mode Using the Serial Port](#) on page 41).
2. Send the firmware to the receiving unit using the **SF** command, where x.x.x.x is the receiving unit's IP address.

Figure 6-2. Sending Firmware to another Unit

```
SF x.x.x.x
```

After loading and storing the firmware, the receiving unit performs a power reset

Note: You can only update your unit's internal Web interface using TFTP or DeviceInstaller.

Using the Serial Port

The following procedure is for using the HyperTerminal software application. This procedure takes about 10 minutes.

Note: Do not switch off the power supply during the update. A loss of power while reprogramming will result in a corrupt program image and a nonfunctional unit.

To download firmware from a computer using the unit's serial port:

1. Enter Monitor Mode using the serial port (see [7: Using Monitor Mode](#)).
2. Download the firmware to the unit using the **DL** command.
3. Select **Send Text File** and select the **U200*.HEX** file to be downloaded. The downloaded file must be the **.HEX** (ASCII) version.
4. After receiving the final record, the unit checks the integrity of the firmware image before programming the new firmware in the flash ROM. The following message displays when the firmware upgrade is complete.

Figure 6-3. Firmware Upgrade Screen Display

```
*** NodeSet 2.0 ***
0>DL
02049 lines loaded.
```


Note: *You can only update your unit's internal Web interface using TFTP or DeviceInstaller.*

7: Using Monitor Mode

Monitor Mode is a command line interface used for diagnostic purposes. There are two ways to enter Monitor Mode: locally using the serial port or remotely using the network.

Entering Monitor Mode Using the Serial Port

To enter Monitor Mode locally, follow the same principles used in setting the serial configuration settings:

1. Do one of the following:
 - ◆ To enter Monitor Mode with network connections, type **xx1** or **zzz** (not three x keys as you did before).
 - ◆ To enter Monitor Mode without network connections, type **xx2** or **yyy**.

A **0>** prompt indicates that you have successfully entered Monitor Mode.

Entering Monitor Mode Using the Network

To enter Monitor Mode using a Telnet connection:

1. First establish a Telnet session. The following message displays:

Figure 7-1. Entering Monitor Mode Using the Network

```
*** Lantronix Device Server ***  
MAC address 00204A08A174  
Software version 05.2 (040402)  
  
Press Enter to go into Setup Mode
```

2. Type **M** (upper case).

A **0>** prompt indicates that you have successfully entered Monitor Mode.

Using Monitor Mode Commands

The following commands are available in Monitor Mode. Many commands have an IP address as an optional parameter (x.x.x.x). If the IP address is given, the command is applied to another unit with that IP address. If no IP address is given, the command is executed locally.

Note: All commands must be in capital letters, with blank spaces between the settings.

Table 7-1. Monitor Mode Commands

Command	Command Name	Function
SF x.x.x.x	Send Firmware	Sends firmware to unit with IP address x.x.x.x.
VS x.x.x.x	Version	Queries software header record (16-byte) of unit with IP address x.x.x.x.
GC x.x.x.x	Get Configuration	Gets configuration of unit with IP address x.x.x.x as hex records.
SC x.x.x.x	Send Configuration	Sets configuration of unit with IP address x.x.x.x from hex records.
PI x.x.x.x	Ping	Pings unit with IP address x.x.x.x to check device status.
AT	ARP Table	Shows the unit's ARP table entries.
TT	TCP Connection Table	Shows all incoming and outgoing TCP connections.
NC	Network Connection	Shows the unit's IP configuration.
RS	Reset	Resets the unit's power.
QU	Quit	Exits diagnostics mode.
G0, G1...GE, GF	Get configuration from memory page	Gets a memory page of configuration information from the device.
S0, S1... SE, SF	Set configuration to memory page	Sets a memory page of configuration information on the device.

Entering any of the commands listed above generates one of the following command response codes:

Table 7-2. Command Response Codes

Response	Meaning
0>	OK; no error
1>	No answer from remote device
2>	Cannot reach remote device or no answer
8>	Wrong parameter(s)
9>	Invalid command

8: Troubleshooting and Technical Support

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.

LEDs

The UDS200 contains the following LEDs, which may help you diagnose problems.

- ◆ Power
- ◆ 10 Mbps Link/Activity (green)
- ◆ 100 Mbps Link/Activity (green)
- ◆ Diagnostics (red)
- ◆ Status Channel 1 (green)
- ◆ Status Channel 2 (green)

Simultaneously lit red and green LEDs mean something is wrong. If the red LED is lit or blinking, count the number of times the green LED blinks between its pauses. The following table explains the LED functions:

Table 8-1. UDS200 LEDs

LEDs	Meaning
10 Mbps link/activity steady green	Valid 10 Mbps network connection
10 Mbps link/activity blinking	Network packets transmitting and receiving
100 Mbps link/activity steady green	Valid 100 Mbps network connection
100Mbps link/activity blinking	Network packets transmitting and receiving
Diagnostic steady red and status blinking green	2 blinks = RAM error 4 blinks = EEPROM checksum error 5 blinks = Duplicate IP address on network
Diagnostic blinking red and status blinking green	5 blinks = No DHCP response
Status steady green	Serial port not connected to network
Status blinking green	Serial port connected to network

Problems and Error Messages

Notes:

- ◆ When troubleshooting the following problems, make sure that the UDS is powered up and the Link LED is lit solid green. If the Link LED is not lit, then the physical network connection is bad. Confirm that you are using a good network connection.
- ◆ We recommend that you use a serial connection so you can view any diagnostic information sent out the serial port.

Table 8-2. Problems and Error Messages

Problem/Message	Reason	Solution
When you issue the ARP -S command in Windows, <i>The ARP entry addition failed: 5</i> 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 attempted to assign an IP address to the UDS using the ARP method, the <i>Press Enter to go into Setup Mode</i> error (described below) displayed. Now when you Telnet to the UDS, the connection fails.	When you Telnet into port 1 on the UDS, you are only assigning a temporary IP address. When you Telnet into port 9999 and do not press Enter quickly, the UDS reboots, causing it to lose the IP address.	Telnet back into 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 message <i>Press Enter to go into Setup Mode</i> displays. However, nothing happens when you press Enter , or your connection closes.	You did not press Enter quickly enough. You only have 5 seconds to press Enter before the connection closes.	Telnet to port 9999 again, but press Enter as soon as you see the message <i>Press Enter to go into Setup Mode</i> .

Problem/Message	Reason	Solution
When you Telnet to port 1 to assign an IP address to the UDS, 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 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, use dashes to separate the segments of the Ethernet address. In some forms of Unix, use colons to separate the segments of the Ethernet address.
	The IP address you are trying to assign is not on your logical subnet.	Confirm that your PC has an IP address and that it is in the same logical subnet that you are trying to assign to the UDS.
	The UDS may not be plugged into the network properly.	Make sure that the Link LED is lit. If the Link LED is not lit, then the UDS is not properly plugged into the network.
When you try to assign an IP with DeviceInstaller, you get the following message: <i>No device was found at this hardware address.</i>	The cause is most likely one of the following:	Double-check the settings that you specified.
	The Hardware address you specified is incorrect.	Note: You cannot assign an IP address to a UDS through a router.
	The device is not physically connected to the network.	
No LEDs are lit.	The unit or its power supply is damaged, or the unit is not plugged into power properly.	Try plugging the UDS into another outlet. If this does not fix the problem, contact your dealer or Lantronix Technical Support for a replacement.
The UDS does not power up properly, and the LEDs are flashing.	Various	Consult the LEDs section above or the Quick Start for the LED flashing sequence patterns. Call Lantronix Technical Support if the blinking pattern indicates a critical error.

Problem/Message	Reason	Solution
The UDS is not communicating with tan attached serial device.	The most likely reason is the wrong serial cable or serial settings were chosen.	<p>Make sure that you are using the correct serial cable. The UDS serial port is just like a modem serial port (DCE). The serial settings for the serial device and the UDS must match.</p> <p>The default serial settings for the UDS are RS232, 9600 baud, 8 character bits, no parity, 1 stop bit, no flow control.</p>
When you try to enter Setup Mode on the UDS using the serial cable, you get no response.	The issue is likely something covered in the previous problem, or possibly you have Caps Lock on.	Double-check everything in the problem above. Confirm that Caps Lock is not on.
You can ping the UDS, but not Telnet to the UDS on port 9999.	<p>There may be an IP address conflict on your network.</p> <p>You are not Tenting to port 9999.</p> <p>The Telnet configuration port (9999) is disabled within the UDS security settings.</p> <p>The unit may have the correct IP address, but an incorrect gateway address.</p>	<p>Turn the UDS off and then issue the following commands at the DOS prompt of your computer:</p> <p>ARP -D X.X.X.X (X.X.X.X is the IP of the UDS)</p> <p>PING X.X.X.X (X.X.X.X is the IP of the UDS).</p> <p>If you get a response, then there is a duplicate IP address on the network (the LEDs on the UDS should flash a sequence that tells you this). If you do not get a response, use the serial port to verify that Telnet is not disabled.</p>
With DeviceInstaller, you get the <i>Wrong Password</i> error when you try to upgrade the firmware.	The file you are attempting to load is the incorrect firmware file for the UDS.	Download the correct firmware file from the Lantronix website.

Problem/Message	Reason	Solution
You are using the correct serial cable, and the UDS is set up correctly, but you are not communicating with your device attached to the UDS across the network.	If you are sure that the serial cable is correct, then you may not be connecting to the correct socket of the UDS.	You can check to see whether there is a socket connection to or from the UDS by looking at the Status LED.
	Another possibility is that the UDS is not set up correctly to make a good socket connection to the network.	If the Status LED is blinking consistently, then there is a good socket connection. If the Status LED is solid green, then the socket connection does not exist. Use the Connect Mode option C0 for making a connection to the UDS from the network. Use Connect Mode option C1 or C5 for a connection to the network from the UDS. See the full list of Connect Mode hexadecimals in B: Binary to Hexadecimal .
When connecting to Web Manager within the UDS, the message <i>No Connection With The UDS</i> displays.	Your computer is not able to connect to port 30718 (77FEh) on the UDS.	Make sure that port 30718 (77FEh) is not blocked with any router that you are using on the network. Also make sure that port 77FEh is not disabled within the Security settings of the UDS.

Technical Support

If you are unable to resolve an issue using the information in this documentation, please contact Technical Support:

Technical Support US

Check our online knowledge base or send a question to Technical Support at <http://www.lantronix.com/support>.

Technical Support Europe, Middle East, Africa

Phone: +33 1 39 30 41 72

Email: eu_techsupp@lantronix.com or eu_support@lantronix.com

Firmware downloads, FAQs, and the most up-to-date documentation are available at <http://www.lantronix.com/support>

When you report a problem, please provide the following information:

- ◆ Your name, and your company name, address, and phone number
- ◆ Lantronix model number
- ◆ Lantronix serial number

- ◆ Software version (on the first screen shown when you Telnet to the device and type **show**)
- ◆ Description of the problem
- ◆ Debug report (stack dump), if applicable
- ◆ Status of the unit when the problem occurred (please try to include information on user and network activity at the time of the problem)

9: Technical Specifications

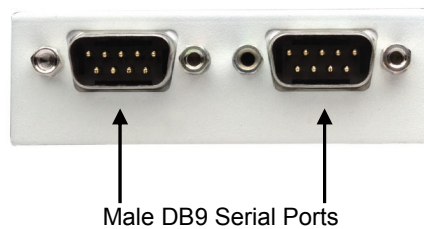
CPU, Memory	Lantronix DSTni-LX 186 CPU, 48 MHz 1 MByte FLASH ROM 256 Kbytes zero wait state RAM
Serial Interface	2 Male DB9 Connectors (DTE pinout) Speed software selectable (300 to 115 kBaud) RS-232C
Network Interface	10/100 RJ45 Ethernet
Power Supply	External adapter included 120 VAC USA 100 - 240 VAC Universal with regional connectors
Power Input	9-30 VDC or 9-24 VAC (2W maximum)
Dimensions	Height: 2.3 cm (0.9 in)
UDS200	Width: 7.3 cm (2.87 in)
	Depth: 9.5 cm (3.74 in)
Weight UDS200	0.35 Kg (0.8 lbs)
Temperature	Operating range: 5° to 50° C (41° to 122° F) Storage range: -40° to 66° C (-40° to 151° F)
Relative Humidity	Operating: 10% to 90% non-condensing, 40% to 60% recommended Storage: 10% to 90% non-condensing

10: Connections and Pinouts

UDS200 Serial Ports

The UDS200 has two male DB9 DTE serial ports that support RS-232 serial standards up to 115 Kbps.

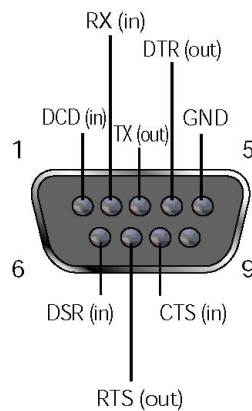
Figure 10-1. Serial Interface



Serial Connector Pinouts

The unit's Male DB9 connector provides an RS-232C interface as would be found on most modern computers. The default serial port settings are 9600 baud, 8 bits, no parity, 1 stop bit, no flow control.

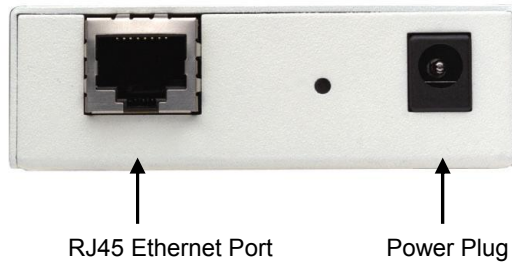
Figure 10-2. DB9 Male RS232 Serial DTE Connector



Network Port

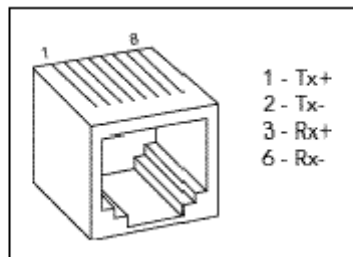
The unit's back panel contains a 9-30 VDC power plug and an RJ45 (10/100) Ethernet port.

Figure 10-3. Network Interface



Ethernet Connector Pinouts

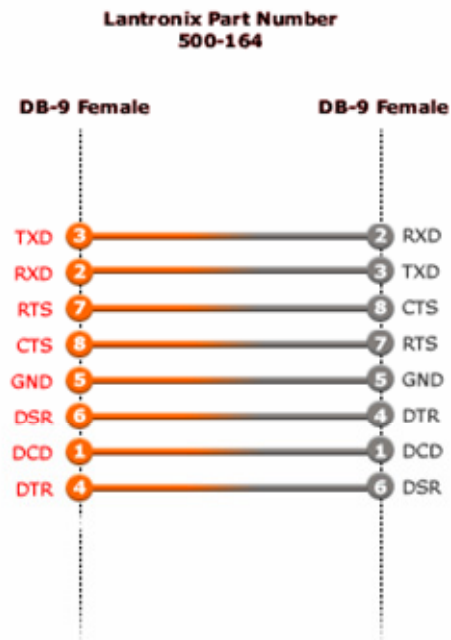
Figure 10-4. RJ45 Ethernet Connector



Null-Modem Cable

When attaching the DB9 of the UDS to the DB9 com port on a PC, use a null-modem cable (Lantronix Part No. 500-164). The figure below shows the pinouts for a DB9 to DB9 null-modem cable. To configure the UDS using the DB9 serial port, you only need to pinout the TXD, RXD, and GND signals.

Figure 10-5. Null-Modem Cable (Lantronix Part No. 500-164)



A: Alternative Ways to Assign an IP Address

Earlier chapters describe how to assign a static IP address using DeviceInstaller, Web Manager, and Setup Mode (through a Telnet or serial connection). This section covers other methods for assigning an IP address over the network.

DHCP

The unit ships with a default IP address of 0.0.0.0, which automatically enables DHCP. If a DHCP server exists on the network, it provides the unit with an IP address, gateway address, and subnet mask when the unit boots up.

You can use the DeviceInstaller software to search the network for the DHCP-assigned IP address and add it to the list of devices retrieved.

Note: This DHCP address does **not** appear in the unit's Setup Mode or in Web Manager. You can determine your unit's DHCP-assigned IP address in Monitor Mode. When you enter Monitor Mode from the serial port with network connection enabled and issue the **NC** (Network Communication) command, you see the unit's IP configuration.

AutoIP

The unit ships with a default IP address of 0.0.0.0, which automatically enables Auto IP within the unit. AutoIP is an alternative to DHCP that allows hosts to obtain an IP address automatically in smaller networks that may not have a DHCP server. A range of IP addresses (from 169.254.0.1 to 169.254.255.1) has been explicitly reserved for AutoIP-enabled devices. Do not use this range of Auto IP addresses over the Internet.

- ◆ If your unit cannot find a DHCP server, and you have not manually assigned an IP address to it, the unit automatically selects an address from the AutoIP reserved range. Then, your unit sends out a (ARP) request to other nodes on the same network to see whether the selected address is being used.
- ◆ If the selected address is not in use, then the unit uses it for local subnet communication.
- ◆ If another device is using the selected IP address, the unit selects another address from the AutoIP range and reboots. After reboot, the unit sends out another ARP request to see if the selected address is in use, and so on.

AutoIP does not replace DHCP. The unit continues to look for a DHCP server on the network. If it finds a DHCP server, the unit switches to the DHCP server-provided address and reboots.

Note: If the unit finds a DHCP server, but the server denies the request for an IP address, the unit does not attach to the network, but waits and retries.

You can disable AutoIP by setting the unit's IP address to 0.0.1.0. This setting enables DHCP but disables AutoIP.

BOOTP

Similar to DHCP, but for smaller networks. Automatically assigns the IP address for a specific duration of time.

ARP and Telnet

If the unit has no IP address, you can use Address Resolution Protocol (ARP) method from UNIX and Windows-based systems to assign a temporary IP address.

To assign a temporary IP address:

1. On a UNIX or Windows-based host, create an entry in the host's ARP table using the intended IP address and the hardware address of the unit (on the product label on the bottom of the unit).

```
arp -s 191.12.3.77 00:20:4a:xx:xx:xx
```

Note: For the ARP command to work on Windows 95, the ARP table on the PC must have at least one IP address defined other than its own.

2. If you are using Windows 95, type **ARP -A** at the DOS command prompt to verify that there is at least one entry in the ARP table. If the local machine is the only entry, ping another IP address on your network to build a new entry in the ARP table; the IP address must be a host other than the machine on which you are working. Once there is at least one additional entry in the ARP table, use the following command to ARP an IP address to the unit:

```
arp -s 191.12.3.77 00-20-4a-xx-xx-xx
```

3. Open a Telnet connection to port 1. The connection fails quickly, but the unit temporarily changes its IP address to the one designated in this step.

```
telnet 191.12.3.77 1
```

4. Open a Telnet connection to port 9999, and press **Enter** within **five seconds** to go into Setup Mode. If you wait longer than five seconds, the unit reboots.

```
telnet 191.12.3.77 9999
```

Note: The IP address you just set is temporary and reverts to the default value when the unit's power is reset, unless you configure the unit with a static IP address and store the changes permanently.

B: Binary to Hexadecimal Conversions

Many of the unit's configuration procedures require you to assemble a series of options (represented as bits) into a complete command (represented as a byte). The resulting binary value must be converted to a hexadecimal representation.

Use this chapter to learn to convert binary values to hexadecimal or to look up hexadecimal values in the tables of configuration options. The tables include:

- ◆ Connect Mode Options
- ◆ Disconnect Mode Options
- ◆ Flush Mode (Buffer Flushing) Options
- ◆ Interface Mode Options
- ◆ Pack Control Options

Converting Binary to Hexadecimal

Following are two simple ways to convert binary numbers to hexadecimal notation.

Conversion Table

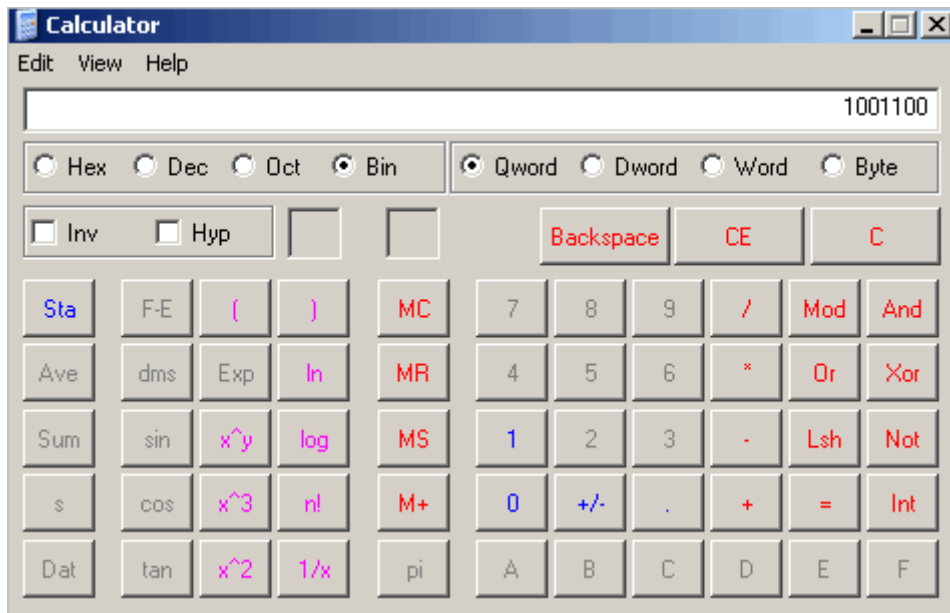
Hexadecimal digits have values ranging from 0 to F, which are represented as 0-9, A (for 10), B (for 11), etc. To convert a binary value (for example, 0100 1100) to a hexadecimal representation, treat the upper and lower four bits separately to produce a two-digit hexadecimal number (in this case, 4C). Use the following table to convert values from binary to hexadecimal.

Decimal	Binary	Hex
0	0000	0
1	0001	1
2	0010	2
3	0011	3
4	0100	4
5	0101	5
6	0110	6
7	0111	7
8	1000	8
9	1001	9
10	1010	A
11	1011	B
12	1100	C
13	1101	D
14	1110	E
15	1111	F

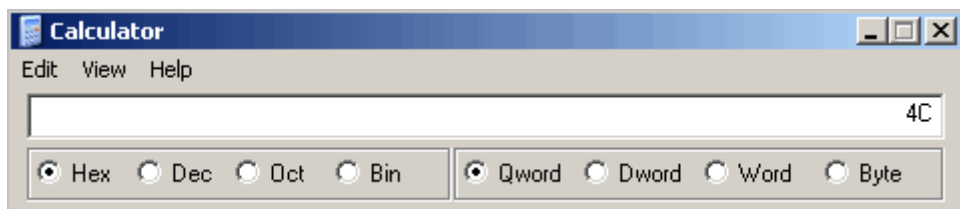
Scientific Calculator

Another simple way to convert binary to hexadecimal is to use a scientific calculator, such as the one available on Windows' operating systems. For example:

1. On the Windows' Start menu, click **Programs→Accessories→Calculator**.
2. On the View menu, select **Scientific**. The scientific calculator displays.
3. Click **Bin** (Binary), and type the number you want to convert.



4. Click **Hex**. The hexadecimal value displays.



Connect Mode Options

Note: Character response codes are C=conn, D=disconn, N=unreachable

Connect Mode Options				
Accept Incoming Connections	Serial Response Upon Connection	Active Connection Startup	Hostlist	Hex
Never	None (quiet)	No active startup		N/A
Never	None (quiet)	Any character		1
Never	None (quiet)	Active DSR		2
Never	None (quiet)	CR (0x0D)		3
Never	None (quiet)	Manual connection		4
Never	None (quiet)	Autostart		5
Never	None (quiet)	UDP		C
Never	Character	No active startup		10
Never	Character	Any character		11
Never	Character	Active DSR		12
Never	Character	CR (0x0D)		13
Never	Character	Manual connection		14
Never	Character	Autostart		15
Never	Character	UDP		1C
With DSR	None (quiet)	No active startup		40
With DSR	None (quiet)	Any character		41
With DSR	None (quiet)	Active DSR		42
With DSR	None (quiet)	CR (0x0D)		43
With DSR	None (quiet)	Manual connection		44
With DSR	None (quiet)	Autostart		45
With DSR	None (quiet)	UDP		4C
With DSR	Character	No active startup		50
With DSR	Character	Any character		51
With DSR	Character	Active DSR		52
With DSR	Character	CR (0x0D)		53
With DSR	Character	Manual connection		54
With DSR	Character	Autostart		55
With DSR	Character	UDP		N/A
Unconditionally	None (quiet)	No active startup		C0
Unconditionally	None (quiet)	Any character		C1
Unconditionally	None (quiet)	Active DSR		C2
Unconditionally	None (quiet)	CR (0x0D)		C3
Unconditionally	None (quiet)	Manual connection		C4
Unconditionally	None (quiet)	Autostart		C5
Unconditionally	None (quiet)	UDP		CC
Unconditionally	Character	No active startup		D0
Unconditionally	Character	Any character		D1
Unconditionally	Character	Active DSR		D2
Unconditionally	Character	CR (0x0D)		D3

Connect Mode Options				
Accept Incoming Connections	Serial Response Upon Connection	Active Connection Startup	Hostlist	Hex
Unconditionally	Character	Manual connection		D4
Unconditionally	Character	Autostart		D5
Unconditionally	Character	UDP		DC
Never	None (quiet)	No active startup	Hostlist	N/A
Never	None (quiet)	Any character	Hostlist	21
Never	None (quiet)	Active DSR	Hostlist	22
Never	None (quiet)	CR (0x0D)	Hostlist	23
Never	None (quiet)	Manual connection	Hostlist	N/A
Never	None (quiet)	Autostart	Hostlist	25
Never	None (quiet)	UDP	Hostlist	N/A
Never	Character	No active startup	Hostlist	N/A
Never	Character	Any character	Hostlist	31
Never	Character	Active DSR	Hostlist	32
Never	Character	CR (0x0D)	Hostlist	33
Never	Character	Manual connection	Hostlist	N/A
Never	Character	Autostart	Hostlist	35
Never	Character	UDP	Hostlist	N/A
With DSR	None (quiet)	No active startup	Hostlist	N/A
With DSR	None (quiet)	Any character	Hostlist	61
With DSR	None (quiet)	Active DSR	Hostlist	62
With DSR	None (quiet)	CR (0x0D)	Hostlist	63
With DSR	None (quiet)	Manual connection	Hostlist	N/A
With DSR	None (quiet)	Autostart	Hostlist	65
With DSR	None (quiet)	UDP	Hostlist	N/A
With DSR	Character	No active startup	Hostlist	N/A
With DSR	Character	Any character	Hostlist	71
With DSR	Character	Active DSR	Hostlist	72
With DSR	Character	CR (0x0D)	Hostlist	73
With DSR	Character	Manual connection	Hostlist	N/A
With DSR	Character	Autostart	Hostlist	75
With DSR	Character	UDP	Hostlist	N/A
Unconditionally	None (quiet)	No active startup	Hostlist	N/A
Unconditionally	None (quiet)	Any character	Hostlist	E1
Unconditionally	None (quiet)	Active DSR	Hostlist	E2
Unconditionally	None (quiet)	CR (0x0D)	Hostlist	E3
Unconditionally	None (quiet)	Manual connection	Hostlist	N/A
Unconditionally	None (quiet)	Autostart	Hostlist	E5
Unconditionally	None (quiet)	UDP	Hostlist	N/A
Unconditionally	Character	No active startup	Hostlist	N/A
Unconditionally	Character	Any character	Hostlist	F1
Unconditionally	Character	Active DSR	Hostlist	F2
Unconditionally	Character	CR (0x0D)	Hostlist	F3
Unconditionally	Character	Manual connection	Hostlist	N/A
Unconditionally	Character	Autostart	Hostlist	F5
Unconditionally	Character	UDP	Hostlist	N/A

The following connect mode options are for when you use modem emulation:

<u>Connect Mode Options for Modem Emulation</u>		
Accept Incoming Connections	Response	Hex
Never	Echo	16
Never	Without echo	6
Never	1-character response	7
With DSR	Echo	56
With DSR	Without echo	46
With DSR	1-character response	47
Unconditionally	Echo	D6
Unconditionally	Without echo	C6
Unconditionally	1-character response	C7

Disconnect Mode Options

<u>Disconnect Mode Options</u>						
Disconnect with DSR Drop	Telnet Mode and Terminal Type Setup	Channel (port) Password	Hard Disconnect	State LED Off with Connection	Disconnect with EOT (^D)	Hex
			Enable			0
		Enable	Enable			10
			Enable		Enable	20
		Enable	Enable		Enable	30
	Enable		Enable			40
	Enable	Enable	Enable			50
	Enable		Enable		Enable	60
	Enable	Enable	Enable		Enable	70
Enable			Enable			80
Enable		Enable	Enable			90
Enable			Enable		Enable	A0
Enable		Enable	Enable		Enable	B0
Enable	Enable		Enable			C0
Enable	Enable	Enable	Enable			D0
Enable	Enable		Enable		Enable	E0
Enable	Enable	Enable	Enable		Enable	F0
			Enable	Enable		1
		Enable	Enable	Enable		11
			Enable	Enable	Enable	21
		Enable	Enable	Enable	Enable	31
	Enable		Enable	Enable		41
	Enable	Enable	Enable	Enable		51
	Enable		Enable	Enable	Enable	61
	Enable	Enable	Enable	Enable	Enable	71
Enable			Enable	Enable		81
Enable		Enable	Enable	Enable		91
Enable			Enable	Enable	Enable	A1
Enable		Enable	Enable	Enable	Enable	B1
Enable	Enable		Enable	Enable		C1
Enable	Enable	Enable	Enable	Enable		D1
Enable	Enable		Enable	Enable	Enable	E1
Enable	Enable	Enable	Enable	Enable	Enable	F1
			Disable			8
		Enable	Disable			18
			Disable		Enable	28
		Enable	Disable		Enable	38
	Enable		Disable			48
	Enable	Enable	Disable			58
	Enable		Disable		Enable	68
	Enable	Enable	Disable		Enable	78
Enable			Disable			88
Enable		Enable	Disable			98

<u>Disconnect Mode Options</u>						
Disconnect with DSR Drop	Telnet Mode and Terminal Type Setup	Channel (port) Password	Hard Disconnect	State LED Off with Connection	Disconnect with EOT (^D)	Hex
Enable			Disable		Enable	A8
Enable		Enable	Disable		Enable	B8
Enable	Enable		Disable			C8
Enable	Enable	Enable	Disable			D8
Enable	Enable		Disable		Enable	E8
Enable	Enable	Enable	Disable		Enable	F8
			Disable	Enable		9
		Enable	Disable	Enable		19
			Disable	Enable	Enable	29
		Enable	Disable	Enable	Enable	39
	Enable		Disable	Enable		49
	Enable	Enable	Disable	Enable		59
	Enable		Disable	Enable	Enable	69
	Enable	Enable	Disable	Enable	Enable	79
Enable			Disable	Enable		89
Enable		Enable	Disable	Enable	Enable	99
Enable			Disable	Enable	Enable	A9
Enable		Enable	Disable	Enable	Enable	B9
Enable	Enable		Disable	Enable		C9
Enable	Enable	Enable	Disable	Enable		D9
Enable	Enable		Disable	Enable	Enable	E9
Enable	Enable	Enable	Disable	Enable	Enable	F9

Flush Mode (Buffer Flushing) Options

<u>Flush Mode Options</u>			
Serial to Network	Network to Serial	Alternate Packing Algorithm	Hex
Clear input buffer upon:	Clear output buffer upon:		
None			0
Active connection			10
Passive connection			20
Active connection Passive connection			30
Disconnect			40
Active connection Disconnect			50
Passive connection Disconnect			60
Active connection Passive connection Disconnect			70
		Enable	80
Active connection		Enable	90
Passive connection		Enable	A0
Active connection Passive connection		Enable	B0
Disconnect		Enable	C0
Active connection Disconnect		Enable	D0
Passive connection Disconnect		Enable	E0
Active connection Passive connection Disconnect		Enable	F0
	Active connection		1
Active connection	Active connection		11
Passive connection	Active connection		21
Active connection Passive connection	Active connection		31
Disconnect	Active connection		41
Active connection Disconnect	Active connection		51
Passive connection Disconnect	Active connection		61
Active connection Passive connection Disconnect	Active connection		71
	Active connection	Enable	81
Active connection	Active connection	Enable	91
Passive connection	Active connection	Enable	A1
Active connection Passive connection	Active connection	Enable	B1
Disconnect	Active connection	Enable	C1

Flush Mode Options			
Serial to Network	Network to Serial	Alternate Packing Algorithm	Hex
Clear input buffer upon:	Clear output buffer upon:		
Active connection Disconnect	Active connection	Enable	D1
Passive connection Disconnect	Active connection	Enable	E1
Active connection Passive connection Disconnect	Active connection	Enable	F1
	Passive connection		2
Active connection	Passive connection		12
Passive connection	Passive connection		22
Active connection Passive connection	Passive connection		32
Disconnect	Passive connection		42
Active connection Disconnect	Passive connection		52
Passive connection Disconnect	Passive connection		62
Active connection Passive connection Disconnect	Passive connection		72
	Passive connection	Enable	82
Active connection	Passive connection	Enable	92
Passive connection	Passive connection	Enable	A2
Active connection Passive connection	Passive connection	Enable	B2
Disconnect	Passive connection	Enable	C2
Active connection Disconnect	Passive connection	Enable	D2
Passive connection Disconnect	Passive connection	Enable	E2
Active connection Passive connection Disconnect	Passive connection	Enable	F2
	Active connection Passive connection		3
Active connection	Active connection Passive connection		13
Passive connection	Active connection Passive connection		23
Active connection Passive connection	Active connection Passive connection		33
Disconnect	Active connection Passive connection		43
Active connection Disconnect	Active connection Passive connection		53
Passive connection Disconnect	Active connection Passive connection		63
Active connection Passive connection Disconnect	Active connection Passive connection		73

Flush Mode Options			
Serial to Network	Network to Serial	Alternate Packing Algorithm	Hex
Clear input buffer upon:	Clear output buffer upon:		
	Active connection Passive connection	Enable	83
Active connection	Active connection Passive connection	Enable	93
Passive connection	Passive connection Active connection	Enable	A3
Active connection Passive connection	Active connection Passive connection	Enable	B3
Disconnect	Active connection Passive connection	Enable	C3
Active connection Disconnect	Active connection Passive connection	Enable	D3
Passive connection Disconnect	Active connection Passive connection	Enable	E3
Active connection Passive connection Disconnect	Active connection Passive connection	Enable	F3
	Disconnect		4
Active connection	Disconnect		14
Passive connection	Disconnect		24
Active connection Passive connection	Disconnect		34
Disconnect	Disconnect		44
Active connection Disconnect	Disconnect		54
Passive connection Disconnect	Disconnect		64
Active connection Passive connection Disconnect	Disconnect		74
	Disconnect	Enable	84
Active connection	Disconnect	Enable	94
Passive connection	Disconnect	Enable	A4
Active connection Passive connection	Disconnect	Enable	B4
Disconnect	Disconnect	Enable	C4
Active connection Disconnect	Disconnect	Enable	D4
Passive connection Disconnect	Disconnect	Enable	E4
Active connection Passive connection Disconnect	Disconnect	Enable	F4
	Active connection Disconnect		5
Active connection	Active connection Disconnect		15
Passive connection	Active connection Disconnect		25
Active connection Passive connection	Active connection Disconnect		35

Flush Mode Options			
Serial to Network	Network to Serial	Alternate Packing Algorithm	Hex
Clear input buffer upon:	Clear output buffer upon:		
Disconnect	Active connection Disconnect		45
Active connection Disconnect	Active connection Disconnect		55
Passive connection Disconnect	Active connection Disconnect		65
Active connection Passive connection Disconnect	Active connection Disconnect		75
	Active connection Disconnect	Enable	85
Active connection	Active connection Disconnect	Enable	95
Passive connection	Active connection Disconnect	Enable	A5
Active connection Passive connection	Active connection Disconnect	Enable	B5
Disconnect	Active connection Disconnect	Enable	C5
Active connection Disconnect	Active connection Disconnect	Enable	D5
Passive connection Disconnect	Active connection Disconnect	Enable	E5
Active connection Passive connection Disconnect	Active connection Disconnect	Enable	F5
	Passive connection Disconnect		6
Active connection	Passive connection Disconnect		16
Passive connection	Passive connection Disconnect		26
Active connection Passive connection	Passive connection Disconnect		36
Disconnect	Passive connection Disconnect		46
Active connection Disconnect	Passive connection Disconnect		56
Passive connection Disconnect	Passive connection Disconnect		66
Active connection Passive connection Disconnect	Passive connection Disconnect		76
	Passive connection Disconnect	Enable	86
Active connection	Passive connection Disconnect	Enable	96
Passive connection	Passive connection Disconnect	Enable	A6
Active connection Passive connection	Passive connection Disconnect	Enable	B6
Disconnect	Passive connection Disconnect	Enable	C6

Flush Mode Options			
Serial to Network	Network to Serial	Alternate Packing Algorithm	Hex
Clear input buffer upon:	Clear output buffer upon:		
Active connection Disconnect	Passive connection Disconnect	Enable	D6
Passive connection Disconnect	Passive connection Disconnect	Enable	E6
Active connection Passive connection Disconnect	Passive connection Disconnect	Enable	F6
	Active connection Passive connection Disconnect		7
Active connection	Active connection Passive connection Disconnect		17
Passive connection	Active connection Passive connection Disconnect		27
Active connection Passive connection	Active connection Passive connection Disconnect		37
Disconnect	Active connection Passive connection Disconnect		47
Active connection Disconnect	Active connection Passive connection Disconnect		57
Passive connection Disconnect	Active connection Passive connection Disconnect		67
Active connection Passive connection Disconnect	Active connection Passive connection Disconnect		77
	Active connection Passive connection Disconnect	Enable	87
Active connection	Active connection Passive connection Disconnect	Enable	97
Passive connection	Active connection Passive connection Disconnect	Enable	A7
Active connection Passive connection	Active connection Passive connection Disconnect	Enable	B7
Disconnect	Active connection Passive connection Disconnect	Enable	C7
Active connection Disconnect	Active connection Passive connection Disconnect	Enable	D7
Passive connection Disconnect	Active connection Passive connection Disconnect	Enable	E7
Active connection Passive connection Disconnect	Active connection Passive connection Disconnect	Enable	F7

Interface Mode Options

Interface Mode Options				
Interface	Bits	Parity	Stop Bits	Hex
RS-232C	7	No	1	48
RS-232C	7	No	2	C8
RS-232C	7	Even	1	78
RS-232C	7	Even	2	F8
RS-232C	7	Odd	1	58
RS-232C	7	Odd	2	D8
RS-232C	8	No	1	4C
RS-232C	8	No	2	CC
RS-232C	8	Even	1	7C
RS-232C	8	Even	2	FC
RS-232C	8	Odd	1	5C
RS-232C	8	Odd	2	DC

Pack Control Options

Pack Control Options				
Sendcharacter Defined by a:	Trailing Characters	Idle Time Force Transmit:	Send Immediately after Sendcharacter	Hex
1-Byte Sequence	No	12ms		0
1-Byte Sequence	No	52ms		1
1-Byte Sequence	No	250ms		2
1-Byte Sequence	No	5sec		3
1-Byte Sequence	1	12ms		4
1-Byte Sequence	1	52ms		5
1-Byte Sequence	1	250ms		6
1-Byte Sequence	1	5sec		7
1-Byte Sequence	2	12ms		8
1-Byte Sequence	2	52ms		9
1-Byte Sequence	2	250ms		A
1-Byte Sequence	2	5sec		B
2-Byte Sequence	No	12ms		10
2-Byte Sequence	No	52ms		11
2-Byte Sequence	No	250ms		12
2-Byte Sequence	No	5sec		13
2-Byte Sequence	1	12ms		14
2-Byte Sequence	1	52ms		15
2-Byte Sequence	1	250ms		16
2-Byte Sequence	1	5sec		17
2-Byte Sequence	2	12ms		18
2-Byte Sequence	2	52ms		19
2-Byte Sequence	2	250ms		1A
2-Byte Sequence	2	5sec		1B

<u>Pack Control Options</u>				
Sendcharacter Defined by a:	Trailing Characters	Idle Time Force Transmit:	Send Immediately after Sendcharacter	Hex
1-Byte Sequence	No	12ms	Yes	20
1-Byte Sequence	No	52ms	Yes	21
1-Byte Sequence	No	250ms	Yes	22
1-Byte Sequence	No	5sec	Yes	23
1-Byte Sequence	1	12ms	Yes	24
1-Byte Sequence	1	52ms	Yes	25
1-Byte Sequence	1	250ms	Yes	26
1-Byte Sequence	1	5sec	Yes	27
1-Byte Sequence	2	12ms	Yes	28
1-Byte Sequence	2	52ms	Yes	29
1-Byte Sequence	2	250ms	Yes	2A
1-Byte Sequence	2	5sec	Yes	2B
2-Byte Sequence	No	12ms	Yes	30
2-Byte Sequence	No	52ms	Yes	31
2-Byte Sequence	No	250ms	Yes	32
2-Byte Sequence	No	5sec	Yes	33
2-Byte Sequence	1	12ms	Yes	34
2-Byte Sequence	1	52ms	Yes	35
2-Byte Sequence	1	250ms	Yes	36
2-Byte Sequence	1	5sec	Yes	37
2-Byte Sequence	2	12ms	Yes	38
2-Byte Sequence	2	52ms	Yes	39
2-Byte Sequence	2	250ms	Yes	3A
2-Byte Sequence	2	5sec	Yes	3B

Declaration of Conformity

(according to ISO/IEC Guide 22 and EN 45014)

Manufacturer's Name & Address:

Lantronix 15353 Barranca Parkway, Irvine, CA 92618 USA

Declares that the following product:

Product Name Model: Device Server UDS200

Conforms to the following standards or other normative documents:

Safety:

EN60950:1992+A1, A2, A3, A4, A11

Electromagnetic Emissions:

EN55022: 1994 (IEC/CSPIR22: 1993)

FCC Part 15, Subpart B, Class A

IEC 1000-3-2/A14: 2000

IEC 1000-3-3: 1994

Electromagnetic Immunity:

EN55024: 1998 Information Technology Equipment-Immunity Characteristics

IEC61000-4-2: 1995 Electro-Static Discharge Test

IEC61000-4-3: 1996 Radiated Immunity Field Test

IEC61000-4-4: 1995 Electrical Fast Transient Test

IEC61000-4-5: 1995 Power Supply Surge Test

IEC61000-4-6: 1996 Conducted Immunity Test

IEC61000-4-8: 1993 Magnetic Field Test

IEC61000-4-11: 1994 Voltage Dips & Interrupts Test

(L.V.D. Directive 73/23/EEC)

Supplementary Information:

This Class A digital apparatus complies with Canadian ICES-003 (CSA) and has been verified as being compliant within the Class A limits of the FCC Radio Frequency Device Rules (FCC Title 47, Part 15, Subpart B CLASS A), measured to CISPR 22: 1993 limits and methods of measurement of Radio Disturbance Characteristics of Information Technology Equipment. The product complies with the requirements of the Low Voltage Directive 72/23/EEC and the EMC Directive 89/336/EEC.

Manufacturer's Contact:

Director of Quality Assurance, Lantronix

15353 Barranca Parkway, Irvine, CA 92618 USA

Tel: 949-453-3990

Fax: 949-453-3995

Warranty

For details on the Lantronix warranty policy, go to our web site at www.lantronix.com/support/warranty.

Index

- Application examples, 9
- ARP and Telnet, 54
- ARPCache timeout, 34
- AutolP, 13, 53
- Baudrate, 24
- Binary to hexadecimal conversions, 55
- BOOTP, 13, 54
- Buffer flushing, 31
- Cable, 51
- Com Port Redirector
 - Example, 9
 - Tutorial, 17
- Compliance, 69
- Configuration methods, 11
- Connect Mode, 26
- Connectors, 50
- DB9- to-DB9 null-modem cable, 51
- Defaults, 36
- DeviceInstaller
 - Assigning IP address, 14
 - Disabling configuration by, 35
 - Installing from product CD, 14
- DHCP, 13, 53
- DHCP name, 23
- Diagnostics, 41
- Disabling Telnet access, 35
- Disabling TFTP for Upgrades, 35
- Disconnect Mode, 31
- Echo port, 35
- Error messages, 44
- Ethernet address, 11
- Firmware files, 37
- Firmware upgrade, 37
- Flow control, 25
- Flush Mode, 31
- Gateway, 14, 23
- Hardware address, 11, 13
- Inactivity timeout, 33
- Installation, 12
- Interface (I/F) Mode, 24
- Internal web server, 11
- IP address
 - Alternative methods of assigning, 53
 - Assigning by DeviceInstaller, 14
 - Assigning by Web Manager, 18
 - Assigning in Setup Mode, 22
 - Factory default, 13
 - Remote, 30
 - Requirement, 13
 - Searching for on the network, 15
- Label, 11
- LEDs, 43
- MAC address, 11
- Modem emulation, 11
- Modem Mode, 29
- Monitor Mode
 - Accessing, 41
 - Commands, 42
- Netmask, 23
- Network class, 14
- Null-modem cable, 51
- Pack control, 32
- Password
 - Channel (Port), 33
 - Enhanced security, 35
- Pinouts, 50
- Port
 - 9999 for Setup Mode access, 26
 - Disabling Echo, 35
 - Number, 25
 - Password, 33
 - Remote, 30
 - Serial and Telnet, 11
- Power plug, 51
- Protocols, 10
- Redirection software, 9
- Remote IP address, 30
- Required information, 13
- Reserved port numbers, 25
- RJ45 Ethernet port, 51
- RS-232 and RS-485/422 standards, 50
- Security settings, 34
- Send characters, 33
- Serial port
 - Accessing Setup Mode, 15
 - Settings, 24
- Serial tunneling
 - Example, 9
 - Tutorial, 17
- Server properties, 18
- Setup Mode
 - Accessing using Telnet, 20
 - Accessing using the serial port, 22
 - Disabling Telnet access, 35
- SNMP, 34
- Specifications, 49
- Subnet mask
 - Assigning on Web Manager, 18

- Description, 23
- TCP Keepalive time, 34
- Technical Support, 47
- Telnet
 - Configuration password, 23
 - Password, 18
 - Port, 11
 - Terminal type, 33
- TFTP, 38
- Troubleshooting, 43
- Tutorials
 - Com Port Redirector, 17
 - Serial tunneling, 17
 - UDS Configuration Guidelines page, 16
 - Updating firmware, 37
 - Warranty, 70
 - Web browser, 16
 - Web Manager
 - Configuring using, 16
 - Disabling configuration by, 35

Mouser Electronics

Authorized Distributor

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

Lantronix:

[UDS200-NL-02](#) [UDS200-NL-01](#)