7500 Series
User Manual

7500 Series^{TM} User Manual
Software Release 2.55

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Preface

The *7500 Series User Manual* details the features of DVTel's 7500 Series video servers and provides comprehensive instructions for using the units.

Who Should Read this Manual

This manual is intended for managers, IT system administrators, engineers, and technicians who will use the 7500 Series units. It provides conceptual information on how to configure, install, and operate the units.

This manual assumes that you are familiar with:

◆ Installation and manipulation of electronic equipment

◆ General use of computers

◆ Microsoft Windows operating systems

◆ Local area networks (LANs) and basic IP data communication concepts and practices

◆ Pan-tilt-zoom (PTZ) platforms (cameras and keyboards)

How to Use this Manual

This manual contains all the information needed to install, configure, and use the 7500 Series units.

Contents

The *7500 Series User Manual* is divided into the following chapters:

1 **Overview**—Provides a brief description of the features of the 7500 Series encoders/decoders and illustrations of their casings.

2 **Network Planning**—Describes the network conditions necessary for the 7500 Series units to properly function.

3 **Configuring and Installing Units**—Presents configuration and installation procedures for 7500 Series video servers.

4 **Setting Parameters with the CLI**—Explains how to program the 7500 Series units using the command line interface (CLI).

5 **On-Screen Display (OSD)**—Presents the four quadrants on the receiver (decoder) unit.

The manual also includes the following appendixes:

A **Factory Default Configuration**—Lists the default parameter values of 7500 Series encoders/decoders.

B **RS-485 Multidrop Connections**—Presents basic information on the 2-wire and 4-wire RS-485 multidrop connections.

C **DHCP Support**—Explains how the dynamic host configuration protocol server assigns valid network configurations to DVTel video servers.

D **DTE and DCE Connections**—Presents diagrams explaining how to differentiate and connect data terminal equipment (DTE) and data communication equipment (DCE).

E **CLI with Device Configurator**—Explains how to access the command line interface with the Device Configurator.

F **CLI with HyperTerminal**—Explains how to access the command line interface with the Windows HyperTerminal tool.

G **Audio Pinouts and Specifications**—Presents pinouts for audio input/output and the audio specifications.

H **Technical Specifications**—Lists the complete technical specifications of 7500 Series units.

A glossary, an index, and compliance information complete the manual.

Conventions

The following typographic conventions are used throughout this manual:

Visual cue	Meaning
Connect to	The name of a window, dialog box, field, or any other interface element
File > **Properties**	A menu–command sequence, for example, the **Properties** command from the **File** menu
`UNIT_1`	Text that must be typed exactly as shown, or a file name
connection_name	Text that must be replaced by a user-supplied value or text representing variable content

Related Documentation

In addition to this manual, the following documentation is also available:

◆ *7500 Series Quick Instal Guide*—Contains basic installation instructions for 7500 Series encoders and decoders

◆ *Device Configurator User Manual*—Presents instructions for using the DVTel Device Configurator to configure 7500 Series video servers, connect them to other units, and update their firmware.

◆ *Release Notes*—Contain information about 7500 Series upgrades and known issues still under investigation, as well as a description of features not covered in this version of the documentation.

All these documents are contained in the Manuals folder of the DVTel SecureLink CD shipped with the 7500 Series units.

Related DVTel Products

You may use the 7500 Series units along with NVRS software from DVTel. This user-friendly video management and storage software is able to view, record, and play back video simultaneously from any location.

The 7500 Series and NVRS are part of the SecureLink line of products. Additionally, the SecureLink system offers twisted pair transmission products, based on EtherReach technology, that allow high quality, full motion video to be sent over standard phone lines. All DVTel products are designed to integrate seemlessly with each other as well as LAN and WAN in order to offer highly versatile and customizable surveillance solutions.

For more details about SecureLink, NVRS, EtherReach treansmission and all DVTel products, visit our Web site. For pricing information, call your dealer.

Support

If you encounter any problems after reading this manual, contact your local distributor or DVTel representative. You can also browse the Technical Support Knowledge Base, located in the Support section of our website, for solutions to many of the most common problems.

DVTel technical support personnel is available for help with all DVTel hardware and software products.

To reach technical support	
On the Web:	**Support** tab on www.dvtel.com
By phone:	**(888) DVTel 77**, Monday to Friday, from 8 AM to 6 PM EST
By email:	**ta@dvtel.com**

Warranty

Each standard product manufactured by DVTel is warranted to meet all published specifications and to be free from defects in material and workmanship for a period of one year from date of delivery as evidenced by DVTel packing slip or other transportation receipt. Products showing damage by misuse, abnormal conditions of operation or products which have been modified by Buyer or have been repaired or altered outside DVTel factory without a specific authorization from DVTel shall be excluded from this warranty. DVTel shall in no event be responsible for incidental or consequential damages including without limitation, personal injury or property damage.

DVTel responsibility under this warranty shall be to repair or replace, at its option, defective work or parts returned to DVTel with transportation charges to DVTel factory paid by Buyer and return paid by DVTel. If DVTel determines that the Product is not defective within the terms of the warranty, Buyer shall pay all costs of handling and transportation. DVTel may, at its option, elect to correct any warranty defects by sending its supervisory or technical representative, at it's own expense, to customer's plant or location. DVTel shall in no event be responsible for incidental or consequential damages including, without limitation, personal injury or property damage.

Since DVTel has no control over conditions of use, no warranty is made or implied as to suitability for customer's intended use. There are no warranties, expressed or implied, except as stated herein. This limitation on warranties shall not be modified by verbal representations.

Equipment shipped EX-WORKS DVTel factory shall become the property of Buyer, upon transfer to the common carrier. Buyer shall communicate directly with the carrier by immediately requesting carrier's inspection upon evidence of damage in shipment.

Buyer must obtain a return materials authorization (RMA) number and shipping instructions from DVTel prior to returning any product under warranty. Do not return any DVTel product to the factory until RMA and shipping instructions are received.

Overview

Designed for video monitoring and surveillance over IP networks, the 7500 Series of video servers provides a self-contained solution for delivering high quality MPEG-4 video at up to 30 frames per second over 10/100Base-T networks. Video servers can easily be extended over local and wide area networks (LANs and WANs) or the Internet using ISDN, PSTN, or xDSL routers. They are built on open standards to provide long-term investment protection.

The 7500 Series is used by DVTel's NVRS software, which provides a sophisticated video-over-IP surveillance solution. Video servers can also be purchased independently, however, for transmission use in more traditional CCTV setups.

The 7500 Series units are for indoor use only.

About the 7500 Series

The 7500 Series contains several units covering different input/output needs.

Physical Characteristics

A 7500 Series unit can be either an encoder (*-E and -M*) or a decoder (*-D*); a single decoder and three encoders are available. Encoders are also referred to as receivers; decoders as transmitters. Below is an overview of the various units' features (where *PTT* stands for push-to-talk, and *PTL*, for push-to-listen; *fps* indicates frames per second):

Features	7501D	7501E	7504M	7502M
Video I/O	1 output	1 input	4 inputs	2 inputs
Frame rate	N/A	30 fps full motion	3.75 fps	2 inputs at 15 fps each full motion, or 1 at 30 fps full motion
Serial ports	2 independent	2 independent	1 shared	2 independent
Reset button	yes	yes	no	yes
Data input	1 dry contact; 1 stereo jack if audio	3 dry contacts	1 dry contact; 1 stereo jack if audio	3 dry contacts
Audio	PTT in stereo jack; PTL in the dry contact	dry contact 2 for PTT	PTT in stereo jack	dry contact 2 for PTT
SSL certificate	yes	yes	yes	yes

7500 Series units are available, upon request, with an extended temperature option.

Unless otherwise specified, the word *7500 Series* refers to any of these units.

As indicated, there are two separate layouts with regards to serial ports:

◆ The 7501E, 7501D, and 7502M units have two independent serial ports that can be used at the same time. The RS-232 and RS-422/485 ports can be used by any serial device.

◆ The 7504M has two serial port connectors, RS-232 and RS-422/485, but only one actual port; this is why the port has the *shared* label. The serial port automatically detects if it is connected to an RS-232 or an RS-422/485 device. The RS-232 port has precedence over the other.

Security

Every 7500 Series unit comes with a unique SSL (secure sockets layer) certificate for securing its IP link. SSL is a commonly used protocol for managing the security of a message transmission on an IP network. Therefore, the connections between a receiver and a transmitter or between a unit and the Device Configurator program can be secured.

The SSL protocol secures the following data: I/O, serial port, and VSIP communication. It does not apply to audio and video transmission.

Once a unit is in secure mode, you cannot access it anymore with Telnet and you cannot perform firmware updates through the IP network on it. However, you can configure it with the Device Configurator's Units tab.

For more information about this security feature, refer to the *Device Configurator User Manual*.

Video

The video resolution of the 7500 Series units is (where the horizontal resolution is in number of columns, and the vertical resolution, in number of lines):

Resolution	Horizontal resolution	Vertical resolution	
	NTSC/PAL	NTSC	PAL
QCIF	176	120	144
CIF	352	240	288
2CIF	352	384	448
4CIF	704	480	576

Their video frame rate is in the 1–30 frames per second (fps) range in NTSC, and 1–25 fps in PAL.

Shipment

Your 7500 Series shipment contains the following items:

◆ The requested transmitter and/or receiver units

Product code	Description
7501D	Ethernet decoder
7501E	Ethernet encoder (one input)
7502M	Ethernet encoder (two inputs)
7504M	Ethernet encoder (four inputs)
ProductCode-*A*	Transmitter or receiver with bidirectional audio

◆ 12V DC external power supply (for North America only)

◆ A BNC cable assembly, for the 7504M only (*7504M-miniDIN-3BNC*)

◆ The *DVTel SecureLink* CD containing the documentation and release notes for the unit as well as the Device Configurator application

The shipment may also contain the following option:

◆ 3, 6 or 10-unit rack mount panels.

Unit Casing Description

The 7500 Series electronics are enclosed in a non-weatherproof extruded aluminium casing that is not meant for outdoor use. The front and back panels vary depending on the unit in the series.

7501E and 7502M

The front panel consists of an RJ-45 jack, a status LED, a reset button, and a female DB-9 connector for RS-232 use.
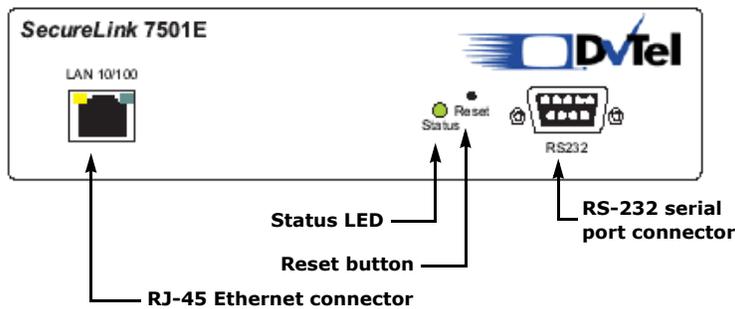
The back panel consists of a 12-pin terminal strip (for 12V DC power, alarm, and RS-422/485), one or two female BNC connectors to be used as video input or output, and optional audio connectors.
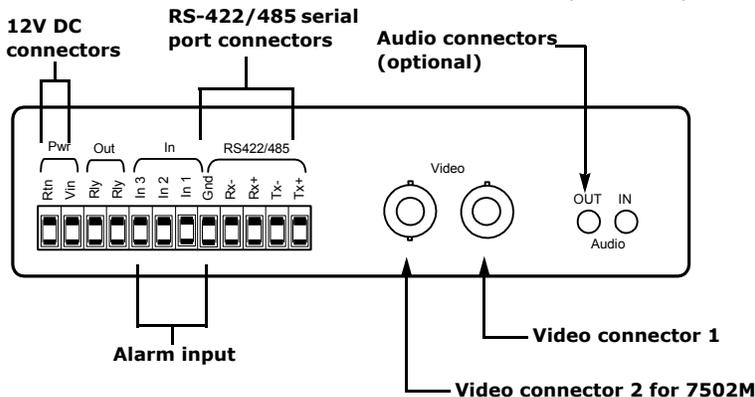
7504E

The front panel consists of optional audio connectors, a status LED (described on page 15), a female BNC connector to be used as video input, and an auxiliary connector for the S1500e-T4.
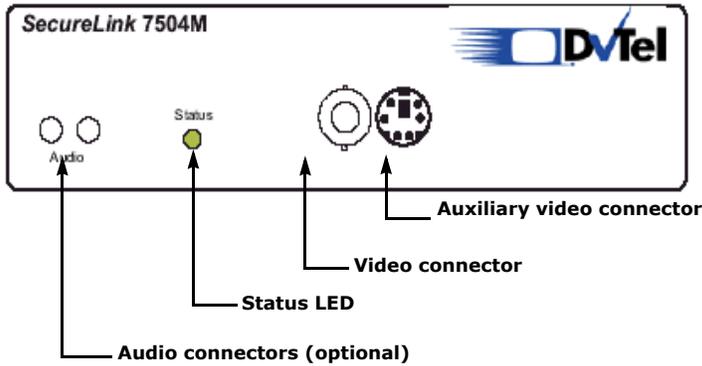
Auxiliary video connector

Video connector

Status LED

Audio connectors (optional)

The back panel consists of an RJ-45 jack, a status LED, a female DB-9 connector for RS-232 use, and a 10-pin terminal strip. This connector is broken down into three sections for RS-422/485, alarm, and power (12V DC).

12V DC connectors

Alarm input

Status LED

RS-422/485 serial port connectors

RS-232 serial port connector

RJ-45 Ethernet connector

2
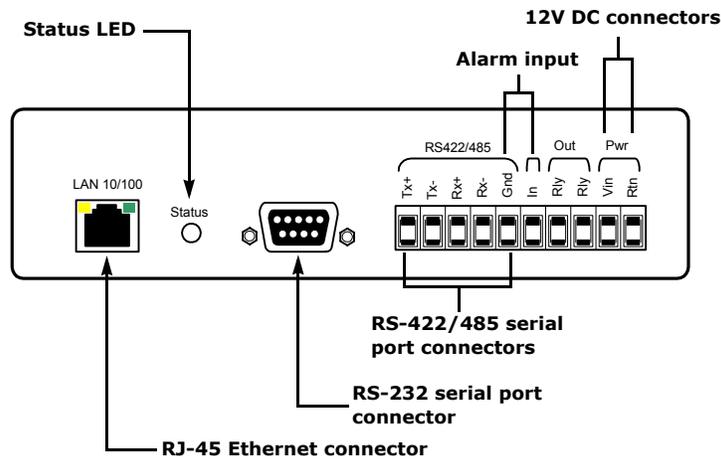
Network Planning

To allow optimal configuration, you must properly plan your network, especially its layout and IP address assignments. For more information on networking, refer to network equipment providers such as 3COM and Cisco.

IP Address Assignment

Wired networks can come in various shapes and sizes: from a printer plugged directly into a PC to the Internet. What is known as a local area network (LAN) consists of a group of devices (PCs, printers, access points) that share a common communications line. A wide area network (WAN) usually contains leased lines from a public carrier that permit a span of large distances (up to many hundreds of miles).

The 7500 Series works best over LANs and WANs where data rates can be controlled and guaranteed.

To allow communication between every device on a network without confusion, a standard protocol has been developed to permit seamless flow of information back and forth between all devices. Known as 802.3, this protocol requires devices to send all information in units of data called *packets*. To determine the destination device, packets are given destination addresses. The numerical addresses use the Internet Protocol (IP) and are therefore known as *IP addresses*. They are broken up into four fields, seperated by dots, each with a value between 1 and 254. Therefore, your address should range between 1.1.1.1 and 254.254.254.254.

When installing your 7500 Series, you will have to give it a unique IP address. If you are using your own, closed network (no other devices will be on this network and it is not connected to any other LAN, WAN, or the Internet), it is strongly recommended that you use the address range 192.168.135.1 to 192.168.135.254. If you are installing the 7500 Series on an existing LAN or WAN, you should get the range of addresses for the 7500 Series from the network administrator.

Some networks have a server that allocates the IP addresses. This is known as *dynamic host configuration protocol*, or DHCP. The 7500 Series supports this feature. If DHCP is enabled on your unit, the server will automatically allocate an IP address to the unit, making it unnecessary for you to do so. For more information about DHCP support for the 7500 Series, see Appendix C, page 29.

Network Layout

It is critical to ensure that no IP link of more than 300 feet (100 meters) be present in a network, unless otherwise stated by connection equipment such as 100Base-T to SC converters which can offer a 1.24-mile (2-km) range.

The 7500 Series supports a streaming method called *multicast*, which permits more than one receiver unit to view a video stream at any one time. Here is a typical connection of a point-to-multipoint application.

3
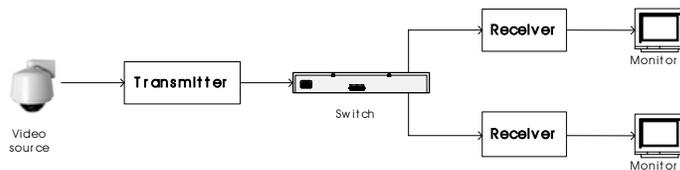
Configuring and Installing Units

This chapter presents the basic installation and configuration procedures for the 7500 Series encoders and decoders. To prepare your unit for operation, you will have to perform a series of steps:

◆ Basic configuration, mainly for communication and connection

◆ Physical installation in the unit's final location

◆ Alarm and audio configuration (if applicable)

◆ Connection to the serial ports (if applicable)

The chapter also contains information about the factory reset procedure and status LED indications.

Configuring the Unit

The following configuration steps are required:

◆   Setting a series of parameters, including the IP address

◆   In an analog extension context, creating a point-to-point connection

Setting Unit Parameters

The first step in installing a 7500 Series unit is to change ita IP address to ensure compatibility with any existing LAN or WAN. The default IP addresses of all 7500 Series units are based on the APIPA service and will be in the range 169.254.*X.Y*, where *X* and *Y* are based on the MAC address of the individual unit.

To work properly, units on the same network must have unique IP addresses. For more information regarding networking and appropriate IP addresses, see Chapter 2, page 5, or contact your network administrator.

The unit will not prevent you from entering a duplicate address. Its status LED, however, will flash red; then the unit will reboot with an APIPA address. If the unit is a receiver, the "Duplicate IP Detected" message will also be displayed in the on-screen display (for more information on this display, see Chapter 5, page 23).

The IP addresses of a unit can be set by two methods:

◆   Connecting your unit to the same LAN as your PC and using Device Configurator (described next)

◆   Using the command line interface (see page 20)

Next, you have to set serial port parameters.

The configuration procedure is the same for all units of the 7500 Series.

To set the parameters:

1   In a lab, unpack the unit and set it on a table.

2   Plug the 7500 Series IP connector directly to a computer using a crossover IP cable or to your LAN using a straight-through IP cable.

3   Power up the unit using 12V DC.

4   Start the Device Configurator software included on the DVTel SecureLink CD shipped with your equipment.

5   From the **General** tab, click **Program Options**.

6   Ensure that the **VSIP Port** value is 5510 (the default).

7   Checkmark the **Detect All Units on LAN** box, then click **OK**.

8 Choose the **Units** tab, then click **Discover**.
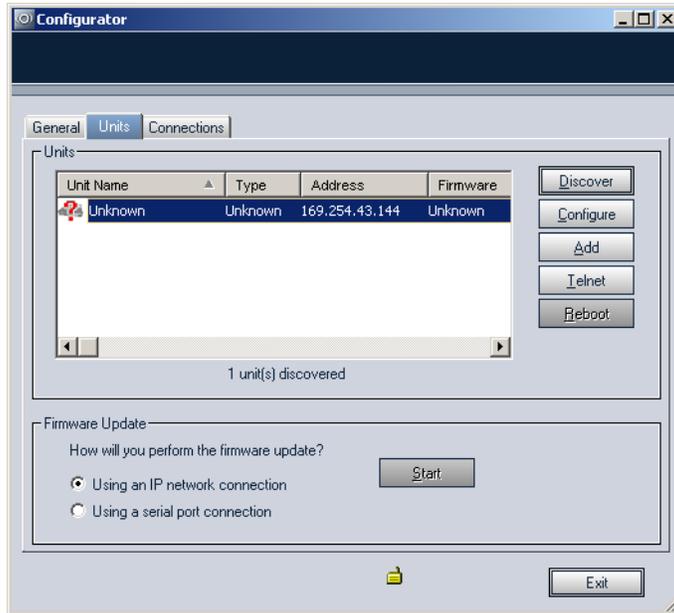
A unit of type "Unknown" with a 169.254.*X.Y* IP address appears in the list; it corresponds to your new unit. Other units, already configured and connected to the network, may also appear.

9 Select the unit to be configured, then click **Configure**. In the **Reconfigure unit?** confirmation window, click **Yes**.

10 To use DHCP (dynamic host configuration protocol), checkmark **Use DHCP**. Otherwise, enter the IP address, subnet mask, and gateway of the unit, as provided by your network administrator.

For more details on DHCP, see page 29.

11 Click **OK**.

12 Using the CLI (described in Chapter 4, page 16), configure the serial port parameters to match those of the dome/PTZ equipment (**skip this step if you will be using your encoder/decoder with NVRS**).

The 7500 Series initial configuration is now complete. You can now connect the unit to the IP network. You can perform further configuration with either the Device Configurator or NVRS Config Tool.

Creating a Point-to-Point Connection

In a point-to-point analog extension context (as opposed to using the NVRS software), you have to create connections between the transmitter and receiver units, to allow transfer of video, audio, I/O, and serial port data. Both units must reside on the same IP network. For more information, refer to the "Managing Connections" chapter in the *Device Configurator User Manual*.

To create a point-to-point connection:

1 Start Device Configurator.

2 Choose the **Units** tab, then click **Discover**.

All encoder/decoder units on the network should appear in the **Units** list. If the unit you would like to configure does not appear, check that its VSIP port is the same as that of the computer you are using.

3   Choose the **Connections** tab and click **Add**.

The **Connection Creator** window appears.
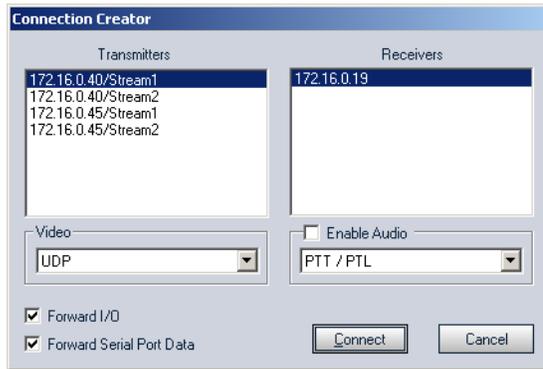
4   Select a transmitter in the left column and a receiver in the right one.

5   To disable I/O data transmission (for example, alarms), clear **Forward I/O**.

6   To disable serial port data transmission (like PTZ commands), clear **Forward Serial Port Data**.

7   To enable audio, check **Enable Audio**, then select the audio mode.

8   Click **Connect**.

If **Forward Serial Port Data** is checked on and one of the two units involved has only one serial port, the **Serial Port Connection** window will appear. Otherwise, go to step 10.

9   Select the serial port from which data should be forwarded, then click **OK**.

10 In the information window confirming the connection was successfully created, click **OK**.

Installing the Unit

Once your unit is successfully configured, it is ready to be installed in its final location.

The number of video inputs you can connect to an encoder depends on the unit's type. Only one video output is connected to each decoder. Depending on the context, you may, therefore, need more than one receiver for each transmitter.

◆   Point-to-point analog extension—One decoder per **video input**.

◆   NVRS—Decoders are optional, since all output can be viewed on a computer screen using the Monitor application.

The 7501E, 7501D and 7502M Video Servers

The 7501E and 7501D each have a single video connector; the 7502M has two.

To install a unit:

1   Power up the unit with 12V DC.

2   Connect the encoder/decoder, via its video in or video out socket, to either a camera/dome or an analog monitor. In the case of the 7502M, you can connect to two devices.

3   If applicable, connect the RS-422/485 serial port of the unit to the appropriate dome/PTZ/control panel interface (for instructions, see page 12).

4   Plug a network cable to the video server's RJ-45 Ethernet connector.

If the unit is an *-XT* model, make it stand vertically to allow for quicker, more effective cooling.
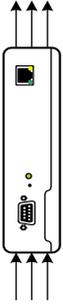
The 7504M Video Server

The 7504M encoder has four video inputs.

To install a 7504M unit:

1 Plug the video cable of the first camera or dome to the main video connector.

2 Plug the additional three video inputs to the BNC connectors available on the 7500-miniDIN-3BNC cable; then plug this cable to the 7504M auxiliary connector.

On the auxiliary connector assembly cable, a label identifies each additional video input: video 2, video 3, and video 4. These labels match the video inputs in Device Configurator (refer to its user manual).
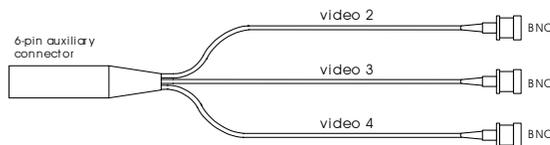
3 Power up or reboot the unit.

4 If required, connect the RS-422/485 serial port of the unit to the appropriate dome/PTZ/control panel interface (for instructions, see page 12).

5 Plug the network cable to the RJ-45 Ethernet connector.

Configuring Alarms

The alarm features on the terminal strip are bidirectional. On the 7504M, one alarm input and one alarm output are available. On the other units, there are three alarm inputs and one alarm output.

You can perform alarm configuration using the Device Configurator (**Connections** tab). If you have NVRS, use the Config Tool instead.

The event sensor needs to be plugged to a pin in the **In** section of the RS422/485 connector, whereas the alarm system should be connected to the **Out** section. For example, on an 7501E encoder:
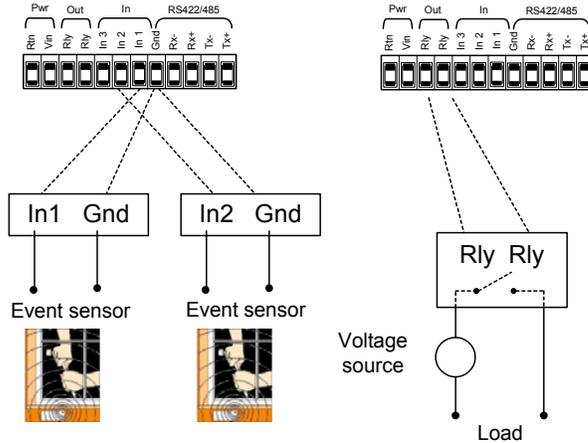
Understanding the Serial Ports

The 7500 Series units contain connectors for two serial ports: RS-232 and RS-422/485.

RS-232

A cable should be connected to the DB-9 connector the following way:

Pin number	Signal name
2	RxD
3	TxD
5	Signal GND
7	RTS
8	CTS

RS-422/485

To use the RS-422/485 functionality, you have to connect the twisted pair cables to the terminal strip. The terminal strip permits access to the Tx+, Tx-, Rx+, Rx-, and Gnd connections. To properly connect an RS-422/485 serial connection using four wires, use the following correspondence table:

Matrix/dome connector	7500 Series connector
Tx+	Tx+
Tx-	Tx-
Rx+	Rx+
Rx-	Rx-
Gnd	Gnd

For RS-422/485 bidirectional protocols, the setup is the following:
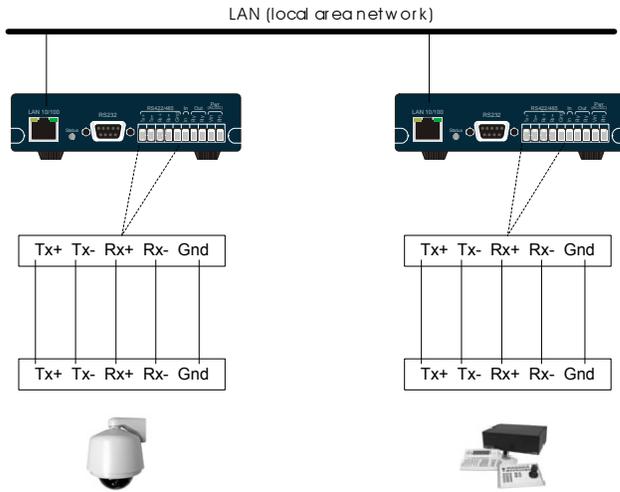
For the RS-422/485 Pelco P or D protocols, connect the serial ports as shown in the diagram below:
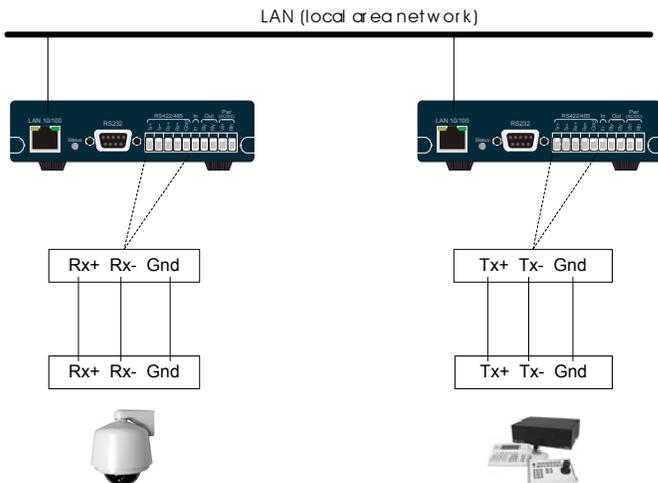
A typical connection of a multidrop RS-485 network (a number of terminals sharing the same line) is presented in Appendix B, page 27.

Configuring Audio

Encoders/decoders with audio capabilities have two 3.5 mm stereo. The 7500 Series supports both the full duplex bidirectional mode and the push-to-talk/push-to-listen (PTT/PTL) mode. You can set the mode in Device Configurator when creating a point-to-point connection or in the Config Tool if you use NVRS.

The PTT/PTL mode allows you to control audio communication between two units. If the PTT switch is pressed, the audio transmission circuit is activated. If both the transmitter and receiver PTT switches are activated at the same time, the receiver's will have precedence; audio will be transferred from the receiver to the transmitter. If the receiver's PTT and PTL functions are activated at the same time, PTT will be activated and PTL will be ignored. Here is a typical application of the PTT/PTL audio mode.
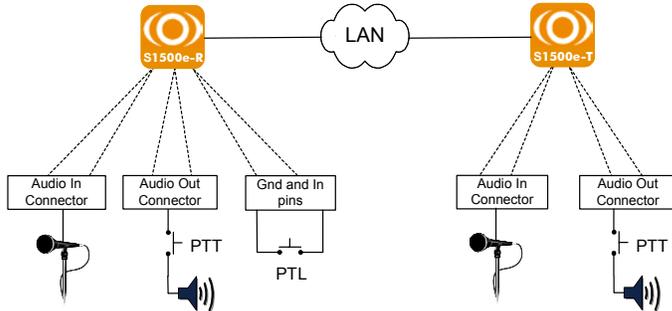
In full duplex mode, audio data is always transferred in both directions.

Appendix G, page 37, presents the audio input/output specifications along with connector descriptions for the 7504M unit.

Audio Output using Full Duplex Mode

In full duplex mode for audio output, you can use either a 3.5 mm mono or 3.5 mm stereo jack.

Audio Input using PTT/PTL or Full Duplex Mode

Audio supports two input types: line-in and micro (with preamplifier). If you wish to use a multimedia microphone (Electret), set the input type to **micro** in Device Configurator (**Audio** configuration tab). Most multimedia microphones use a 3.5 mm stereo jack.

The line-in audio input type is the default value for both the receiver and transmitter. In this mode, a 3.5 mm stereo jack or a 3.5 mm mono jack may be used.

Audio Output using PTT/PTL Mode

Audio output setups vary depending on the unit.

◆ 7504M—Use a 3.5 mm stereo jack to integrate the PTT button.

◆ All other units—Use the **In** dry contact 2 on the 12-pin connector to integrate the PTT button.

On all units, a normally open switch has to be connected between the Gnd and In pins on the terminal strip connector.

Performing a Hardware Reset

If during configuration the system becomes unstable or stops responding (possibly due to the entering of a wrong value via the CLI), it is possible to perform a hardware reset. This operation will cause the unit to revert to its original factory-configured parameters (listed in Appendix A, page 25).

To reset the unit parameters to their factory defaults **without performing a hardware operation**, see page 22.

Following a reset, the unit may need to be reconfigued for proper operation within its network.

7501E, 7501D and 7502M Units

To perform a hardware reset, use the Reset button located on the front panel.

To perform a hardware reset:

1 Press and hold the Reset button.

 The status LED flashes red very rapidly.

2 Hold the button for an additional five seconds, until the LED turns off.

The unit reboots with the default parameters.

7504M Unit

The hardware reset is invoked by shorting together the CTS and TxD pins of the serial port during the power-up sequence.

To perform a hardware reset:

1 Power down the unit.

2 Short the TxD and CTS conductors together (pins 3 and 8 on the DB-9 connector).

3 Power up the unit and wait until the normal boot-up sequence is completed.

4 Remove the short on the TxD and CTS pins.

The unit reboots with the default parameters.

Understanding the Status LED

The status LED is a bicolor (green-red) LED that provides detailed information on the current state of the system.

Condition	Indication	*-E, -M*	*-R*
Steady red	The unit is powering up.	✓	✓
Flashing red (0.1 sec. intervals)	The IP address of the unit is already assigned to another unit in the network.	✓	✓
Flashing green (3 sec. intervals)	The firmware has started, but the unit is not connected to the network.	✓	✓
Flashing green (1 sec. intervals)	The firmware has started, the unit is connected to the network, but no video/audio/serial* data is transmitted.	✓	
	The firmware has started, the unit is connected to the network, but no video is received or audio/serial* data is received/transmitted.		✓
Flashing green (0.5 sec. intervals)	The firmware has started, the unit is connected to the network, and video/audio/serial* data is transmitted.	✓	
	The firmware has started, the unit is connected to the network, and video is received or audio/serial* data is received/transmitted.		✓
Three consecutive red blinks every 3 to 5 sec.	No video input is detected.	✓	
Flashing green-red (1 sec. intervals)	The unit is undergoing a firmware update.	✓	✓
Flashing red (0.1 sec. intervals)	The unit is being identified.	✓	✓
One red blink	A video packet is lost. In the worst case, it could flash at 5 Hz.		✓

* At least one of them must be transferred to obtain the LED condition.

Warning

The following power-up conditions are abnormal:

◆ LED not lit: Check the power supply and cabling. If power is available and the LED stays off, call DVTel technical support for assistance.

◆ Steady red LED: There is an internal error that prevents the unit from starting normally. Power down and power back up the unit once. If the condition persists, proceed to a firmware update (for details, refer to the *Device Configurator User Manual*). If the update fails or the condition persists after the update, call DVTel technical support for assistance.

◆ Flashing red LED (2 second intervals): There is an internal error that prevents the unit from operating normally. This situation may happen after a firmware update or after the first boot-up. Power down and call DVTel technical support for assistance.

◆ Flashing green-red LED not during a firmware update: The unit is in backup mode; you will need to perform a firmware update using a serial connection.

4

Setting Parameters with the CLI

The 7500 Series units come with a simple command line interface (CLI) for configuration purposes. The CLI is hierarchically organized, with menus, sub-menus, and individual options representing configuration parameters. Only the parameters that you are likely to change are described in this document.

Your 7500 Series system is configured to interface, right out of the box, with the most popular camera data port configurations (4800 baud, 8 data bits, no parity, 1 stop bit).

Getting Started

You can access the CLI the following ways:

◆ With a network connection and the Telnet command

◆ With a serial connection and the Device Configurator application (see Appendix E, page 33)

◆ With a serial connection and a terminal emulation program such as HyperTerminal (see Appendix F, page 34)

Starting the CLI with Telnet

You can use the Telnet command to open the command line interface of the 7500 Series.

Note

Ensure that your PC and the 7500 Series unit are in the same IP subnet.

To enter the CLI with Telnet:

1 Start the **Command Prompt** Windows accessory.

2 At the command line, type `telnet` followed by the IP address of the unit, then press **Enter**.

```
Command Prompt                                        _ □ ×
Microsoft Windows 2000 [Version 5.00.2195]
(C) Copyright 1985-2000 Microsoft Corp.

Z:\>telnet 172.16.0.34_
```

The CLI main menu appears.

```
********************************
Main Menu
-------------------------------
Menus:
1) Serial Port Setup
2) UserName/Password Setup
3) System Status
4) Network
5) Ethernet Communication
6) Advanced

Commands:
s) Save Settings
r) Reboot System
l) Load Default Configuration
q) Quit
********************************
```

The CLI has a timeout that is triggered after three minutes of inactivity. When the timeout occurs you will be brought back to the **Command Prompt** command line. To reactivate the CLI, re-enter the `telnet` command.

3 To end the CLI work session:

❖ Save your settings by entering **s** at the main menu and pressing **Enter**.

❖ Exit the CLI by entering **q** at the main menu and pressing **Enter**.

Using the CLI

To work through the CLI menu structure, follow these guidelines:

◆ To execute a command, press **Enter** after typing in the corresponding letter or number.

◆ All letters entered in the CLI must be lowercase.

◆ Entering **p** returns you to the previous menu.

◆ Entering **s** saves all the changes you have made in the work session.

◆ To exit, enter **q** in the main menu. Depending on the changed settings, the unit may perform a soft reboot.

Serial Ports

The Serial Port menu enables you to establish proper settings ensuring compatibility between the 7500 Series unit and your serial equipment (for example, dome, keyboard, matrix, multiplexer, or access card). For more information about the serial port settings of the specific product with which you want to interface, refer to its user manual or contact your product manufacturer.

Depending on the unit, you can set one or two serial ports.

On 7504M units, there is only one serial port; therefore the settings apply to the chosen one.

```
*********************************************
Main Menu \ Serial Port Setup
---------------------------------------------
Parameters:
1) Bit rate                  : 4800
2) Parity                    : None
3) Line driver               : Auto
4) RS422/RS485 Operating Mode: RS422 4 Wire

Commands:
p) Previous Menu
*********************************************
```

On all other units, you have access to two independent serial ports.

```
********************************
Main Menu \ Serial Port Setup
--------------------------------
Menus:
1) RS-232
2) RS-422/485

Commands:
p) Previous Menu
********************************
```

For the RS-232 port, the available commands are:

```
****************************************
Main Menu \ Serial Port Setup \ RS-232
----------------------------------------
Parameters:
1) Bit rate: 4800
2) Parity  : None

Commands:
p) Previous Menu
****************************************
```

For the RS-422/485 port, you have access to the following settings:

```
*********************************************
Main Menu \ Serial Port Setup \ RS-422/485
---------------------------------------------
Parameters:
1) Bit rate                  : 4800
2) Parity                    : None
3) RS422/RS485 Operating Mode: RS422 4 Wire

Commands:
p) Previous Menu
*********************************************
```

Bit Rate

The bit rate represents the data rate at which the target product operates. Possible values range from 1200 bps to 230,400 bps (for a transmitter) or to 115,200 bps (for a receiver).

Parity

The serial equipment may have a parity of *odd* or *even*. It may also not have parity check at all; most communication devices do not use parity.

Line Driver

For 7501E, 7501D and 7502M units, the line driver option is unavailable, since the units have two independent serial ports.

For 7504M units, the default setting is to automatically detect the electrical line interface of the serial port (RS-232 or RS-422/485). However, if your system cannot properly detect the electrical level (for instance, when there is too much noise on the line or too much signal attenuation due to long cable length), you can use the line driver setting to force its electrical line interface.

Here are the possible line driver settings, where -d indicates that the auto-detection mode is activated, and -f, that the line driver is forced:

Setting	Description
232f-d	RS-232 auto-detected, full-duplex operation
232f-f	RS-232 forced, full-duplex operation
485f-d	RS-422/485 auto-detected, 4-wire full-duplex, RS-485 operation
485h-d	RS-422/485 auto-detected, 2-wire half-duplex, RS-485 operation
485h-f	RS-422/485 forced, 2-wire half-duplex, RS-485 operation
485f-f	RS-422/485 forced, 4-wire full-duplex, RS-485 operation
422f-d	RS-422/485 auto-detected, 4-wire full-duplex, RS-422 operation
422f-f	RS-422/485 forced, 4-wire full-duplex, RS-422 operation

Warning

If the line driver is forced to the RS-422/485 setting, you will not have access to the CLI unless you use an RS-485 to RS-232 converter or perform a factory reset (described on page 14).

RS-422/485 Operating Mode

The operating mode setting enables you to establish the way your RS-422/485 serial equipment will interface with the 7500 Series unit. The supported modes are:

◆ RS422 4 Wire
◆ RS485 4 Wire
◆ RS485 2 Wire

System Status

The system status information indicates the current values of internal unit parameters, including the serial number and firmware version. A transmitter and a receiver connected together must have the same firmware version.

A value of 03-03 or later in **Unit Tested** indicates that the unit has an SSL certificate.

```
****************************************************
Main Menu \ System Status
---------------------------------------------------
Parameters:
    Firmware Version     : 2.55-  build 303
    Build Date           : May 22 2003 at 10:54:29
    CPU Info             : Rev. 1.0
    CPU Frequency        : 206250000
    Uptime               : 01:36:30
    Serial Number        : 00079a-001a72
    CPLD Version         : 0
    Flash Size           : 4
    Internal Value 1     : 9398272
    Audio Hardware       : Present
    Unit Tested (MM-YY) : 03-03
    Unit Firmware Size   : 3392 KB
    Backup Firmware Size: 384 KB


Commands:
p) Previous Menu
****************************************************
```

Network

The Network menu allows you to configure several parameters in order to ensure the compatibility between your unit and the IP network into which it will be integrated.

```
*************************************************)
Main Menu \ Network
------------------------------------------------
Parameters:
1) DHCP Configuration        : Disabled
2) Local IP Address          : 192.168.135.92
3) Subnet Mask               : 255.255.255.0
4) Gateway                   : 192.168.135.2
5) Primary DNS Server Address: 0.0.0.0
6) Backup DNS Server Address : 0.0.0.0
7) Ping Request              : 0.0.0.0

Commands:
i) Ping Remote Address
p) Previous Menu
*************************************************)
```

For more information about these settings, contact your network administrator.

DHCP Configuration

DHCP (dynamic host configuration protocol) allows devices and computers connected to a network to automatically get a valid network configuration from a server. For more information about DHCP, see Appendix C, page 29.

You can set this option only if the encoder/decoder is connected to a network that uses a DHCP server.

Local IP Address

The IP address is the identifier of the 7500 Series unit on the network. The IP address format is a 32-bit numeric address written as four numbers separated by periods. Each number is in the 0-255 range. Each device on a network must have a unique IP address.

Subnet Mask

The subnet mask is the binary configuration specifying the subnet in which the IP address of the unit belongs. A subnet is a portion of a network that shares a common address component. On TCP/IP networks, subnets are defined as all devices whose IP addresses have the same prefix.

Unless otherwise specified by your network administrator, it is recommended that you use a subnet mask of 255.255.255.0.

Gateway

The gateway represents a network point that acts as an entrance to another network.

Ping Request

Ping is a basic Internet program that lets you check that a particular IP address exists and can accept requests. You can ping a specific unit by entering its IP address.

UserName/Password

The UserName/Password menu gives you the opportunity to protect the unit's configuration when it is accessed by a serial connection or a Telnet session. When the username/password mode is enabled, configuration by serial port is accessible only if the entered user name and password are correct. The password must be at least four characters long, digits or letters.

```
***********************************
Main Menu \ UserName/Password Setup
-----------------------------------
Parameters:
1) UserName
2) Password
3) UserName/Password Mode: Disabled

Commands:
p) Previous Menu
***********************************
```

Advanced Menu

The Advanced menu contains a series of advanced setups used mainly by DVTel technical support. Some of these configuration parameters are available through the Device Configurator utility software.

```
*******************************************
Main Menu \ Advanced
-------------------------------------------
Menus:
1) Video Setup
2) Video Status
3) Security
4) Test and Debug
5) Serial Port Setup (IP)
6) VSIP
7) VSIP Statistics
8) Power Management
9) Audio Setup
10) System Time
11) License Management
12) Serial Port Status
13) Communication Status and Statistics

Commands:
i) Identify Unit
p) Previous Menu
*******************************************
```

Identifying a Unit

To identify an encoder/decoder among a large set of units, you can make its LED flash red rapidly.

To identify a 7500 Series unit:

1   From the main menu, choose **Advanced**, then press **Enter**.

2   Enter **i** to make the LED flash red. Re-enter **i** to set the LED to its original state.

3   Enter **p** until you are in the main menu.

4   Enter **q** to exit.

Security

The Security menu allows access to commands used to protect of the unit. It allows you to:

◆   Prevent access to Telnet sessions

◆   Prevent firmware updates through the IP network

◆   Supply an SSL passkey

```
*******************************************
Main Menu \ Advanced \ Security
-------------------------------------------
Parameters:
1) Allow IP Firmware Update: Enabled
2) Firmware Update Port    : 12345
3) Allow Telnet Session    : Enabled
4) Allow Report Monitor    : Enabled
5) Security Profile        : Disabled
6) SSL Passkey             :

Commands:
p) Previous Menu
*******************************************
```

Preventing Telnet Sessions

By default, Telnet access to 7500 Series units is allowed. To improve the security of your system, you may prohibit this access. The CLI will then only be accessible through a serial connection (with Device Configurator or HyperTerminal).

To prevent Telnet sessions:

1   From the main menu, choose **Advanced**, then press **Enter**.

2   Choose **Security** and press **Enter**.

3   Choose **Allow Telnet Session** and press **Enter**.

4   Enter **0** and press **Enter**.

5   Enter **p** until you are in the main menu.

6   Enter **s** to save your changes, then **q** to exit.

CLI access using a Telnet session is now denied. To enter the CLI or allow Telnet session again, you will need to use a serial connection.

Preventing Firmware Updates

You can prevent firmware updates to be performed on your unit through the IP network. By default, this type of update is allowed. For more information about firmware updates, refer to the *Device Configurator User Manual*.

To prevent firmware updates:

1   From the main menu, choose **Advanced** and then press **Enter**.

2   Choose **Security** and press **Enter**.

3   Choose **Allow IP Firmware Update**, then press **Enter**.

4   Enter **0**, then press **Enter**.

5   Enter **p** until you are in the main menu.

6   Enter **s** to save your changes, then **q** to exit.

You will not be able to perform firmware updates through the IP network anymore.

Supplying an SSL Passkey

To secure a unit with SSL, you need to provide a passkey. This passkey must be the same for all units as well as Device Configurator to allow proper secure communication between them.

It is recommended you perform this operation in Device Configurator (version 2.55 or higher); for detailed instructions, refer to the *Device Configurator User Manual*. Otherwise, to build a truly secure system, you should first access the CLI through a physical serial port connection, rather than through Telnet, in order to avoid eavesdropping on the network.

Load Default Configuration

The Load Default Configuration option, located in the main menu, resets all user parameters to their factory settings (described in Appendix A, page 25). All user-defined values will be lost.

To reset the unit parameters to their factory defaults with a hardware operation instead, see page 14.

Following a configuration reset, the unit may need to be reconfigured for proper operation within its network.

Reboot System

The Reboot System functionality, located in the main menu, performs a soft boot. A system reboot clears all unsaved changes in the CLI and returns to your preset configuration.

5

On-Screen Display (OSD)

The 7500 Series receiver units display information on a video monitor.

The information displayed on the video monitor can be broken down into four quadrants as follows:

Quadrant 1	Quadrant 2
Quadrant 4	Quadrant 3
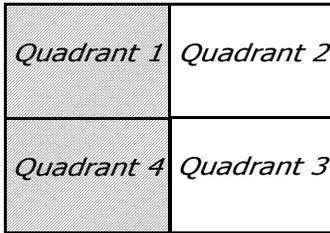
Quadrants 1 and 4 are unused.

Quadrant 2: Video Message

When a connection is created between two units, the IP address of the transmitting unit is displayed.

Quadrant 3: Receiver Setup Details

Quadrant 3 displays basic unit configuration details, including serial port and network setup. This information is displayed during 45 seconds on startup. For example:

```
7501D ver: 2.55- build 303
Comm: 4800, 8, N, 1 232f-d
IpAddr: 192.168.135.97
SubNet: 255.255.255.0
Gateway: 192.168.135.1
```

Here is the description of the `Comm` line:

Serial port	Description
4800	Bit rate
8	Number of data bits
N	Parity: None
1	Number of stop bits
232f-d	Line driver

The "Duplicate IP Detection" message will be displayed if the IP address of the unit is already assigned to another machine in the network.

Factory Default Configuration

This appendix lists the factory default configuration of the 7500 Series units.

7500 Series units are programmed at the factory with the following configuration:

Type	Configuration
Serial port	◆ Bit rate: 4800 bauds ◆ Parity: none ◆ Line driver: for 7504M, auto-detected ◆ RS-422/485 operating mode: RS-422 4-wire
Network	◆ DHCP configuration: Disabled ◆ IP address: 169.254.*.* (MAC address of the unit) ◆ Subnet mask: 255.255.0.0 ◆ Gateway: 169.254.*.* (MAC address of the unit) ◆ Primary DNS server address: 0.0.0.0 ◆ Backup DNS server address: 0.0.0.0 ◆ Ping request: Target IP address not specified
Video settings	◆ Target frame rate: 30 fps ◆ Target bit rate: 800 Kbps ◆ Maximum quantizer: 10 ◆ Resolution: CIF ◆ Video standard: NTSC
VSIP	◆ VSIP Port: 5510 ◆ VSIP Multicast IP Address: 224.16.32.1 ◆ VSIP Discovery IP Address: 255.255.255.255
Security	◆ Telnet sessions: Enabled ◆ IP firmware update: Enabled ◆ Security profile: Disabled ◆ SSL passkey: <empty>
User name/password	◆ User name: USERNAME ◆ Password: PASSWORD ◆ User name/Password mode: Disabled

B

RS-485 Multidrop Connections

Two multidrop configurations are available:

◆ Four-wire

◆ Two-wire

The four-wire configuration, which can be used for both RS-422 and RS-485, is:
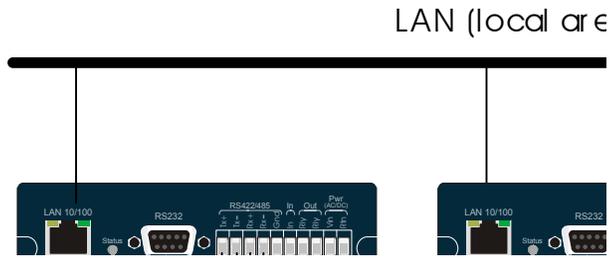
The two-wire configuration, for RS-485 only, is:

A
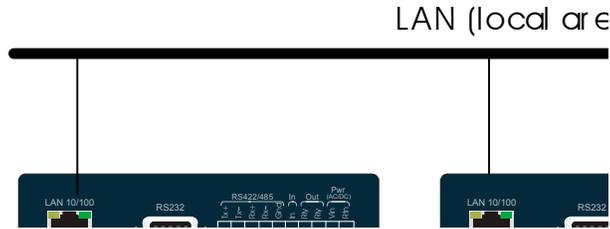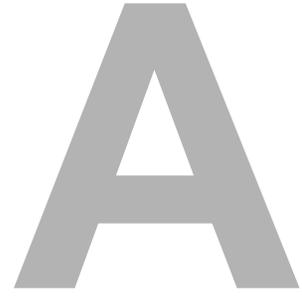
DHCP Support

DHCP (dynamic host configuration protocol) allows devices and computers connected to a network to automatically get a valid network configuration from a DHCP server on that network.

During startup, the Device Configurator determines if a network configuration is stored in its memory or if it must contact a DHCP server to get one. For DVTel units, the network configuration consists of:

◆ An IP address
◆ A sub-network mask
◆ A default gateway
◆ One or two IP addresses of DNS servers (optional)

If the network configuration is stored locally on the unit, the unit uses it and proceeds with starting its applications. If the configuration must be obtained from a DHCP server, the unit must take extra steps to get it before it can start its applications. The unit then tries to contact a DHCP server and get a valid configuration from it.

If no DHCP server can be found or no network configuration can be obtained from it within one minute, DHCP configuration fails. A fake network configuration is used instead; the unit then tries to start its applications anyway. The applications on the unit are only started after DHCP completes or fails.

If DHCP configuration fails, the unit may not be able to see other devices on the network or may not be visible to them. The fake configuration used by the unit is:

◆ IP address:169.254. *. *
◆ Subnet mask:255.255.0.0
◆ Default gateway:169.254. *. *

The 169.254. *. * address used by each unit is a unique address based on the MAC address and is determined in accordance with the APIPA service developed by Microsoft. This service allows each unit to find a unique IP address until a DHCP server can provide a complete network configuration.

A unit newly upgraded from a previous version of the firmware will have DHCP configuration disabled by default and will retain its current network configuration. The first time a new unit boots up, it has no IP address. It will use a temporary IP address using the APIPA service. Once the user provides a valid network configuration or activates DHCP, the unit reboots and uses the new settings.

If you perform a factory setting reset, DHCP support is disabled and the network configuration is deleted. The unit will therefore use an APIPA address the next time it boots.

D

DTE and DCE Connections

Before connecting a DVTel unit to other serial equipment, you need to determine if they are DTE (data terminal equipment) or DCE (data communication equipment).

Here are examples of both equipment types:

◆ DCE—7500 Series units, 6501E Encoder NTU, modems

◆ DTE—PCs, switches, multiplexers, cameras, keyboards

You need to know which equipment type your other serial device is in order to connect it correctly to the 6501E unit, which is a DCE.

In the following descriptions:

◆ Voltage is measured when no data is transferred on the Rx and Tx pins.

◆ *-X volts* represents a negative voltage value.

Data Terminal Equipment

DTE modules have the following electrical-level setup:

Pin number	Signal	Measured voltage
3	Tx	-X volts
2	Rx	0 volt
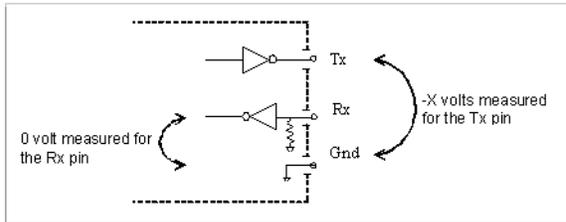
Data Communication Equipment

DCE modules have the following electrical-level setup:

Pin number	Signal	Measured voltage
3	Tx	0 volt
2	Rx	-X volts
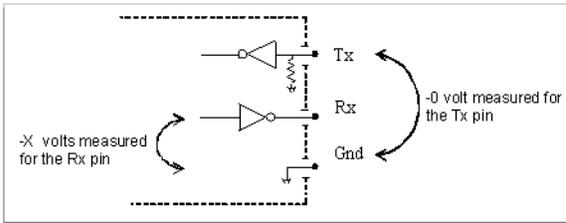
Connecting DTE and DCE

When connecting two modules of the same type, you have to cross the data wires to create proper communication. On the other hand, when connecting a DTE with a DCE, a straight cable is required.

E
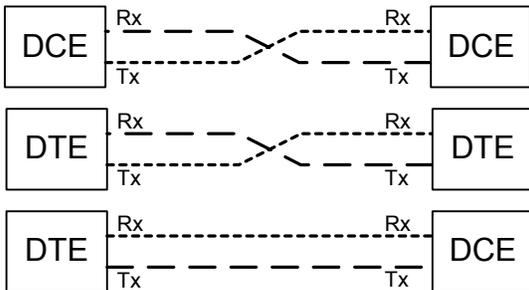
CLI with Device Configurator

The Device Configurator console enables you to easily access the CLI (command line interface) tool to configure and customize your 6501E unit.

You can find the Device Configurator program and its user manual on the DVTel SecureLink CD shipped with your unit. You can either launch Device Configurator directly from the CD or copy the executable file onto your hard disk first.

To access the CLI with the Device Configurator console:

1 Connect the 6501E unit to a COM port of the computer using a serial cable.

2 Start Device Configurator.
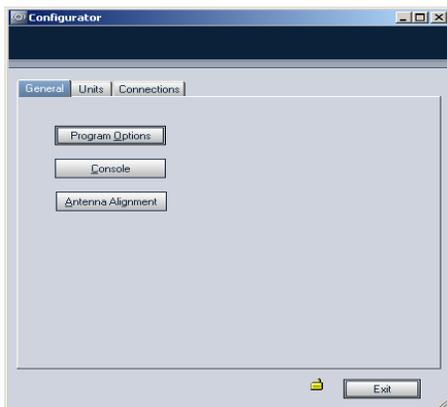
3 From the General tab, click **Console**.

The **Console** window appears.

4 In the **Connect using** list, select the COM port used to communicate with the unit.

5 Click **Connect**.

The CLI has a timeout that is triggered after three minutes of inactivity. When the timeout occurs you will lose access to the command line.

6 To reactivate the CLI after a timeout, click **Connect**.

7 To end the CLI work session:

❖ Save the settings by entering **s** at the main menu, then pressing **Enter**.

❖ Exit the CLI by entering **q** at the main menu, then pressing **Enter**.

❖ Close the **Console** window.

Warning
The **Disconnect** button is used to terminate the connection to the Device Configurator console, not to exit from the CLI. Clicking it does not free the RS-232 connection and does not save your settings.

CLI with HyperTerminal

HyperTerminal is a Windows system tool for connecting to other computers, Internet Telnet sites, bulletin board systems (BBSs), online services, and host computers. You can use it to access the CLI (command line interface) in order to configure and customize your unit.

Before using HyperTerminal to access the CLI, you will have to perform the following operations:

◆ Connect the 6501E unit to a COM port of the computer using a CAB9P serial cable with a DB-9 end

◆ Power up the 6501E unit

◆ Establish a connection

◆ Set the parameters of the computer's serial port

◆ Activate the connection

Notes

A COM port is required to perform unit configuration. You need to disable any program using this port prior to starting this procedure.

Turn off the **Scroll Lock** key on your keyboard before entering HyperTerminal.

To establish a connection:

1 From the **Start** menu, choose **Programs** > **Accessories** > **Communications** > **HyperTerminal**.

The **Connection Description** window appears.
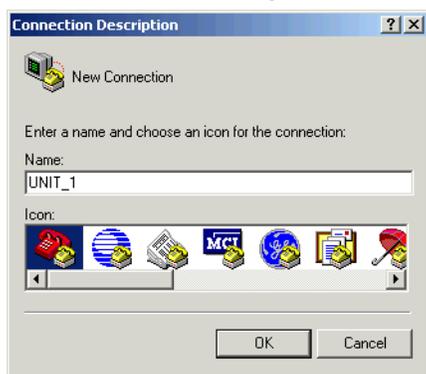
2 In the **Name** field, enter a description for the connection; for example, `UNIT_1`.

3 Click **OK**.

4 In the **Connect To** window, click **Cancel**.

To set the parameters of the serial port:

1   From the main HyperTerminal window, choose **File** > **Properties**.

The *connection_name* **Properties** window appears.
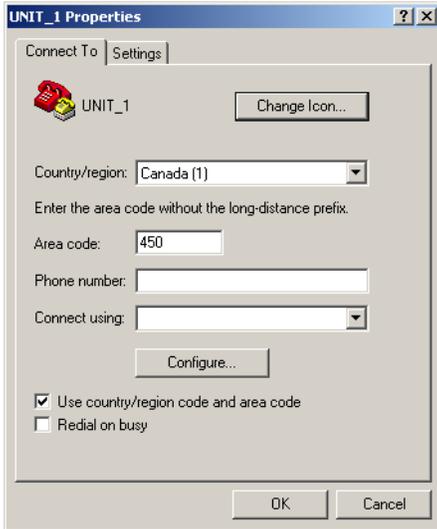
2   In the **Connect using** field, select the COM port you are using for the connection.

3   Click **Configure**.

A **Properties** window appears.
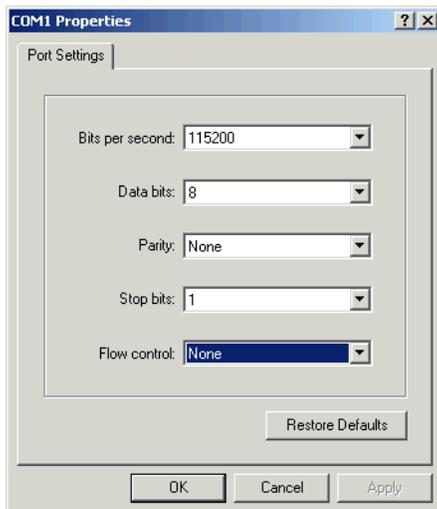
4   Set the parameters with the values indicated in the illustration.

5   Click **OK**.

6   In the *connection_name* **Properties** window, click **OK**.

To activate the connection:

◆   From the main HyperTerminal window, choose **Call** > **Call**.

You can now use the CLI to configure your 6501E unit.

To access the CLI with HyperTerminal:

1   Press **Ctrl**+**Break**, then the space bar for a few seconds.

The CLI has a timeout that is triggered after three minutes of inactivity. When the timeout occurs you will lose access to the command prompt.

2   To reactivate the CLI after a timeout, press **Ctrl**+**Break**, then the space bar for a few seconds.

3 To end the CLI work session:

    ❖   Save the settings by entering **s** at the main menu, then pressing **Enter**.

    ❖   Exit the CLI by entering **q** at the main menu, then pressing **Enter**.

    ❖   Close the **HyperTerminal** window.

G

Audio Pinouts and Specifications

This appendix presents information regarding the 3.5 mm mono and stereo plugs used for audio on the 7504M units as well as the input/output specifications for all units in the 7500 Series.

Connectors for Audio Input

Stereo Plugs in Full Duplex or PTT/PTL Mode

Ground (shield)

Ground (shield)

Mic bias (not
connected for line-in)

Mic/Line-in

Mic bias (not connected
for line-in)

Mic/line-in

Mono Plugs in Full Duplex or PTT/PTL Mode

Ground (shield)

Line-in

Line-in

Ground (shield)
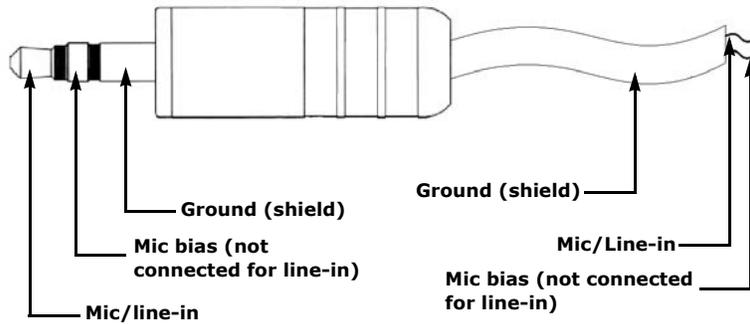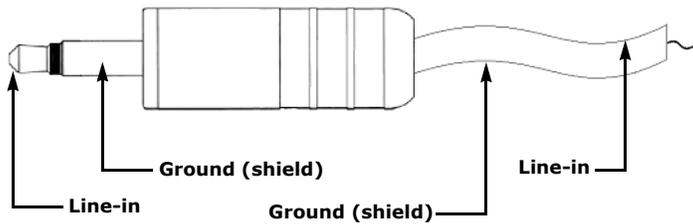
Connectors for Audio Output

Stereo Plugs in Full Duplex Mode

Ground (shield)

Ground (shield)

Not connected

Line-out (speaker)

Line-out (speaker)

Not connected

Mono Plugs in Full Duplex Mode

Ground (shield)

Line-out
(speaker)

Line-out (speaker)

Ground (shield)

Stereo Plugs in PTT/PTL Mode

* PTT is a normally open switch ⸺•⸺•⸺ .

Input/Output Specifications

Here are the audio specifications:

Mode	Level	Impedance	Frequency range
Mic-in	-38 to -21 dBV	30 Kohm	
Line-in	-20 to -3 dBV	30 Kohm	300–3600 Hz
Line-out/speaker	-45 to -3 dBV	8 ohms min.	

where 0 dBV = Vrms

H

Technical Specifications

Video	Compression	MPEG-4-based
	Frame rate	1-30 fps (programmable)
	Input	7501E: 1 input, 1 Vpp into 75 ohms
		7502M: 2 inputs
		7504M: 4 video inputs
	Output	7501D: 1 output, 1 Vpp into 75 ohms
	Resolution	Scalable from 176 x 120 to 720 x 480 NTSC pixels (176 x 144 to 720 x 576 PAL pixels)
	Standard	Programmable NTSC or PAL
	Connectors	BNC female
Serial Port	Electrical levels	Port 1: RS-232 (230 kbps max.)
		Port 2: RS-422/485 2/4 wires (230 kbps max.)
	Connectors	Port 1: DB-9 female
		Port 2: pluggable screw-terminal strip
	Operating mode	Transparent serial port supporting any asynchronous serial protocol (specific protocol emulation may be supported on request)
General I/O	Alarm input	3 dry contact inputs
	Alarm output	1 relay contact output (48V AC/DC at 100 mA max.)
	Connector	Pluggable screw-terminal strip
Audio	Bidirectional	Input: -46 to -3 dBV into 1 kOhm
		Output: -46 to -3 dBV into 16 ohms min.
	Connectors	0.14 inch (3.5 mm) input and output stereo jacks
Network	Interface	Ethernet 10/100Base-T
	Connector	RJ-45 jack
	Protocols	Transport: RTP/IP, UDP/IP, TCP/IP, multicast IP
		Others: DNS and DHCP client
	Security	SSL-based authentication
Power	Supply voltage	12V DC ±10%
	Consumption	6W max. (500 mA max. at 12V DC)
Physical	Enclosure	Metal case with flange mount (black color)
	Size	4.52L x 5.6W x 1.25H inches (115L x 142W x 32H millimeters)
	Environment	7500 Series: 32°F to 122°F (0°C to 50°C)
		7500 Series-XT: -22°F to 140°F (-30°C to 60°C)
	Humidity	95% non condensing at 122°F (50°C)
Certification and Regulation	USA	FCC part 15 subpart B (Class A)
	Canada	ICES-003/NMB-003
	Europe	CE mark, EN 55022:1998 Class A, EN 55024:1998
Management	Configuration	Local via the serial port using any ASCII terminal
		Remote using Device Configurator, Internet Explorer 5.5, or Telnet
	Typical connections	Multiple 7500 Series units to an NVRS server
	Bandwidth	Active management and error correction when using RTP/IP protocol

Glossary

Alarming A feature on surveillance systems which allows the equipment to typically provide a simple switch closure in response to a designated input alarm signal.

APIPA (Automatic Private IP Addressing) A feature of Windows-based operating systems that enables a computer to automatically assign itself an IP address when there is no dynamic host configuration protocol (DHCP) server available to perform that function. APIPA serves as a DHCP server failover mechanism and makes it easier to configure and support small local area networks (LANs). Also known as *AutoIP*.

CCTV (Closed Circuit Television) A television system in which signals are not publicly distributed; cameras are connected to television monitors in a limited area such as a store, an office building, or on a college campus. CCTV is commonly used in surveillance systems.

CIF (Common Image Format) A video format that easily supports both NTSC and PAL signals. Many CIF flavors are available, namely CIF, QCIF, 2CIF, and 4CIF. Each flavor corresponds to a specific number of lines and columns per video frame.

CLI (Command Line Interface) A textual user interface in which the user responds to a prompt by typing a command. All DVTel units have a built-in CLI which can be used for advanced configuration.

Codec (Coder/Decoder) A device that encodes or decodes a signal.

DCE (Data Communication Equipment) In an RS-232C communication channel, a device that connects to the RS-232C interface. DVTel units and modems are DCE.

Decoder See *Receiver*.

Device Configurator A proprietary program used to configure DVTel video servers and update their firmware.

DHCP (Dynamic Host Configuration Protocol) A communication protocol that lets network administrators manage centrally and automate the assignment of Internet Protocol (IP) addresses in an organization's network.

DTE (Data Terminal Equipment) In an RS-232C communication channel, the device to which the RS-232C interface connects. PCs, switches, multiplexers, cameras, and keyboards are DTE.

DVR (Digital Video Recorder) A device (usually a PC) that acts like a VCR in that it has the ability to record and play back video images. The DVR takes the feed from a camera and records it into a digital format on a storage device which is most commonly the hard drive.

Encoder See *Transmitter*.

Ethernet A local-area network (LAN) architecture using a bus or star topology and supporting data transfer rates of 10 Mbps. It is one of the most widely implemented LAN standards. A newer version of Ethernet, called 100Base-T (or Fast Ethernet), supports data transfer rates of 100 Mbps.

EtherReach A technology for transmitting and receiving up to 30 Mbps (combined) using standard CAT3 phone lines (twisted pair).

Firmware Software stored in read-only memory (ROM) or programmable ROM (PROM), thereby becoming a permanent part of a computing device.

IP (Internet Protocol) The network layer for the TCP/IP protocol suite widely used on Ethernet networks. IP is a connectionless, best-effort packet switching protocol. It provides packet routing, fragmentation, and re-assembly through the data link layer.

LAN (Local Area Network) A computer network that spans a relatively small area. A LAN can connect workstations, personal computers, and surveillance equipment (like video servers). See also *WAN*.

MPEG-4 A graphics and video compression algorithm based on MPEG-1, MPEG-2, and Apple QuickTime technology. MPEG-4 extends these earlier algorithms with synthesis of speech and video, fractal compression, computer visualization, and artificial intelligence-based image processing techniques.

Multicast Communication between a single sender and multiple receivers on a network. Multicast is a set of protocols using UDP/IP as their transport protocol.

NVRS   The DVTel video management and storage software. This graphical product is used in conjunction with Ethernet and wireless video servers.

NTSC   (National Television Standards Committee) The North American standard (525-line interlaced raster-scanned video) for the generation, transmission, and reception of television signals. In addition to North America, the NTSC standard is used in Central America, a number of South American countries, and some Asian countries, including Japan. Compare with *PAL*.

NTP   (Network Time Protocol) A protocol designed to synchronize the clocks of devices over a network.

OSD   (On-Screen Display) Status information displayed on the video monitor connected to a receiver unit.

PAL   (Phase Alternation by Line) A television signal standard (625 lines, 50 Hz, 220V primary power) used in the United Kingdom, much of the rest of western Europe, several South American countries, some Middle East and Asian countries, several African countries, Australia, New Zealand, and other Pacific island countries. Compare with *NTSC*.

Point-to-Point Connection   A direct connection between a transmitter and a receiver, in an analog extension context (as opposed to using the NVRS software).

PTL   (Push-to-Listen) In a two-way system, the communication mode in which the listener must push a button while listening.

PTT   (Push-to-Talk) In a two-way system, the communication mode in which the talker must push a button while talking.

PTZ Camera   (Pan-Tilt-Zoom) An electronic camera that can be rotated left, right, up, or down as well as zoomed in to get a magnified view of an object or area. A PTZ camera monitors a larger area than a fixed camera.

Receiver   A device converting a digital video signal sent by a transmitter into an analog form. Also called *decoder*.

RF   (Radio Frequency) Any frequency within the electromagnetic spectrum associated with radio wave propagation. When a modulated signal is supplied to an antenna, an electromagnetic field is created that is able to propagate through space. Many wireless technologies are based on RF field propagation.

RS-232   A standard interface approved by the Electronic Industries Alliance (EIA) for connecting serial devices.

RS-422   A standard interface approved by the Electronic Industries Alliance (EIA) for connecting serial devices, designed to replace the older RS-232 standard because it supports higher data rates and greater immunity to electrical interference.

RS-485   An Electronics Industry Alliance (EIA) standard for multipoint communications.

Serial Port   An interface that can be used for serial communication, in which only one bit is transmitted at a time. A serial port is a general-purpose interface that can be used for almost any type of device.

SSID   (Service Set Identifier) A name identifying a pair of DVTel units (transmitter and receiver) working together.

SSL   (Secure Sockets Layer) A commonly used protocol developed by Netscape for transmitting private documents via the Internet. SSL works by using a public key to encrypt data that is transferred over the SSL connection. The SSL protocol secures the following data: I/O, serial port, and VSIP communication. It does not apply to audio and video transmission.

Transmitter   A device sending video signals captured with a connected camera or dome to a receiver. The transmitter converts the analog signal into a digital form before transmitting it. Also called *encoder*.

Video Server   A unit transmitting or receiving video signals.

VSIP   (Video Services over IP) A proprietary communication protocol for sending messages between PCs and encoder/decoder units.

WAN   (Wide Area Network) A computer network that spans a relatively large geographical area. Typically, a WAN consists of two or more local area networks (LANs).

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