



## **INSTALLATION AND OPERATING INSTRUCTIONS**

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**VCX-4402-E Dual MPEG-4 Encoder, IP**  
**VCX-4402-ER Dual MPEG-4 Encoder, IP Rack Mount**

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## Table of Contents

Introduction.....	3
Familiarization with the VCX4402-E.....	4
Com Port Data Interface .....	5
Video Input Interface .....	5
Ethernet Interface.....	5
Power .....	5
Display (full size encoder only).....	5
Mounting the Encoder.....	6
Quick Start .....	7
If user wishes to configure settings with VCX4402-E via COM Port or Network: .....	7
Updating Firmware with TFTP.....	9
IP Configuration.....	10
Overview.....	10
Initial IP Addressing .....	10
Connecting to Unit.....	12
Program Commands.....	20
Network Setup .....	20
Common Commands .....	22
Encoder Commands .....	22
COM Port Setup.....	23
OSD COMMANDS (On Screen Display) .....	25
Video Commands.....	26
SAP Settings .....	28
SNMP Settings.....	29
Miscellaneous Settings.....	30
Specifications .....	32
Model Numbers .....	33
Appendix A.....	34
Pinouts.....	34

Com Port Data Interface Pin Out (uses RJ-45 Plug).....	34
Standard Ethernet Pin Out .....	35
RJ-11 to Serial Interface Adaptor Pinout.....	36

## Introduction

The model VCX-4402-E is the stand-alone Dual MPEG-4 version of the VCX family and is housed in a 19-inch 1U rack mount case with a display, control port and a universal AC power supply. The configuration of the VCX-4402-E-H is akin to desktop like devices being 1U high but only 8.5 inches wide. The model VCX-4402-E-R is a rack mounted card only used in the 4U 19-inch rack unit. See Accessories R-12.

The VCX Digital Video transport system consists of the video encoder and a decoder. These will make up an encoder/decoder pair providing the capability for one-way end-end transmission of the compressed digital video stream in one of two formats. The format is MPEG4 standard ISO/IEC 14496. The transportation process is performed by transmitting and receiving IP packets at data rates in the 64 kbps to 4.0 Mbps range. The encoding-decoding process is applied to an NTSC (or PAL) video input, selected in software.

The video encoder converts the Analog Video to a Serial Digital signal, which is multiplexed with any data sub-channels present. The stream is then formatted into a series of IP packets sent to the network through a standard Ethernet connection.

Modification of video format and resolution, data sub-channel characteristics, and basic IP parameters is achieved through one of the following means:

- a) A terminal Program
- b) Telnet through the Ethernet connection
- c) Watchdog CCS Software
- d) SNMP
- e) Web Interface

The video decoder receives the IP packets, separates the video data from the data sub-channels, and converts the video data to analog form, providing an NTSC (or PAL) output.

The units feature two bi-directional data sub-channels (support for RS-232 or RS-422) and a separate front-panel terminal port. Sub-channel information is removed from the video stream by the encoder thus completing the control link back to the decoder that is supplying the pan-tilt-zoom commands.

## Familiarization with the VCX4402-E

The VCX-4402-E Video Encoder accepts two BNC video input and two data sub-channels. The output from the encoder is a stream of IP-packets. The Full Width (19”) Encoder also contains a fluorescent LED display to allow monitoring of unit performance and to facilitate troubleshooting.

The VCX-4402-E Video Encoder has a programmable reset, which prompts the re-initiation of the video stream, as well as a reboot command. The decoder also has a programmable reset command, tied to errors in the incoming video stream, as well as a reboot command.

### Front Panel



### Back Panel



## Com Port Data Interface

There are two bi-directional data interfaces, RS-232 and RS-422 selectable, on the encoder and decoder assemblies. Each interface uses RJ-45 connectors. Refer to Table below for the correct pin out. When using the RS-232 configuration pin 7 is ground. Com Port parameters are configured through the system software.

**Refer to Appendix A for the correct pin out.**

## Video Input Interface

Connect a BNC-terminated coaxial cable from a composite video source (e.g., CCTV camera) to the BNC connector labeled “VIDEO IN” (encoder). The composite video input should be in NTSC or PAL format. The maximum length of cable that should be interfaced to the encoder or decoder is 100 feet, although the specific installation environment will dictate the actual permissible length.

## Ethernet Interface

There is one Ethernet interface for encoder or decoder, which uses a standard RJ-45 connector. The standard method of terminating an ETHERNET cable reflects the TIA568A standard (Telecommunications Industry Association standard).

**Refer to Appendix A for the Straight Through and Crossover Ethernet Pin Out.**

## Power

Power is applied through a standard IEC type detachable line cord at the rear of the unit. The unit automatically senses 110 VAC or 220 VAC supply and will operate with either. The typical current is 1.2 amps from a 110VAC line and drops to .9 amps from a 230 VAC line source.

## Display (full size encoder only)

The fluorescent LED display (Full Width 19” Encoder only) provides a scrolling list of key parameters when the unit is in its active (non-stand-by) state.

The display is a two-line display. Each parameter is displayed, in turn, for three seconds on the bottom line. It then moves to the top line while the next parameter is displayed on the bottom line.

The parameters displayed are as follows:

- Name of unit
- Software version

- Device IP address
- Sub-net mask
- Video IP (multi-cast group)
- Group Length
- FPS (frames per second)
- Maximum Bit Rate (encoder only)
- Audio On or Off
- Com 1 On or Off
- Com 1 Bit Rate
- Com 1 IP
- Com 2 On or Off
- Com 2 Bit Rate
- Com 2 IP

## Mounting the Encoder

The VCX-4402-E Encoder is a 19-inch wide 1U unit and is furnished with mounting ears allowing installation in a 19" rack frame. The VCX-4402-E-H is a desktop like unit that is 8.5 inches wide and designed to be a shelf model without the need for mounting. However if you choose to mount the half size model, extended mounting ears are available. The VCX-4402-E-R is a single card for use in the multi-card chassis, which is a 19-inch 4U unit that will support 12 cards.

All signal connections are from the rear, eliminating any need for setback from the front plane of the rack. The user programming port on the front panel is used to alter system parameters via a Terminal Program such as Hyper Terminal.

## Quick Start

### If user wishes to configure settings with VCX4402-E via COM Port or Network:

Set up for COM Port:

User may configure VCX4402-E setting using a PC connected to the encoder control port at the front of the unit. A simple 6-wire phone cable (PCA-2400 programming cable) with the **RJ-11 adaptor described in Appendix A** will supply the proper RS-232 connection to the PC's serial port. **Note:** This is not the same as the "Sub-Channel" interface. Do not use the RJ-11 adaptor for this channel.

This configuration will permit the unit configuration by a terminal program running on a PC. Once you have connected the encoder to the PC's serial port open your terminal program. The encoder will boot up then ask for a password. The default password is: **admin**.

#### **The PC should have its Com Port configured as:**

Baud rate	38,400 kbps
Data bits	8 bits
Parity	No Parity
Stop Bits	1 Stop Bit
Flow control	None

**Refer to Appendix A for pin layout for RJ-11 connector.**

Set up for network:

If the operator wishes to configure the unit through the network the user may accomplish this by the following procedure. **Note:** The operator must be sure that the VCX-4402-E is accessible on their SUBNET. **Before completing this step, please refer to the Programming Configuration Section of this Manual.** Here you will set the IP address and SUBNET Mask of the VCX-4402-E so that it is accessible on your SUBNET and has a valid IP address. (An example IP address is being used in the following example.):

Open a "cmd" window and enter the following commands:

```
Telnet 192.168.0.253 <enter>
```

The encoder will reply asking for a password. Default password is "admin".

```
Password: admin
```

**Having used either of these methods, the encoder is ready to receive configuration commands.**

### **Main unit configuration**

The VCX-4402-E units incorporate support MPEG-4 encoding from two different input channels. It is important the operator understand this to be able to configure the unit properly. All commands follow this simple format:

(command<space>parameter<enter>)

From the command prompt, the operator may view the current configuration by entering the “display” command. This will dump the entire configuration status for the selected encoder. Remember there are three encoders in one unit. Enter the following configuration for each of the encoder channels. Take note the IP address must be of valid encoders on the network. The IP addresses below are just an example. Locate two MPEG4 encoders.

### **Connection Configuration**

```
ip 192.168.5.150 (use a valid IP on your network)
ipmask 255.255.240.0
name CoreTec Encoder
default
com1 1
com1ip 192.168.5.151 (IP address of the decoder that is sending sub-channel commands)
com1tcp 1 (assume a universal decoder)
com1server 1
com1timeout 20
com1baud 38400
com1rs422 1
```

### **MPEG4 Configuration (encoder 1)**

The MPEG4 encoder requires the following parameters be configured to your network:

```
encoder 1
enable 1
videoip 239.5.5.150 (use a valid IP on your network)
res 1/2
bitrate 1800
port 4568
videoin 1
```

### **MPEG4 Configuration (encoder 2)**

The MPEG2 encoder requires the following parameters be configured to your network:

```
encoder 2
enable 1
videoip 239.5.5.151 (use a valid IP on your network)
port 4570
bitrate 1800
res 1/2
fps 30
```

## Saving Configuration

When all the configuration parameters have been entered, they must be saved to memory and the unit restarted by entering the following command:

Commit <enter> (please wait a moment until the following prompt appears:)

```
COMMIT
DONE
```

Reboot <enter>

## Updating Firmware with TFTP

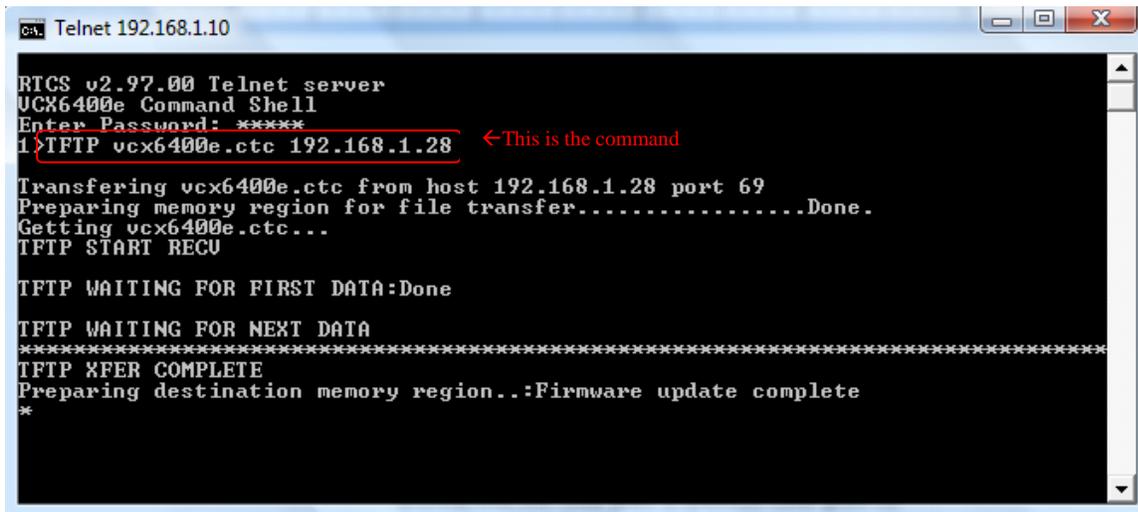
TFTP is a simple and reliable way of updating the firmware on any device. All that is required is to have access to a TFTP server which will be used as the host and contain the necessary files. (An example file name is VCX4402e.ctc).

Via Telnet, enter the following command in order to update the firmware for the device that is being used.

TFTP <File Name> <Server IP Address>

*(File Name is the name of the file which contains the firmware update information. In order to receive the latest update files, please contact Coretec.)*

Here is an example of what a successful update will look like:



```
Telnet 192.168.1.10
RTCS v2.97.00 Telnet server
UCX6400e Command Shell
Enter Password: *****
1> TFTP vcx6400e.ctc 192.168.1.28 ← This is the command
Transferring vcx6400e.ctc from host 192.168.1.28 port 69
Preparing memory region for file transfer.....Done.
Getting vcx6400e.ctc...
TFTP START RECU
TFTP WAITING FOR FIRST DATA:Done
TFTP WAITING FOR NEXT DATA
*****
TFTP XFER COMPLETE
Preparing destination memory region..:Firmware update complete
*
```

This is an example using the 6400E, but the method is the same for the 4402E

## IP Configuration

### Overview

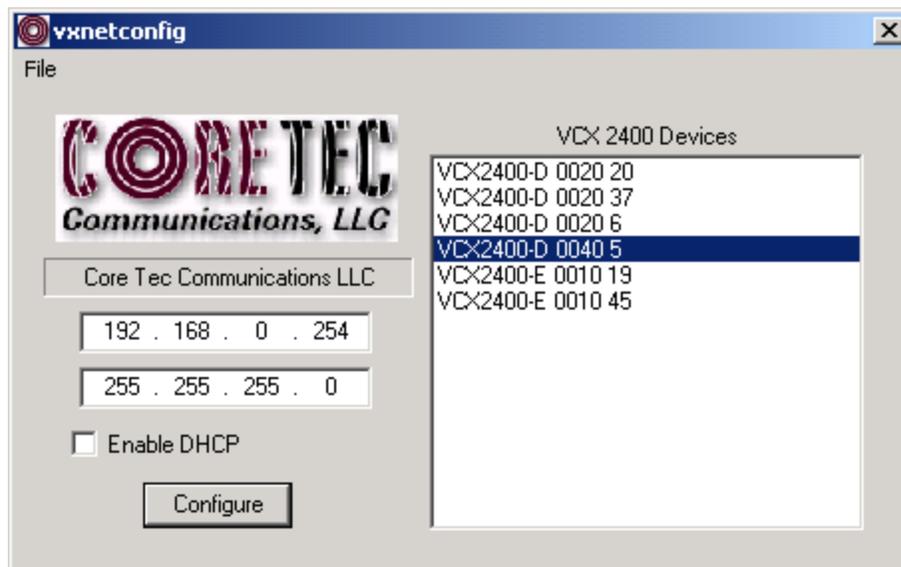
The commands contained in this section provide the means to configure critical network, com ports, encoder, and decoder parameters. The user should consult the factory if specific functions of interest do not appear to be supported.

### Initial IP Addressing

To set the device parameters properly, encoder and decoder units must be given appropriate IP addresses, compatible with the network on which they are to be connected. The software module **VXNETCONFIG** was developed to allow a network administrator to set the IP and Subnet in the VCX-4402 series encoders and decoders.

#### 1) Installation

To load VXNETCONFIG insert the CORE TEC CD into your CD drive. Select VXNETCONFIG by double clicking on the program. The following window will open:



VCXNETCONFIG Window

## Description of Program Functions

- (a) The first box on the left hand side of the window displays the current IP address of the CORE TEC device being interrogated. Type the new IP address into this space
- (b) The second box is used to change the SUBNET address. Note that the address displayed is always 255.255.255.0. Type the new SUBNET address into this space.
- (c) The Enable DHCP box is checked when DHCP is to be enabled.

**NOTE: Do not enable DHCP if sub-channels are being used of if there is no DHCP server. Check with the Network Administrator, or call Core Tec Tech Support if further assistance is needed.**

- (d) The Configure button is to execute the requested changes to the IP and SUBNET information. Note that future queries of the SUBNET will indicate 255.255.255.0. Therefore, the correct SUBNET address should always be entered prior to using the Configure button.
- (e) The box on the right hand of the window displays all VCX-4402 devices (encoders and decoders) on the network.

### 1) To make a change to the equipment addressing perform the following steps:

- (a) Select the Core Tec device address from the list in the box on the right side of the window.
- (b) Move the cursor to the IP box and select the first octet by highlighting the octet. Enter the new IP data for the selected octet. As the 3 digits are entered, the software will automatically highlight the next octet for change. Complete entering the IP address and then switch to the SUBNET data.
- (c) Move the cursor to the SUBNET box and select the first octet by highlighting the octet. Enter the new SUBNET data for the selected octet. As the 3 digits are entered, the software will automatically highlight the next octet for change. Complete entering the SUBNET data.
- (d) To execute the change press the configure button. The IP address and the SUBNET will be updated in the selected Core Tec equipment. The new IP address will be displayed. The SUBNET will display a default class C- SUBNET there is no read back of the changed SUBNET displayed.
- (e) Repeat this process for all the CORE TEC equipment requiring change.

## Connecting to Unit

There are currently five ways to connect to the VCX-4402-E.

### 1) Telnet

#### **Password: admin (default)**

To change the default password perform the following:

Type: PASSWORD <followed by your password (up to 11 characters)>

Where <your password> equals the new password.

For configuration using an Ethernet connection, activate the Telnet function by the following:

- a. Initiating from the Command Prompt - Telnet nnn.nnn.nnn.nnn
- b. Use the MS Windows – START – RUN Telnet nnn.nnn.nnn.nnn

(where nnn.nnn.nnn.nnn is the IP address of the unit being configured)

Employ the command set as described below.

Note that the initial IP addresses (factory default) are:

Encoder 192.168.0.253

Decoder 192.168.0.254

Sub net Mask 255.255.255.0

(Alternatively, the end user software SW-2400 is usable when an Ethernet connection is established.)

## 2) Terminal Program

**NOTE:** The following procedure is valid for standalone units only and is not applicable to rack mount units.

The Terminal Program, such as HyperTerminal, configuration procedure uses the serial connection on the front of the unit.

Using the PCA-2400 programming cable, connect to the control port. This cable should be attached to the serial port of an attached PC and the Hyper Terminal program launched. The PC should have its Com Port configured as:

Baud rate	38,400 kbps
Data bits	8 bits
Parity	No Parity
Stop Bits	1 Stop Bit
Flow control	None

Activate the HyperTerminal function, normally found in a sub-menu under ACCESSORIES. Employ the command set as described in the following section.

### **Password: admin (default)**

To change the default password perform the following:

Type: PASSWORD <followed by your password (up to 11 characters)>

Where <your password> equals the new password

## 3) Web Interface

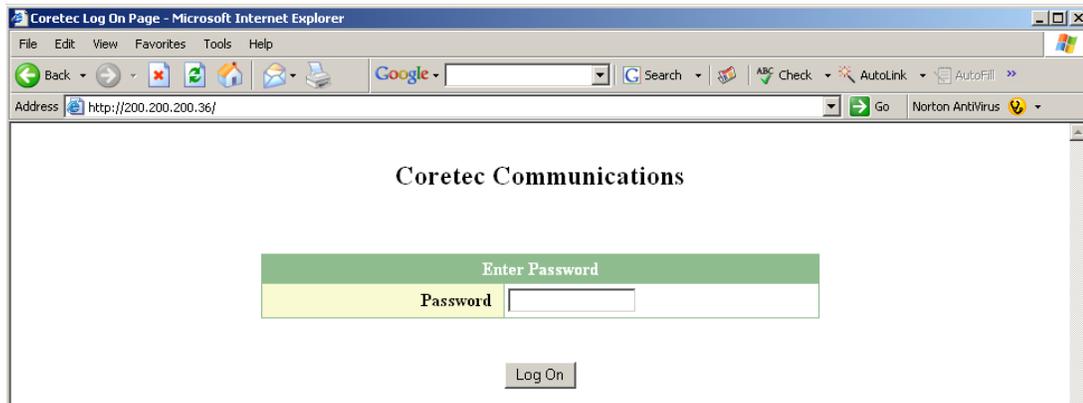
When the unit accepts the log in (default password: **admin**), the following web page will be displayed. The header identifies the type of unit followed by the page control bar. The basic network configuration is displayed in the appropriate fields giving the operator the option to modify them if needed. There are eight (8) pages to select from each giving the operator control over the unit operation. General, Network, MPEG4 Video1, MPEG4 Video2, OSD1 (for MPEG4), OSD2 (for MPEG4), COM1 (Subchannel 1), COM2 (Subchannel 2) provide all the parameters that an operator may modify grouped as labeled. There are two (2) options to the far right, “Log Out” and “Commit/Reboot”, which will terminate the session. Log Out will log the operator out without committing to the changes made in the previous pages and the last will perform the commit function, writing the changes to the unit and performing a reboot. Both operations will log the operator off and close the communications channel. The web page may or may not report the termination of the communications channel. The login process must be performed to access the unit again.

The following pictures show the various parameters available to the operator. The definitions are described below in the command sections.

Open a new Internet Explorer window and enter the IP address of the unit into the explorer address frame. (Review the section INITIAL IP ADDRESSING to obtain this address)



The selected device will respond by opening the following page. Note all internet communication pages will apply while the thread is open.



Type password **XXXXXXXXXXXX**

Where **XXXXXXXXXXXX** is the new password.

The password can be anything up to eleven (11) characters in length.

## GENERAL – Configuration parameters

### Core Tec Communications VCX-4402E Configuration

[General](#) [Network](#) [Video 1](#) [Video 2](#) [OSD 1](#) [OSD 2](#) [Com 1](#) [Com 2](#) [Log Out](#) [Commit/Reboot](#)

General Settings	
Device Name	Core Tec Communications, LLC
Password	admin
Display Speed	1500
Auto Restart	28800
Enable Watchdog	<input checked="" type="checkbox"/>

Configure

## NETWORK – Configuration parameters

### Core Tec Communications VCX-4402E Configuration

[General](#) [Network](#) [Video 1](#) [Video 2](#) [OSD 1](#) [OSD 2](#) [Com 1](#) [Com 2](#) [Log Out](#) [Commit/Reboot](#)

Network Settings	
MAC Address	00:0a:fc:03:08:17
DHCP	No
Host IP	192 . 168 . 0 . 253
Host Subnet	255 . 255 . 240 . 0
Default Gateway	0 . 0 . 0 . 0
DNS IP	0 . 0 . 0 . 0
Network Speed	Auto
Network Duplex	Auto
Command Port	5000
Join Video Multicast	<input checked="" type="checkbox"/>

Configure

## Video 1 MPEG-4 – Configuration parameters

### Core Tec Communications VCX-4402E Configuration

[General](#) [Network](#) [Video 1](#) [Video 2](#) [OSD 1](#) [OSD 2](#) [Com 1](#) [Com 2](#) [Log Out](#) [Commit/Reboot](#)

MPEG-4 Video 1 Settings	
Enable	<input checked="" type="checkbox"/>
Video IP	239 . 5 . 8 . 2
Video Port	4570
Resolution	1/2
FPS	30
Bitrate	1800
Video Standard	NTSC
Brightness	127
Contrast	63
Saturation	70
Tint	0
Camera Type	0
Camera ID	1

## Video 2 MPEG-4 – Configuration parameters

### Core Tec Communications VCX-4402E Configuration

[General](#) [Network](#) [Video 1](#) [Video 2](#) [OSD 1](#) [OSD 2](#) [Com 1](#) [Com 2](#) [Log Out](#) [Commit/Reboot](#)

MPEG-4 Video 2 Settings	
Enable	<input checked="" type="checkbox"/>
Video IP	239 . 5 . 8 . 3
Video Port	4572
Resolution	1/2
FPS	30
Bitrate	1800
Video Standard	NTSC
Brightness	127
Contrast	63
Saturation	70
Tint	0
Camera Type	0
Camera ID	1

## OSD1 – On Screen Display

### Core Tec Communications VCX-4402E Configuration

[General](#) [Network](#) [Video 1](#) [Video 2](#) **OSD 1** [OSD 2](#) [Com 1](#) [Com 2](#) [Log Out](#) [Commit/Reboot](#)

OSD Video 1 Settings	
Text 1	<input type="text"/>
Cursor X 1	<input type="text" value="1"/>
Cursor Y 1	<input type="text" value="1"/>
Text 2	<input type="text"/>
Cursor X 2	<input type="text" value="1"/>
Cursor Y 2	<input type="text" value="1"/>
Text 3	<input type="text"/>
Cursor X 3	<input type="text" value="1"/>
Cursor Y 3	<input type="text" value="1"/>
Text 4	<input type="text"/>
Cursor X 4	<input type="text" value="1"/>
Cursor Y 4	<input type="text" value="1"/>
Text 5	<input type="text"/>
Cursor X 5	<input type="text" value="1"/>
Cursor Y 5	<input type="text" value="1"/>

## OSD2 – On Screen Display

### Core Tec Communications VCX-4402E Configuration

[General](#) [Network](#) [Video 1](#) [Video 2](#) [OSD 1](#) **OSD 2** [Com 1](#) [Com 2](#) [Log Out](#) [Commit/Reboot](#)

OSD Video 2 Settings	
Text 1	<input type="text"/>
Cursor X 1	<input type="text" value="1"/>
Cursor Y 1	<input type="text" value="1"/>
Text 2	<input type="text"/>
Cursor X 2	<input type="text" value="1"/>
Cursor Y 2	<input type="text" value="1"/>
Text 3	<input type="text"/>
Cursor X 3	<input type="text" value="1"/>
Cursor Y 3	<input type="text" value="1"/>
Text 4	<input type="text"/>
Cursor X 4	<input type="text" value="1"/>
Cursor Y 4	<input type="text" value="1"/>
Text 5	<input type="text"/>
Cursor X 5	<input type="text" value="1"/>
Cursor Y 5	<input type="text" value="1"/>

## SUBCHANNEL 1 – Configuration parameters

### Core Tec Communications VCX-4402E Configuration

[General](#) [Network](#) [Video 1](#) [Video 2](#) [OSD 1](#) [OSD 2](#) [Com 1](#) [Com 2](#) [Log Out](#) [Commit/Reboot](#)

Subchannel Settings - Serial Subchannel 1

Enable	<input checked="" type="checkbox"/>
Baud Rate	9600
Line Type	RS422
Stop Bits	ONE
7/8 Bit	8
Parity	NONE
Destination IP	192 .168 .0 .254
Port	5002
TCP	<input checked="" type="checkbox"/>
Server	<input checked="" type="checkbox"/>
Xmit Level	100
Idle Time	20

Configure

## SUBCHANNEL 2 – Configuration parameters

### Core Tec Communications VCX-4402E Configuration

[General](#) [Network](#) [Video 1](#) [Video 2](#) [OSD 1](#) [OSD 2](#) [Com 1](#) [Com 2](#) [Log Out](#) [Commit/Reboot](#)

Subchannel Settings - Serial Subchannel 2

Enable	<input checked="" type="checkbox"/>
Baud Rate	9600
Line Type	RS422
Stop Bits	ONE
7/8 Bit	8
Parity	NONE
Destination IP	192 .168 .0 .254
Port	5004
TCP	<input checked="" type="checkbox"/>
Server	<input checked="" type="checkbox"/>
Xmit Level	100
Idle Time	20

Configure

## Logging off

[General](#) [Network](#) [Video 1](#) [Video 2](#) [OSD 1](#) [OSD 2](#) [Com 1](#) [Com 2](#) [Log Out](#) [Commit/Reboot](#)



## Commit/Reboot

[General](#) [Network](#) [Video 1](#) [Video 2](#) [OSD 1](#) [OSD 2](#) [Com 1](#) [Com 2](#) [Log Out](#) [Commit/Reboot](#)

This process will write all the parameters into nonvolatile memory and then reboot the unit. The reboot process will stop all current operations and restart with the new parameters.

Note: The Commit/Reboot operation, in most cases, will not give the operator an indication the operation has started, in progress or has finished.

### 4) SNMP

SNMP is available if wanted.

The two (2) .mib files are available at our website ([www.coretec.com](http://www.coretec.com)). A password will be needed to access these files.

### 5) Core Tec Watchdog Software

Please refer to the Watchdog Manuals.

## Program Commands

### IMPORTANT NOTES:

1. After entering one or more commands, it is necessary to enter COMMIT and REBOOT for the new settings to take effect.
2. Typing “?” displays a listing of all commands.

## Network Setup

### IP (IP Address)

The IP address setup is in the form of decimal dotted notation. The selection of an IP should come from the person who administrates the network. The current IP selection is static. A dynamic IP setting using DHCP is planned for future enhancement.

Default:

Encoder - 192.168.0.253  
Decoder - 192.168.0.254

Example command:

IP 192.168.0.10 (sets IP address to 192.168.0.10)

### IPMASK (IP Subnet Mask)

The IP Subnet Mask is in the form of decimal dotted notation. The selection of an IP subnet mask should come from the network administrator. It is used to represent the number of bits in the current IP subnet.

Default: 255.255.255.0

Example command:

IPMASK 255.255.240.0

### GATEWAY <ip-address> [<ip-subnet address> <subnet mask>]

The GATEWAY command can have either one or three parameters. The first parameter is the IP address of the host that is the gateway. Optionally you may include the IP address and the subnet mask of the subnet you want to route through the gateway. You can program up to five gateway entries.

Default: No Gateways

Example command:

GATEWAY 192.168.0.1

The following example indicates that all packets sent to hosts on the 62.41.1.0.xxx subnet should be routed through the gateway at 192.168.0.2

Example command:

GATEWAY 192.168.0.2 62.41.1.0 255.255.255.0

## **CLEARGATEWAY**

This command will clear the gateway table. There are no parameters. This command clears all entries.

## **CMDPORT <TCP command port number>**

The TCP command port selection is configurable. However, the default setting should be adequate for normal operation. The command port is used by software that can operate the VCX-4400 devices programmatically. For example, a Microsoft Windows GUI based application.

Default: 5000

Example Command:

```
CMDPORT<sp>5010 (sets TCP command port to 5010)
```

## **VIDEOIP <video destination IP address>**

The video destination IP is an address that allows the reception of the MPEG-4 stream by a single (unicast) or multiple (multicast) device(s).

**NOTE:** Class D IP addresses, in the range 224.0.0.0 to 239.255.255.255 are called multicast addresses. The range 224.0.0.0 to 224.0.0.255 is reserved for local purposes and the range 239.0.0.0 to 239.255.255.255 is reserved for administrative scooping. Both the encoder and decoder should be set to the same Video IP for correct operation together.

Default: 239.5.6.8

Example Command:

```
VIDEOIP 234.5.6.10 (sets multicast IP to 234.5.6.10)
```

## **VIDEOPORT <video multicast port number>**

The video multicast port selection is configurable. However, the default setting should be adequate for normal operation.

Default: 4568

Example Command:

```
VIDEOPORT 4569 (sets multicast port to 4569)
```

## **TTL <n>**

Time to live. TTL is the time that the datagram is allowed to exist on the network. A router that processes the packet decrements this by one. Once the value reaches 0, the packet is discarded. Acceptable range is from 1-255.

Default: 10

Example Command:

```
TTL 9 (sets the TTL to 10)
```

## Common Commands

The following commands apply to both encoders and decoders.

### COMMIT

This command saves the parameter changes in permanent memory. A commit command must be issued before a reboot or power cycle if the new device settings are to be maintained.

### DEATHBLOW

This command causes a reboot of the device. The purpose of this command is to cause a reboot from the password prompt. If you cannot login into the command, prompt because of the “Another administrator is logged in.” message, then you can use DEATHBLOW as the password to return the unit to the power up state.

### EXIT

Exits from the command prompt and releases the current login. You may also use the following alternatives... LO (Log Off) and QUIT.

### NTSC

This command sets unit for NTSC video operation.

### PAL

This command sets unit for PAL video operation.

### REBOOT

This command restarts device from power-up state. Most changes in device settings require a reboot after a commit.

### START

This command starts encoding or playback (video out).

### STOP

This command stops encoding or playback (video out).

### VER

This command displays the software version/build date, BSP (board support package) version/build date, and board revision.

Example response:

Version: VCX2400d3 v1.6a, Date: 29JUN04

BSP VCXV73 v1.2, 04JUN04

Board revision: 3.1

## Encoder Commands

These commands are associated with the encoder functions of the unit. There are two video input ports that may be multiplexed to any of the three encoder channels. The MPEG2, MPEG4 and JPEG functions which are separate hardware and software are in fact separate channels with in the unit.

ENCODER [MPEG4:1|MPEG4:2] or [1|2]

This command selects the encoding method to be used on the current video input channel. MPEG4:1 or 1, MPEG4:2 or 2 are valid options.

Example encoder 1  
encoder mpeg4:1

The system prompt will reflect the encoder selected by the following display:  
MPEG4:1> (denotes the MPEG4, encoder 1 is selected)

VIDEOIN <1|2>

This command selects the video input channel to be addressed by all the other commands. Valid options are 1 or 2. Note this command is valid on models with dual video BNC connectors.

**NOTE:** At initial start up, encoder 1 will be set to VIDEOIN 1 and encoder 2 will be set to VIDEOIN 2.

Example videoin 1 (the currently selected encoder will receive the video stream from channel 1 connector)

TOS <n>

Type of Service is how the datagram should be used. E.g. delay, precedence, reliability, minimum cost, throughput, ect. The acceptable range is from 0-7F in hexadecimal.

Default: 0

Example: TOS 9

## COM Port Setup

The VCX-4402 supports two sub-channels that allow the two-way transmission of serial data to selected target devices. The sub-channel can be configured for either RS232 or RS422 operation. It is not necessary for both ends to use the same configuration. The following is a list of the configuration items for the sub-channel:

- Channel Enable
- Baud rate
- Parity
- IP address of target
- TCP port for operation
- RS422 or RS232

Certain VCX-4402 devices can be delivered with either one or two com ports. The ports are designated as 1 and 2. The commands for configuring the settings use the A or B designation to indicate the port being configured.

Example(s): COM1xxx for com port 1 (selects com port 1)  
COM2xxx for com port 2 (selects com port 2)

**Note:** Communications port 2 is also the control port for programming. If this port is also needed for non-programming related data purposes, the user should program the necessary parameters with the jumper in place if using the Hyper Terminal method. Upon completion of programming, removal of the jumper will result in port 2 operating as programmed. If not using Hyper Terminal to program, jumper should be removed if com port 2 is to be used.

#### COM1, COM2 (0|1)

This command sets the active state of the com port. The parameter is “0” or “1”, where “1” enables and “0” disables the com port function. At this time, the com port is always enabled and this command has no effect.

Default: 0 (OFF)

Example Commands: COM1 1 (enables com port 1)

#### COM1BAUD, COM2BAUD (Comm Port Baud Rate)

This command sets the baud rate for the comm port. Valid values are 2400, 4800, 9600, 19200, and 38400. Other data rates may be functional but are not tested.

Default: 9600

Example Command: COM1BAUD 4800  
(sets baud rate for com port 1 at 4800 bps)

#### COM1PARITY, COM2PARITY (Com Port Parity)

The parity for the com port can be set to Odd, Even, or None. The parameters for the COM[1|2]PARITY command are N,O,E, which correspond respectively to None, Odd, Even.

Default: None

Example Command: COM2PARITY N (sets com port 2 to no parity)

#### COM1IP, COM2IP (Com Port IP)

The IP address of the destination for the com port data is set by this command. A typical setup would have an encoder and a decoder. The decoder would have a com port IP address that is the same as the encoder. In addition, likewise, the encoder’s com port IP would be the same as the decoder. Notice that the default com ports IP’s are the opposite of the default device IP’s.

Default:

Encoder com ports - 192.168.0.253  
Decoder com ports- 192.168.0.254

Example Command: COM2IP 192.168.0.10 (points the com port data to an encoder, decoder, or other device whose IP address is 192.168.0.10)

#### COM1PORT, COM2PORT (Com Port)

The com port selection is configurable. However, the default setting should be adequate for normal operation.

Default:

Com port 1 - 5002  
Com port 2 – 5004

Example Command: COM1PORT 5010 (sets com port 1 to port 5010)

COM1RS422, COM2RS422 <0|1>

The com port data-format is configurable. The parameter is “0” or “1”, where “1” enables RS-422 and “0” enables RS-232 format.

Default: 0 (RS-232)

Example Command: COM1RS422 0 (sets com port 1 for RS-232)

#### COMM PORT COMMAND – FURTHER EXAMPLES

The following examples set up com port 1:

COM1 1 – Enable com port 1  
COM1BAUD 9600 – Set com port 1 baud rate to 9600  
COM1RS422 1 – Set com port 1 mode to RS422  
COM1PORT 5002 – Set com port 1 port to 5002  
COM1PARITY E – Set com port 1 parity to even  
COM1IP 192.168.0.10 – Set destination address for data to 192.168.0.10

COMxTCP <0|1>

1= Use TCP, 0=Use UDP

COMxSERVER <0|1>

1 = server, 0 = client

#### OSD COMMANDS (On Screen Display)

These permit the configuration of the On-Screen-Display(OSD) properties of the encoder. This section is for labeling the video stream.

OSD <1...5> <label text>

This command permits up to five lines of text to be configured for display with the outgoing video stream. The text lines must be assigned from 1 to 5 in order and unassigned lines between assigned lines are not permitted. All five lines need not be assigned text strings.

Example

osd 1 This is the first line of text.  
osd 2 This is the second.

This is the first line of text.  
This is the second

OSDX <1...5> <x pos>

This command will locate the line of text associated with the number 1-5 with the horizontal location defined by the <x pos>.

Example

osdx 1 50 will set the first character of the line of text 1 to x position 50.

OSDY <1...5> <y pos>

This command will locate the line of text associated with the number 1-5 with the horizontal location defined by the <y pos>.

Example

osdy 1 50 will set the first character of the line of text 1 to y position 50.

**Note:** When using the OSDX and OSDY commands, the screen resolution must be taken into account. Locating the first character outside the video frame will prevent that entire line from being displayed. If the first character is within the field but the string is longer than the video frame the string will wrap around and the line directly below will not be displayed. Characters are 16x16 pixels and relate to the current resolution set by the "PROFILE" command. The range of coordinates starts with 0 and continues to the maximum pixel range divided by 16 (character size) and subtract 1 (because 0 is the first position).

Example

D1 resolution in the vertical (Y direction) is 480 and yields 30 line locations (480/16)-1=29 so line 0 to line 29 are the available Y locations.

OSDCLEAR

This command will clear all the fields configured by the previous commands.

## Video Commands

These are associated with the quality of video being encoded. The resolution both in frame size and in the time domain are supported in this command set.

STREAMTYPE

This command selects between Program and Transport multiplexing of the video stream. Acceptable parameters are T or P, where P is Program and T is Transport.

Default: P (program stream)

Example: STREAMTYPE T (transport stream)

PROFILE

This command is used to select a desired resolution for the encoded video. It also sets the optimal defaults for other parameters, such as bit rate. The allowable settings are QQCIF, QCIF, CIF, 1/2, D1.

Default: 1/2

Example Command: PROFILE 1/2 (sets resolution to 1/2 D1)

**Note:** Since the Profile command selects defaults for other settings, it should be issued before any other commands relating to the encoded MPEG stream.

QQCIF            80x60

QCIF	160x120
CIF	352x240
1/2	352x480
D1	720x480

#### FPS [n]

Sets encoded frames/second. Where n = frames per second of the video stream (i.e. 30, 15, 10, 5, 3, 2, 1)

#### GROUPLLEN[ n]

Sets frame spacing between I frames. Where n = number of frames between I-Frames.

Default: 30.

A larger GROUPLLEN and smaller FPS increases the startup time of the decoder.

#### RES <D1|2/3|1/2|SIF|QSIF|VGA|QVGA|QQVGA>

Sets encoder resolution. QSIF, VGA, QVGA, and QQVGA are not supported by MPEG2 (Encoder 1).

QQVGA - 160x120 (cropped horz)

QSIF - 176x120

QVGA - 320x240 (cropped horz)

SIF - 352x240

1/2 - 352x480

VGA - 640x480 (cropped horz)

D1 - 720x480

#### BRIGHT [n]

This command adjusts image brightness. The acceptable range is from 0 to 255, where a higher number provides more brightness.

Default: 128

Example Command: BRIGHT 170 (increases brightness from default setting)

#### CONTRAST [n]

This command adjusts image contrast. The acceptable range is from 0 to 127, where a higher number provides more contrast.

Default: 63

Example Command: CONTRAST 90 (increases contrast from default)

#### SATURATION [n]

Adjusts color saturation. The acceptable range is from 0 (no color) to 127.

Default: 63

Example Command: SATURATION 75 (increases color saturation from default)

#### TINT [n]

Adjusts color tint. The acceptable range is from –128 to 127.

Default: 0

Example Command: TINT 10 (adjusts tint)

#### BITRATE [n]

This command adjusts the bit rate (in kbits/sec) of the encoded MPEG-4 video. This sets the maximum rate (of the variable bit stream) encoded. If audio is in the MPEG-4 stream, then an additional 256 kbits/sec will be added to the rate set by this command.

Default: The default is set by the Profile command

Example Command: BITRATE 2000 (Sets max bit rate to 2 Mbits/sec)

Note: This command should be issued AFTER the Profile command if the Profile command is used.

## SAP Settings

The encoder is capable of multicasting SAP (Session Announcement Protocol RFC-2974) packets with SDP (Session Description Protocol RFC-2327) content. There are a number of parameter settings for configuring SAP. They are presented in this section. The user should refer to the referenced RFCs to understand the significance of the SAP/SDP parameter settings.

#### SAP

This command is used to enable or disable the SAP multicast. ON or OFF are the permitted parameters.

Default: OFF

Example: SAP ON

#### SAPAUTHOR

This command is used to set the SDP (RFC-2327) author information. The parameter is an ASCII string with a limitation of 30 characters.

Default: No text

#### SAPCOPYRIGHT

This command is used to set the SDP (RFC-2327) copyright information. The parameter is an ASCII string with a limitation of 30 characters.

Default: No Text

## SAPINFO

This command is used to set the SDP (RFC-2327) info information. The parameter is an ASCII string with a limitation of 62 characters.

Default: Core Tec VCX2400e

Example: SAPINFO Intersection of 1st and main

## SAPINTERVAL

This command sets the interval between SAP packet transmissions. The parameter is the number of milliseconds between transmits.

Default: 5000 ms (5 seconds)

Example: SAPINTERVAL 10000 ms (10 seconds)

## SAPIP

This command sets the IP address of the destination host for SAP packets. This address is a multicast address defined in RFC-2974. It is unlikely that the user will need to change this setting.

Default: 224.2.127.254

## SAPKEYWORD

This command is used to set the SDP (RFC-2327) keyword information. The parameter is an ASCII string with a limitation of 30 characters.

Default: No text

## SAPNAME

This command is used to set the SDP (RFC-2327) name information. The parameter is an ASCII string with a limitation of 30 characters.

Default: Core Tec Communications, LLC

Example: SAPNAME Main Street Camera #1

## SAPPORT

This command sets the destination port for SAP packets. The port number is defined in RFC-2974. It is unlikely that the user will need to change this setting.

Default: 9875

## SAPUPDATE

Issue this command after changing the SAP parameters to update all devices listening to SAP multicasts.

## SNMP Settings

This command allows the encoder to set the SNMP trap receiver. You may add or remove the receiver from the encoder.

Format: SNMPMANAGER [ADD:REMOVE] <n.n.n.n> [abcdef...]

Example: snmpmanager add 192.168.5.66 public

#### RWCOMMUNITY

This command sets the read/write community name. (The SNMP Manager must know this Community name in order to “Get” or “Set” messages.) It allows the SNMP manager to issue “Get” and “Get Next” messages as well as “Set” messages.

Format: RWCOMMUNITY <abcdef...>

Example: rwcommunity private

#### ROCOMMUNITY

This command sets the read only community name. (The SNMP Manager must know this Community name in order to “Get” messages.) It allows the SNMP manager to issue “Get” and “Get Next” messages only.

**Format:** ROCOMMUNITY <abcdef...>

**Example:** rocommunity public

## Miscellaneous Settings

#### CAMERA [n]

Store a user defined camera type code 0..255

This is a current list of the Cameras we support:

Cohu = 1  
Philips\_Bosch = 2  
Pelco = 3  
Vicon = 4  
RVision = 5  
Panasonic = 6

#### CAMERAID [n]

Store a user defined camera ID code 0..255

#### DISPLAY <VIDEO | COM | IP | SAP | FTP | SNMP | MISC>

This command displays current encoder settings. Entering DISPLAY only provides all settings. Adding the VIDEO, COM, IP, SAP, FTP, SNMP, or MISC displays those respective settings specifically.

Example Command: DISPLAY IP (displays current IP encoder settings)

## WD

The watchdog is a timer that will perform a complete reset of the device if the firmware encounters a lockup condition. The parameter is “0” or “1”, where “1” enables and “0” disables the watchdog function. Enabling the watchdog allows the VCX-4402 devices to recover from some fatal error conditions without user intervention.

Default: 0 (OFF)

Example Command: WD 1 (enables watchdog)

## AUTOREBOOT

This command permits a periodic timed reboot of the device. The parameter is the number of seconds between reboots.

Default: 0 (off)

Example: AUTOREBOOT 3600

## AUTOSTART

This command sets a periodic timed restart of the video encoder/decoder. The parameter is the number of seconds between starts.

Default decoder: 0 (off)

Default encoder: 28800 (8 hours)

Example: AUTOSTART 3600

300 seconds equals 5 minutes

3600 seconds equals 1 hour

## DATE

Example: DATE [yyyy:mm:dd]

## TIME

When entering time, it needs to be typed in in 24 hour notation.

Example: TIME [hh:mm<:ss>]

## JOIN VIDEO MULTICAST

Example: JVM [1|0]

1=on

0=off

## Specifications

### PHYSICAL AND ENVIRONMENTAL

#### Dimensions

11.0" x 5.25"

#### Mounting

R-12 Card Cage Enclosure

#### Weight

.6 pounds

#### Temperature

-20 degrees to + 70 degrees Centigrade  
(-4 to 158 degrees Fahrenheit)

#### Humidity

0 to 95% non-condensing

### POWER REQUIREMENTS

From Enclosure

### CONNECTORS

#### Video

NTSC/PAL BNC

#### Power

From Back-plane (36 pin Molex)

#### Data

Network RJ-45

Com ports RJ-45

### ELECTRICAL

#### Video Input (NTSC/PAL)

Impedance: 75 ohm unbalanced, return loss  $\geq$  30 dB

#### Dynamic

Range: 0.5 volts to 2.0 volts peak to peak

#### Video Output (NTSC/PAL)

Impedance: 75 ohm unbalanced, return loss  $\geq$  30 dB

Output Level: 1.0 volts peak to peak nominal  
(.9 volts minimum to 1.1 volts maximum)

Sync Level: 257 mV (36 IRE) to 314 mV (44 IRE)

Bar Level: 642 mV (90 IRE) to 785 mV (110 IRE)

Burst Level: 257 mV (36 IRE) to 314 mV (44 IRE)

Resolution: Full D1: 720h x 480v (NTSC); 720h x 576v (PAL)  
1/2 D1: 352h x 480v (NTSC); 480h x 576v (PAL)  
CIF: 352h x 240v (NTSC); 352h x 288v (PAL)  
QCIF: 160x120  
QQCIF: 80x60

Frame Rate: 1 to 30 frames per second maximum

#### Data (Network)

Format: Ethernet IEEE 802.3; 10/100 Base T

Line Rate: down to 64kbps

#### Data (Sub-channels)

Format: RS-232 or RS-422 (programmable) (2)

Data Rates: 2400, 4800, 9600, 19200, 38400 bps

#### Programming Data

Format: EIA RS-232C (primary data lines)

Rate: 38.4 kbps

Form: 8-bit data, 1 stop bit, no parity

## Model Numbers

### BASE MODELS

VCX-4402-E Dual MPEG 4 Video Encoder – IP

VCX-4402-E-R Dual MPEG 4 Video Encoder – IP (Card Cage Mount)

\*Note: Base models feature two data sub-channels

## ACCESSORIES

R-12	Card Cage Enclosure (see R-12 data sheet for product options and accessories)
PCA-2400	Programming Cable Assembly
SW-2400	Video Watchdog™ User Software

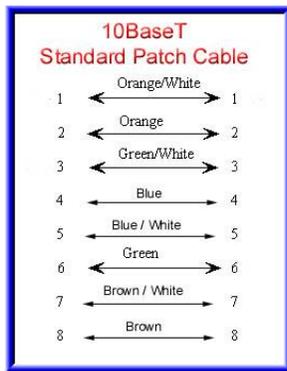
## Appendix A

### Pinouts

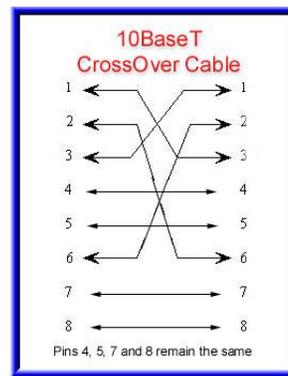
#### Com Port Data Interface Pin Out (uses RJ-45 Plug)

Pin	Signal	Description	Signal Type
1	RS-232	Receive	Input
2	RS-232	RTS	Output
3	RS-232	Transmit	Output
4	RS-232	CTS	Input
5	RS-422	Receive Data +	Input
6	RS-422	Transmit Data -	Output
7	RS-422 RS-232	Receive Data - Ground	Input Ground
8	RS-422	Transmit Data +	Output

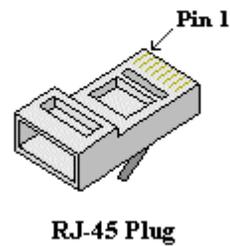
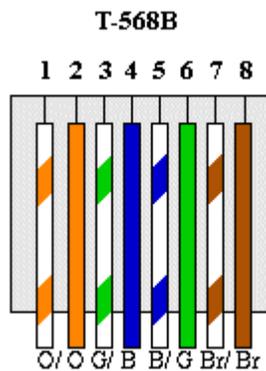
## Standard Ethernet Pin Out



Straight Through Ethernet Pin Out



Cross Over Ethernet Pin Out

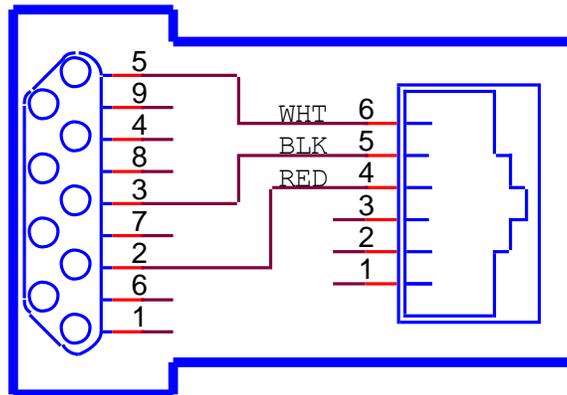


## RJ-11 to Serial Interface Adaptor Pinout

### The PC should have its Com Port configured as:

Baud rate 38,400 kbps  
Data bits 8 bits  
Parity No Parity  
Stop Bits 1 Stop Bit  
Flow control None

RJ-11 Adaptor VCX-Encoder Series  
Front Panel Serial Interface



Manufacturer Supplied Serial Adaptor

Below is the pin layout of the RJ-11:

Pin	Function
1	Ground
2	Unused
3	Unused
4	Serial Out

5	Serial In
6	Ground