LANTRONIX®

UDS10
UDS100
User Guide

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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	Part No.	Rev.	Comments
6/04	900-360	A	Initial document combining UDS10 and UDS100 products.

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1: Using This Guide

Purpose and Audience

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

Chapter Summary

The remaining chapters in this guide include:

Additional Documentation

The following information 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)
"Live" Tutorials on the Lantronix Web Site	Explain and demonstrate Assigning an IP address to the UDS and Setting up the UDS and the Redirector. See http://ts.lantronix.com/tutorials.html.

2: Introduction

The UDS10 and UDS100 are single-port device servers that provide a quick, simple, and cost-effective way to bring the advantages of data accessibility and remote management to devices not currently connected to a network.

The main difference between the two models is that the UDS100 provides both half and full duplex 10/100 Ethernet data transfer, whereas the UDS10 provides only half duplex 10Base-T Ethernet. The technical specifications of the two products differ slightly as well. Unless otherwise noted, we refer to both products as the UDS.

Applications

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

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

Application Examples

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

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
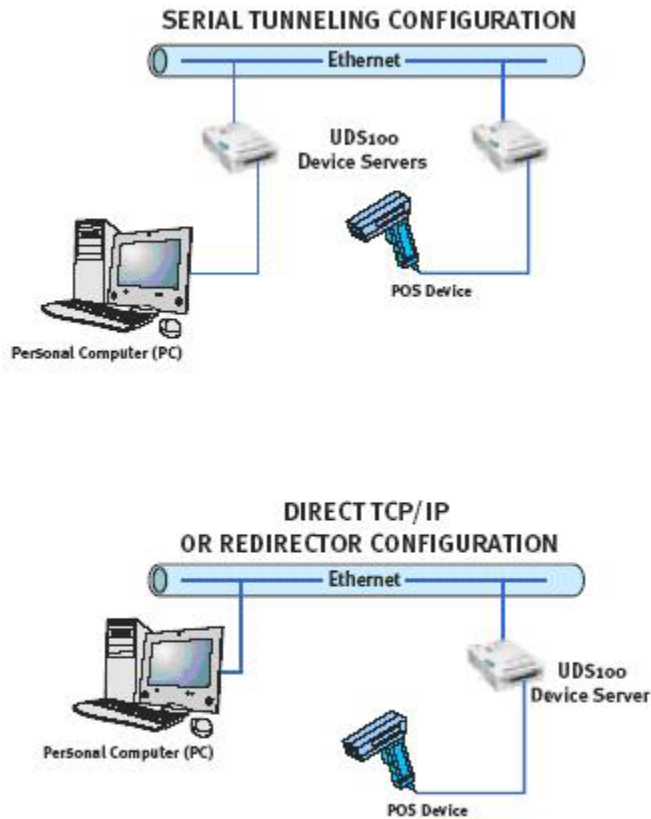
Note: *For step-by-step instructions on configuring the UDS for serial tunneling or for use with the Com Port Redirector, access the UDS Configuration Tutorials using Web Manager. (See Accessing Web Manager on page 18.)*

Protocol Support

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

Supported protocols include:

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

Additional Features

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

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

Configuration Methods

After installation, the UDS requires configuration. For the unit to operate correctly on a network, it must have a unique IP address on the network. There are three basic methods for logging into the UDS and assigning IP addresses and other configurable settings:

DeviceInstaller: Configure the IP address and other network settings on the UDS using a Graphical User Interface (GUI) on a PC attached to a network.
(See *DeviceInstaller* on page 16.)

Web Manager: Through a web interface configures the UDS 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 the 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 UDS

Figure 3-1. UDS Connected to Serial Device and Network
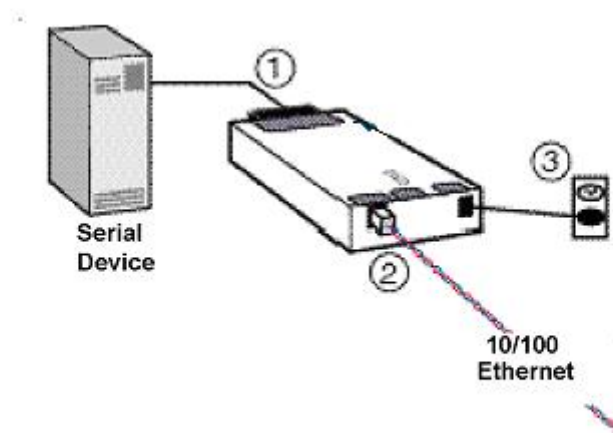
To install the unit, complete the following steps in order. Refer to the numbers in the figure above.

1. Connect a serial device to your unit. See *9: Connections and Pinouts* for more information about the device attachments the unit supports.

2. Connect an Ethernet cable to the RJ45 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 (1 W maximum).

4. Supply power to the serial device.

    Note: If you encounter a problem, please see LEDs on page 45 for diagnostic information.

Required Information

Before configuring the UDS, have the following information available:

Hardware Address

Take note of the unit's hardware address (also known as the Ethernet or MAC address). It is on the product label, in the format: 00-20-4a-XX-XX-XX, where the XXs are unique numbers assigned to the product (see *Product Information Label* on page13).

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 information about other methods of assigning the IP address, 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.

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 (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.

Accessing Web Manager

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

1. Type the unit's IP address into the Web browser's URL (Address/Location) field.
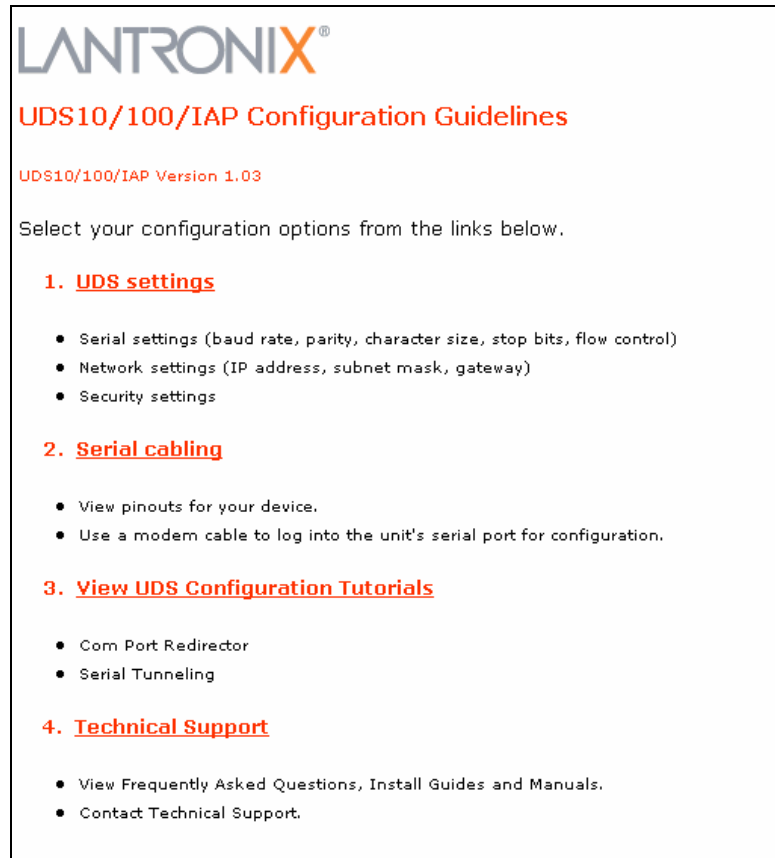
Figure 4-1. Web Browser Login

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 17.)*

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

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Figure 4-2. UDS Configuration Guidelines Page

- ◆ **UDS settings** opens a configuration window to configure the UDS10/UDS100, 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.

Using Web Manager

1. To configure the unit, select **UDS Settings** on the UDS Configuration Guidelines Page. The Web Manager page displays.

Figure 4-3. Lantronix Web Manager

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

   Note: For detailed explanations of the settings, see 5: Configuring the UDS Using Telnet or the Serial Port.

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

Example

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

   - I**P Address**
   - **Subnet Mask**
   - **Gateway Address**

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

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 4 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 using 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.

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 17.)*

1. On 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 current configuration settings display, followed by the Change Setup menu.

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Figure 5-2. Setup Mode

```
*** Lantronix Universal Device Server ***
Serial Number 6431073  MAC address 00204A647961
Software version 05.2 (030423) DLX

Press Enter to go into Setup Mode


*** basic parameters
Hardware: Ethernet TPI
IP addr 172.19.19.66, 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 9600, I/F Mode 4C, Flow 00
Port 10001
Datagram Type 01
Pack Cntrl:    00
Remote IP Adr: 172.019.020.015, Port 10001


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

Change Setup:
  0 Server configuration
  1 Channel 1 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 Change Setup menu by entering the number of the option in the **Your choice ?** prompt and pressing **Enter.**

4. To enter a value for a parameter, type the value and press **Enter**. 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, 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, one 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.

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2. Type three lowercase **x** characters (**xxx**) **within one second** after powering up to start the configuration mode.

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

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

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

4. To enter a value for a parameter, type the value and press **Enter**. 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** in the **Your choice ?** prompt and press **Enter**. Current values display in parentheses. The following sections describe the configurable settings within the Server configuration menu.

Figure 5-3. Network Configuration


```
Change Setup:
  0 Server configuration
  1 Channel 1 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) .(066)
Set Gateway IP Address (N) N
Netmask: Number of Bits for Host Part (0=default) (0)
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. See *A: Alternative Ways to Assign an IP Address* for more information about IP addressing.

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 that are assigned 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 displays in standard decimal-dot notation when the saved parameters display (for example, 255.255.255.0).

Table 5-1. Standard IP Network Netmasks

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

Table 5-2. 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.

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. Current values display in parentheses. The following sections describe the configurable settings within the Server configuration menu.

Figure 5-5. Channel 1 Configuration

```
Change Setup:
  0 Server configuration
  1 Channel 1 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 5-3. 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 5-4. 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 5-5. 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

Every TCP connection and every UDP datagram has a destination IP address and a port number. A port number is similar to an extension on a PBX system. For example, a Telnet application commonly uses port number 23. Port number 9999 is reserved for access to the unit's Setup Mode.

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

The default setting for port 1 is 10001. 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 5-6. 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	0
Without Echo				0	0	1	1	0
Numeric modem result codes				1	0	1	1	1

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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 spaces may be in the command string. Between the first and last command string characters must be a full or partial destination IP address and can 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, must be a decimal number in the range 1-65535, and must 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 becomes the destination port number when the connection attempt is made.

If the command string includes a partial IP address, the UDS interprets it to be 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 5-7. 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 selecting this option, you will be prompted 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.

Figure 5-6. Hostlist Option

```
Change Setup:
0 Server configuration
1 Channel 1 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,

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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 5-8. 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 5-9. 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 are 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 be 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 5-10. 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 5-11. 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 34).

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 that can be 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
   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
  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.

Port 77FE is used by DeviceInstaller, Web Manager, and custom programs 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 sites.

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 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

Exit 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

This chapter explains how to obtain and update the unit's firmware.

Obtaining Firmware

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. Use DeviceInstaller (the preferred way), TFTP, another unit, or the serial port. Another option is to use the unit's internal web interface (**CBXW*.COB**) using TFTP or DeviceInstaller.

Following are typical names for the files. Check the Lantronix Web site for the latest versions and release notes.

UDS10

- ◆ LTX*.ROM (Network)
- ◆ LTX*.HEX (Serial)

UDS100

- ◆ DLX*.ROM (Network)
- ◆ DLX*.3HEX (Serial)

Using DeviceInstaller

1. Download the updated firmware files from http://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 being loaded, then click **Next**.

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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 shows in the window.

8. After the upgrade completes, click **Close**.

Using TFTP

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

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

To download new firmware using a TFTP client:

1. Use a TFTP client to send a binary file (**LTX*.ROM** for UDS10, **DLX*.ROM** for UDS100) to the unit to upgrade the unit's internal operational code, and **CBXW*.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 of the following:

    ◆ **3L** for the UDS10 or **3D** for the UDS100 to load the internal operational code

    ◆ **WEB6** for the internal web interface.

5. In the **Remote Host** field, enter the IP address of the unit being upgraded.

6. Click the **Put** button to transfer the file to the unit.

Figure 6-1. TFTP Dialog Box
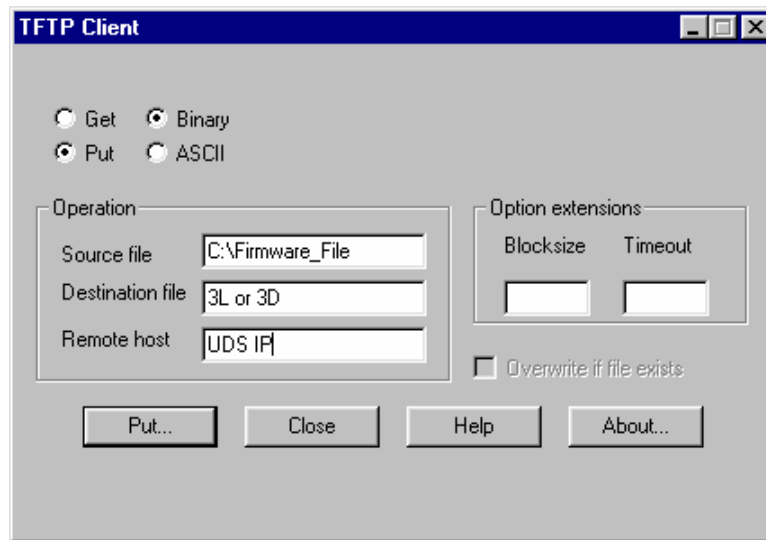
The unit performs a power reset after the firmware has been loaded and stored.

Using Another Unit

To distribute firmware to another unit over the network:

1. Enter the host unit's Monitor Mode (see *7: Using Monitor Mode*).

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

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

Note: *You can only update the 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.

Warning: ***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 *Entering Monitor Mode Using the Serial Port* on page 43).

2. Download the firmware to the unit using the **DL** command.

3. Select **Send Text File** and select the **LTX*.HEX** file for the UDS10 or **DLX*.HEX** file for the UDS100 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.

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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 Contact Information

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 so you can 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 UDS products contain the following LEDs, which help you diagnose problems.

- ◆ 10 Mbps Link/Activity (green)
- ◆ 100 Mbps Link/Activity (green)
- ◆ Collisions
- ◆ Diagnostics (red)
- ◆ Status (yellow)

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. UDS10/UDS100 LEDs

Serial 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
Collision blinking red	Network collisions
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, *The ARP entry addition failed: 5* message displays.	Your currently logged-in user does not have the correct rights to use this command on this PC.	Have someone from your IT department log you in with sufficient rights.
When you attempted to assign an IP address to the UDS using the ARP method, the *Press Enter to go into Setup Mode* 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 *Press Enter to go into Setup Mode* 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 *Press Enter to go into Setup Mode*.

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 hardware address incorrectly with the ARP command.	Confirm that the hardware address that you entered with the ARP command is correct. The hardware address may only include numbers 0-9 and letters A-F. In Windows and usually in Unix, the segments of the address are separated by dashes. In some forms of Unix, the address is segmented with colons.
	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: *No device was found at this hardware address.*	The cause is most likely one of the following: The hardware address you specified is incorrect. The device is not physically connected to the network.	Double-check the settings that you specified. *Note:* *You cannot assign an IP address to a UDS through a router.*
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 will 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 the serial device attached to the UDS.	The most likely reason is the wrong serial cable or serial settings were chosen.	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. The default serial settings for the UDS are RS232, 9600 baud, 8 character bits, no parity, 1 stop bit, no flow control.
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.	There may be an IP address conflict on your network. You are not Telneting to port 9999. The Telnet configuration port (9999) is disabled within the UDS security settings. The unit may have the correct IP address, but an incorrect gateway address.	Turn the UDS off and then issue the following commands at the DOS prompt of your computer: **ARP -D** X.X.X.X (X.X.X.X is the IP of the UDS) **PING** X.X.X.X (X.X.X.X is the IP of the UDS). 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.
With DeviceInstaller, you get the *Wrong Password* 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. Another possibility is that the UDS is not set up correctly to make a good socket connection to the network.	You can check to see whether there is a socket connection to or from the UDS by looking at the Status LED. 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 *No Connection With The UDS* 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 experiencing an error that is not described in this chapter, or if you are unable to fix the error, you may:

◆ Check our online knowledge base at http://www.lantronix.com/support

◆ Call us at:

(800) 422-7044 Domestic

(949) 453-7198 International

(949) 450-7226 Fax

Our phone lines are open from 6:00AM - 5:30 PM Pacific Time Monday through Friday excluding holidays.

Technical Support Europe, Middle East, Africa
Phone: +49 (0) 89 31787 817
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 UDS model number

◆   Lantronix UDS serial number

◆   Software version (on the first screen shown when you Telnet to port 9999)

◆   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: Connections and Pinouts

Serial Port

The UDS has a female DCE DB25 serial port that supports RS-232 and RS-485/422 serial standards (software selectable) up to 115 Kbps.

Figure 9-1. Serial Interface

Serial Connector Pinouts

The unit's female DB25 connector provides an RS-232C, RS-485, or RS-422 DCE serial port. The default serial port settings are 9600 baud, 8 bits, no parity, and 1 stop bit.

Figure 9-2. DB25 Female DCE Interface RS232
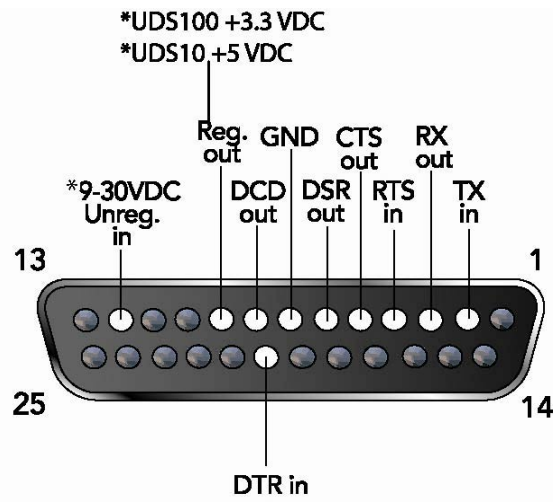
DB25 Female DCE Interface RS232

*Optional power connection

**Figure 9-3. DB25 Female DCE Interface RS485/422**
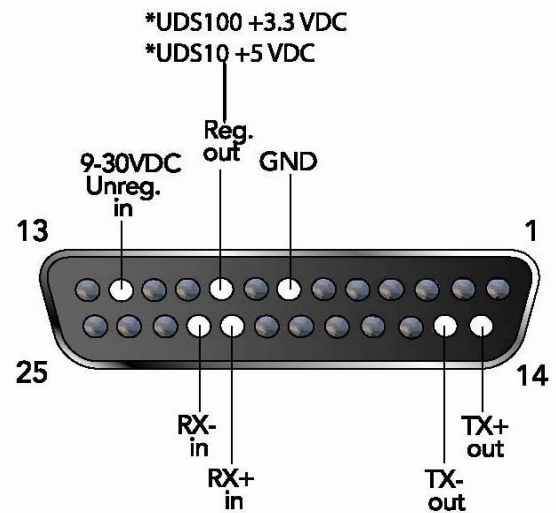
DB25 Female DCE Interface RS485/422

*Optional power connection

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. 500-163). 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 9-4. Null-Modem Cable (Lantronix Part No. 500-163)
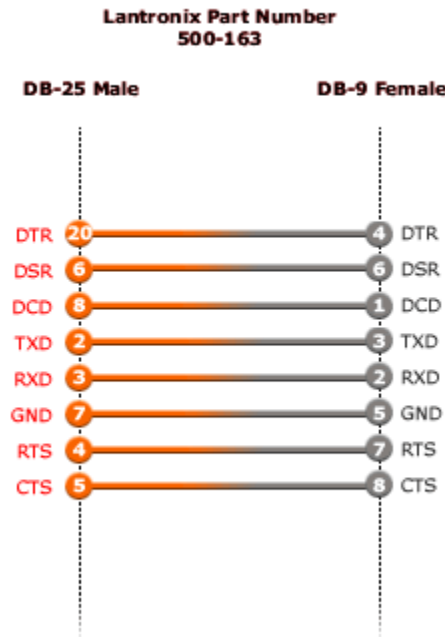
Network Port

The unit's back panel contains a power plug and an RJ45 (10/100) Ethernet port. Power input range on the power plug is 9-30 VDC or 9-24 VAC.

Figure 9-5. Network Interface

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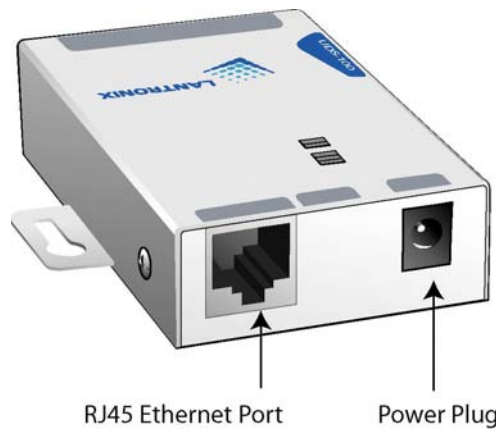
Ethernet Connector Pinouts

The UDS10 supports 10 Mbps half-duplex Ethernet through an RJ45 connector. The UDS100 supports 100 Mbps half or full duplex Ethernet through an RJ45 connector.

Figure 9-6. RJ45 Ethernet Connector
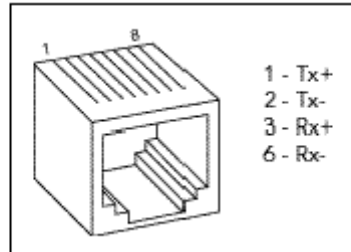
10: Technical Specifications

UDS10 Technical Specifications

CPU, Memory   x86 CPU, 25MHz clock, 128kByte RAM

Serial Interface   Female DB25 connector (DCE pinout)
Speed software selectable (300 to 115 kBaud)
Software selectable RS-232C or RS-422/485

Network Interface   10 Mbps 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 (1W maximum)

Dimensions   Height: 2.3 cm (0.9 in)
Width: 6.4 cm (2.5 in)
Depth: 9.0 cm (3.5 in)

Weight   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

UDS100 Technical Specifications

CPU, Memory	Lantronix DSTni-LX 186 CPU, 48 MHz 1 MByte FLASH ROM 256 Kbytes zero wait state RAM
Serial Interface	Female DB25 connector (DCE pinout) Speed software selectable (300 to 115 kBaud) Software selectable RS-232C or RS-422/485
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 (1W maximum)
Dimensions	Height: 2.3 cm (0.9 in) Width: 6.4 cm (2.5 in) Depth: 9.0 cm (3.5 in)
Weight	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

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 (see Entering Monitor Mode Using the Serial Port on page 43) 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 automatically obtain an IP address 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 a DHCP server is found, but it denies the request for an IP address, the unit does not attach to the network, but waits and retries.

AutoIP can be disabled 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 how to convert binary values to hexadecimals or to look up values in the tables of configuration options in hexadecimal notation. 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 hexadecimals.

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, the upper and lower four bits are treated separately, resulting in 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 hexadecimals 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.
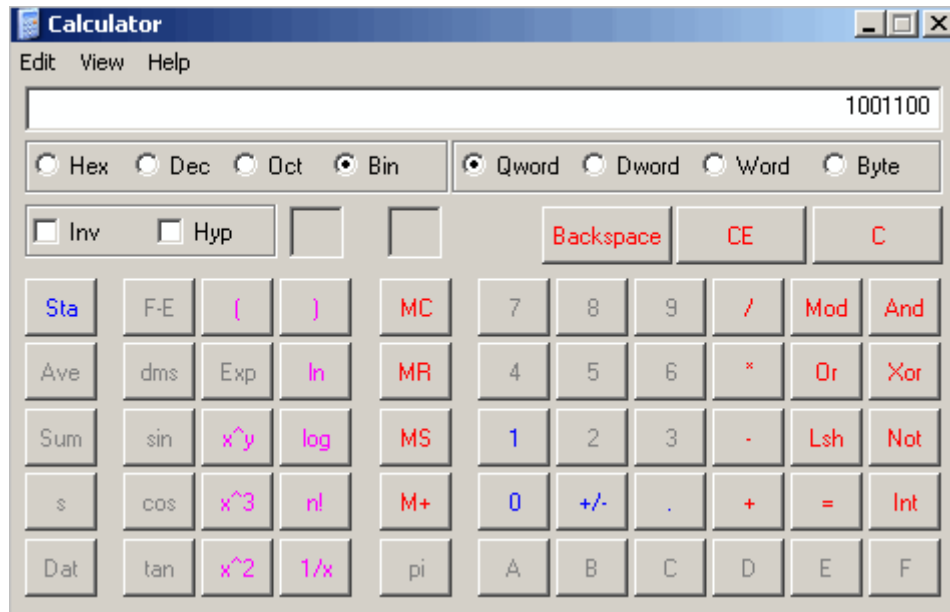
4. Click **Hex**. The hexadecimal value displays.

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 DTR		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 DTR		12
Never	Character	CR (0x0D)		13
Never	Character	Manual connection		14
Never	Character	Autostart		15
Never	Character	UDP		1C
With DTR	None (quiet)	No active startup		40
With DTR	None (quiet)	Any character		41
With DTR	None (quiet)	Active DTR		42
With DTR	None (quiet)	CR (0x0D)		43
With DTR	None (quiet)	Manual connection		44
With DTR	None (quiet)	Autostart		45
With DTR	None (quiet)	UDP		4C
With DTR	Character	No active startup		50
With DTR	Character	Any character		51
With DTR	Character	Active DTR		52
With DTR	Character	CR (0x0D)		53
With DTR	Character	Manual connection		54
With DTR	Character	Autostart		55
With DTR	Character	UDP		N/A
Unconditionally	None (quiet)	No active startup		C0
Unconditionally	None (quiet)	Any character		C1
Unconditionally	None (quiet)	Active DTR		C2
Unconditionally	None (quiet)	CR (0x0D)		C3
Unconditionally	None (quiet)	Manual connection		C4

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Connect Mode Options				
Accept Incoming Connections	**Serial Response Upon Connection**	**Active Connection Startup**	**Hostlist**	**Hex**
Unconditionally	None (quiet)	Autostart		C5
Unconditionally	None (quiet)	UDP		CC
Unconditionally	Character	No active startup		D0
Unconditionally	Character	Any character		D1
Unconditionally	Character	Active DTR		D2
Unconditionally	Character	CR (0x0D)		D3
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 DTR	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 DTR	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 DTR	None (quiet)	No active startup	Hostlist	N/A
With DTR	None (quiet)	Any character	Hostlist	61
With DTR	None (quiet)	Active DTR	Hostlist	62
With DTR	None (quiet)	CR (0x0D)	Hostlist	63
With DTR	None (quiet)	Manual connection	Hostlist	N/A
With DTR	None (quiet)	Autostart	Hostlist	65
With DTR	None (quiet)	UDP	Hostlist	N/A
With DTR	Character	No active startup	Hostlist	N/A
With DTR	Character	Any character	Hostlist	71
With DTR	Character	Active DTR	Hostlist	72
With DTR	Character	CR (0x0D)	Hostlist	73
With DTR	Character	Manual connection	Hostlist	N/A
With DTR	Character	Autostart	Hostlist	75
With DTR	Character	UDP	Hostlist	N/A

Connect Mode Options				
Accept Incoming Connections	**Serial Response Upon Connection**	**Active Connection Startup**	**Hostlist**	**Hex**
Unconditionally	None (quiet)	No active startup	Hostlist	N/A
Unconditionally	None (quiet)	Any character	Hostlist	E1
Unconditionally	None (quiet)	Active DTR	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 DTR	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:

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

Disconnect Mode Options

Disconnect Mode Options						
Disconnect with DTR 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

Disconnect with DTR Drop	Telnet Mode and Terminal Type Setup	Channel (port) Password	Hard Disconnect	State LED Off with Connection	Disconnect with EOT (^D)	Hex
	Enable	Enable	Disable		Enable	78
Enable			Disable			88
Enable		Enable	Disable			98
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 Options

Flush Mode Options			
Serial to Network **Clear input buffer upon:**	**Network to Serial** **Clear output buffer upon:**	**Alternate Packing Algorithm**	**Hex**
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

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	Active connection	Enable	B1
Disconnect	Active connection	Enable	C1
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

Flush Mode Options			
Serial to Network **Clear input buffer upon:**	**Network to Serial** **Clear output buffer upon:**	**Alternate Packing Algorithm**	**Hex**
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
	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

Flush Mode Options			
Serial to Network **Clear input buffer upon:**	**Network to Serial** **Clear output buffer upon:**	**Alternate Packing Algorithm**	**Hex**
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
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

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Flush Mode Options			
Serial to Network **Clear input buffer upon:**	**Network to Serial** **Clear output buffer upon:**	**Alternate Packing Algorithm**	**Hex**
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
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

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Flush Mode Options			
Serial to Network **Clear input buffer upon:**	**Network to Serial** **Clear output buffer upon:**	**Alternate Packing Algorithm**	**Hex**
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
RS-422/485	7	No	1	49
RS-422/485	7	No	2	C9
RS-422/485	7	Even	1	79
RS-422/485	7	Even	2	F9
RS-422/485	7	Odd	1	59
RS-422/485	7	Odd	2	D9
RS-422/485	8	No	1	4D
RS-422/485	8	No	2	CD
RS-422/485	8	Even	1	7D
RS-422/485	8	Even	2	FD
RS-422/485	8	Odd	1	5D
RS-422/485	8	Odd	2	DD
RS-422/485 2-Wire	7	No	1	4B
RS-422/485 2-Wire	7	No	2	CB
RS-422/485 2-Wire	7	Even	1	7B
RS-422/485 2-Wire	7	Even	2	FB
RS-422/485 2-Wire	7	Odd	1	5B
RS-422/485 2-Wire	7	Odd	2	DB
RS-422/485 2-Wire	8	No	1	4F
RS-422/485 2-Wire	8	No	2	CF
RS-422/485 2-Wire	8	Even	1	7F
RS-422/485 2-Wire	8	Even	2	FF
RS-422/485 2-Wire	8	Odd	1	5F
RS-422/485 2-Wire	8	Odd	2	DF

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
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

Pack Control Options				
Sendcharacter Defined by a:	Trailing Characters	Idle Time Force Transmit:	Send Immediately after Sendcharacter	Hex
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 Servers UDS10 and UDS100

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 B

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.

Export Control Classification Number 5A002, License exception ENC.

Manufacturer's Contact:

Director of Quality Assurance, Lantronix
15353 Barranca Parkway, Irvine, CA 92618 USA
Tel: 949-453-3990
Fax: 949-453-3995

Warranty

Lantronix warrants each Lantronix product to be free from defects in material and workmanship for a period of **TWO YEARS** after the date of shipment. During this period, if a customer is unable to resolve a product problem and Lantronix Technical Support determines the product is defective, a Return Material Authorization (RMA) will be issued. Following receipt of an RMA number, the customer shall return the product to Lantronix, freight prepaid. Upon verification of warranty, Lantronix will -- at its option -- repair or replace the product and return it to the customer freight prepaid. If the product is not under warranty, the customer may have Lantronix repair the unit on a fee basis or return it. No services are handled at the customer's site under this warranty. This warranty is voided if the customer uses the product in an unauthorized or improper way, or in an environment for which it was not designed.

Lantronix warrants the media containing its software product to be free from defects and warrants that the software will operate substantially according to Lantronix specifications for a period of **60 DAYS** after the date of shipment. The customer will ship defective media to Lantronix. Lantronix will ship the replacement media to the customer.

*   *   *   *

In no event will Lantronix be responsible to the user in contract, in tort (including negligence), strict liability or otherwise for any special, indirect, incidental or consequential damage or loss of equipment, plant or power system, cost of capital, loss of profits or revenues, cost of replacement power, additional expenses in the use of existing software, hardware, equipment or facilities, or claims against the user by its employees or customers resulting from the use of the information, recommendations, descriptions and safety notations supplied by Lantronix. Lantronix liability is limited (at its election) to:

Refund of buyer's purchase price for such affected products (without interest)

Repair or replacement of such products, provided that the buyer follows the above procedures.

There are no understandings, agreements, representations or warranties, express or implied, including warranties of merchantability or fitness for a particular purpose, other than those specifically set out above or by any existing contract between the parties. Any such contract states the entire obligation of Lantronix. The contents of this document shall not become part of or modify any prior or existing agreement, commitment, or relationship.

For details on the Lantronix warranty replacement policy, please go to our Web site at http://www.lantronix.com/support/warranty/index.html.

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