



KRAMER ELECTRONICS LTD.

# USER MANUAL

MODEL:

**VP-4x1CS**  
4x1 PC Graphics Clean  
Switcher

---

P/N: 2900-300198 Rev 4

# VP-4x1CS 4x1 PC Graphics Clean Switcher Quick Start Guide



This guide helps you install and use your product for the first time. For more detailed information, go to [http://www.kramerelectronics.com/support/product\\_downloads.asp](http://www.kramerelectronics.com/support/product_downloads.asp) to download the latest manual or scan the QR code on the left.

## Step 1: Check what's in the box

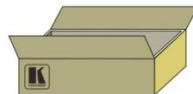


**VP-4x1CS** 4x1 PC Graphics Clean Switcher

- 1 Power cord
- 1 Set of rack "ears"
- 4 Rubber feet



1 Quick Start Guide  
Kramer RC-IR3 Infrared RC Transmitter



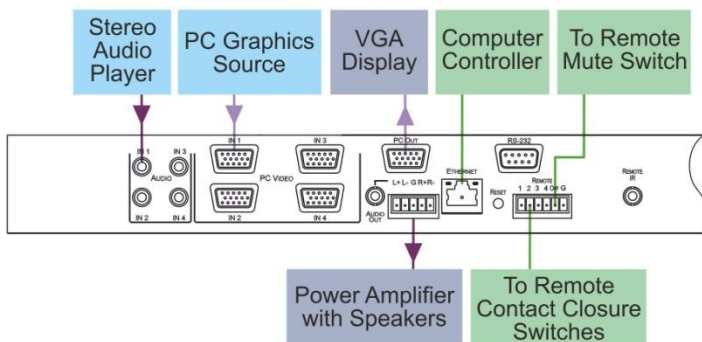
Save the original box and packaging in case your **VP-4x1CS** needs to be returned to the factory for service.

## Step 2: Install the VP-4x1CS

Mount the machine in a rack (using the included rack "ears") or attach the rubber feet and place on a table.

## Step 3: Connect the inputs and outputs

Always switch off the power on each device before connecting it to your **VP-4x1CS**.



Always use Kramer high-performance cables for connecting AV equipment to the **VP-4x1CS**.

## Step 4: Connect the power

Connect the power cord to the **VP-4x1CS** and plug it into the mains electricity.



## Step 5: Operate the VP-4x1CS

Switch an Input to the Output:

- Press one of the input buttons

To set a priority input:

1. Press and hold the Priority button until it flashes.
2. Press the required priority Input button.
3. Press the Priority button again.

# Contents

|           |   |           |
|-----------|---|-----------|
| <b>1</b>  | <b>Introduction</b>   | <b>1</b>  |
| <b>2</b>  | <b>Getting Started</b>  | <b>2</b>  |
| 2.1       | Achieving the Best Performance                                | 2         |
| 2.2       | Safety Instructions   | 2         |
| 2.3       | Recycling Kramer Products                                     | 3         |
| <b>3</b>  | <b>Overview</b>   | <b>4</b>  |
| <b>4</b>  | <b>Defining the VP-4x1CS 4x1 PC Graphics Clean Switcher</b>   | <b>5</b>  |
| 4.1       | Using the IR Transmitter                                      | 7         |
| <b>5</b>  | <b>Installing in a Rack</b>                                   | <b>8</b>  |
| <b>6</b>  | <b>Connecting the VP-4x1CS 4x1 PC Graphics Clean Switcher</b> | <b>9</b>  |
| 6.1       | Connecting the Remote Selector and Mute Switches              | 10        |
| 6.2       | Connecting a Balanced/Unbalanced Stereo Audio Output          | 11        |
| 6.3       | Connecting to the VP-4x1CS via RS-232                         | 11        |
| 6.4       | Connecting to the VP-4x1CS via Ethernet                       | 11        |
| 6.5       | Ethernet Port Configuration                                   | 13        |
| <b>7</b>  | <b>Operating the VP-4x1CS 4x1 PC Graphics Clean Switcher</b>  | <b>14</b> |
| 7.1       | Operating the VP-4x1CS Locally                                | 14        |
| 7.2       | Operating the VP-4x1CS Remotely Using the Embedded Web Pages  | 16        |
| 7.3       | Using the K-Single Application                                | 23        |
| <b>8</b>  | <b>Wiring the TP RJ-45 Ethernet Connector</b>                 | <b>24</b> |
| <b>9</b>  | <b>Technical Specifications</b>                               | <b>25</b> |
| <b>10</b> | <b>Default Communication Parameters</b>                       | <b>26</b> |
| <b>11</b> | <b>Kramer Protocol 2000</b>                                   | <b>27</b> |
| 11.1      | Protocol 2000 Hex Codes                                       | 29        |
| <b>12</b> | <b>Protocol 3000</b>  | <b>31</b> |
| 12.1      | Kramer Protocol 3000 Syntax                                   | 31        |
| 12.2      | Kramer Protocol 3000 Commands                                 | 34        |

## Figures

|            |  |    |
|------------|--|----|
| Figure 1:  | VP-4x1CS 4x1 PC Graphics Clean Switcher Front Panel    | 5  |
| Figure 2:  | VP-4x1CS 4x1 PC Graphics Clean Switcher Rear Panel     | 6  |
| Figure 3:  | Connecting the VP-4x1CS 4x1 PC Graphics Clean Switcher | 9  |
| Figure 4:  | Remote Selector and Output Mute Switch Connection      | 10 |
| Figure 5:  | Balanced Stereo Audio Connection                       | 11 |
| Figure 6:  | Unbalanced Stereo Audio Connection                     | 11 |
| Figure 7:  | Local Area Connection Properties Window                | 12 |
| Figure 8:  | Internet Protocol (TCP/IP) Properties Window           | 13 |
| Figure 9:  | Java Test Page Success Message                         | 17 |
| Figure 10: | The Loading Page                                       | 18 |
| Figure 11: | First Time Security Warning                            | 18 |
| Figure 12: | VP-4x1CS Switching Matrix Page                         | 19 |
| Figure 13: | Switching an Input to an Output                        | 20 |
| Figure 14: | Exiting Offline Warning                                | 21 |
| Figure 15: | Audio Gain Page  | 21 |
| Figure 16: | Configurations Page                                    | 22 |
| Figure 17: | TP Pinout Wiring                                       | 24 |

---

# 1 Introduction

Welcome to Kramer Electronics! Since 1981, Kramer Electronics has been providing a world of unique, creative, and affordable solutions to the vast range of problems that confront video, audio, presentation, and broadcasting professionals on a daily basis. In recent years, we have redesigned and upgraded most of our line, making the best even better!

Our 1,000-plus different models now appear in 11 groups that are clearly defined by function: GROUP 1: Distribution Amplifiers; GROUP 2: Switchers and Routers; GROUP 3: Control Systems; GROUP 4: Format/Standards Converters; GROUP 5: Range Extenders and Repeaters; GROUP 6: Specialty AV Products; GROUP 7: Scan Converters and Scalers; GROUP 8: Cables and Connectors; GROUP 9: Room Connectivity; GROUP 10: Accessories and Rack Adapters and GROUP 11: Sierra Video Products.

Congratulations on purchasing your Kramer **VP-4x1CS** *4x1 PC Graphics Clean Switcher*, which is ideal for the following typical applications:

- Display systems requiring simple input selection
- Remote monitoring of computer activity in schools and businesses
- Rental/staging applications
- Multimedia and presentation source selection

---

## 2 Getting Started

We recommend that you:

- Unpack the equipment carefully and save the original box and packaging materials for possible future shipment
- Review the contents of this user manual



Go to [http://www.kramerelectronics.com/support/product\\_downloads.asp](http://www.kramerelectronics.com/support/product_downloads.asp) to check for up-to-date user manuals, application programs, and to check if firmware upgrades are available (where appropriate).

### 2.1 Achieving the Best Performance

To achieve the best performance:

- Use only good quality connection cables (we recommend Kramer high-performance, high-resolution cables) to avoid interference, deterioration in signal quality due to poor matching, and elevated noise levels (often associated with low quality cables)
- Do not secure the cables in tight bundles or roll the slack into tight coils
- Avoid interference from neighboring electrical appliances that may adversely influence signal quality
- Position your **VP-4x1CS** away from moisture, excessive sunlight and dust



This equipment is to be used only inside a building. It may only be connected to other equipment that is installed inside a building.

### 2.2 Safety Instructions



**Caution:** There are no operator serviceable parts inside the unit

**Warning:** Use only the power cord that is supplied with the unit

**Warning:** Do not open the unit. High voltages can cause electrical shock! Servicing by qualified personnel only

**Warning:** Disconnect the power and unplug the unit from the wall before installing

## 2.3 Recycling Kramer Products

The Waste Electrical and Electronic Equipment (WEEE) Directive 2002/96/EC aims to reduce the amount of WEEE sent for disposal to landfill or incineration by requiring it to be collected and recycled. To comply with the WEEE Directive, Kramer Electronics has made arrangements with the European Advanced Recycling Network (EARN) and will cover any costs of treatment, recycling and recovery of waste Kramer Electronics branded equipment on arrival at the EARN facility. For details of Kramer's recycling arrangements in your particular country go to our recycling pages at <http://www.kramerelectronics.com/support/recycling/>.

---

## 3 Overview

The **VP-4x1CS** is a high quality 4x1 switcher for PC graphics (up to UXGA) and audio signals. Kramer's Kr-isp<sup>®</sup> technology ensures high quality video.

In particular, the **VP-4x1CS** features:

- Clean switching
- Automatic switching
- Kramer's innovative integrated sync processing; Kr-isp<sup>®</sup> technology provides a sharp, stable image by restoring the signal waveform even when the sync level is too low
- Audio-follow-video switching
- Remote, contact closure input selection
- Remote, contact closure output muting
- A lock button to prevent unwanted tampering with the buttons on the front panel
- Independent audio level adjustment
- Support for Kramer Protocol 2000 and Protocol 3000

You can control the **VP-4x1CS** using the front panel buttons, or remotely via:

- RS-232 serial commands transmitted by a PC, touch screen system or other serial controller
- The Kramer **RC-IR3** infrared remote control transmitter
- A PC connected to the Ethernet port on the device via a LAN
- An optional external remote IR receiver (see [Section 4.1](#))
- Remote, contact closure switches for input selection and muting

## 4 Defining the VP-4x1CS 4x1 PC Graphics Clean Switcher

5

This section defines the front and rear panels of the **VP-4x1CS**.

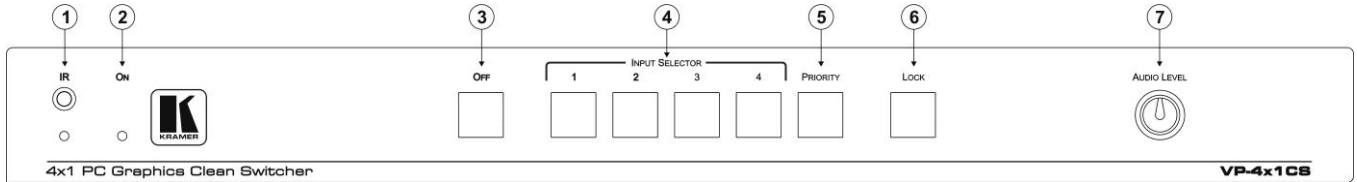


Figure 1: VP-4x1CS 4x1 PC Graphics Clean Switcher Front Panel

| # | Feature                    | Function   |
|---|----------------------------|--|
| 1 | IR Receiver and LED        | Signal receiver and LED for the infrared remote control transmitter. The indicator LED lights yellow when receiving an IR signal                 |
| 2 | ON LED                     | The LED lights green when the device is powered on   |
| 3 | OFF Button                 | Press to mute the output   |
| 4 | INPUT SELECTOR 1-4 Buttons | Press one of the 4 input buttons to switch it to the output  |
| 5 | PRIORITY Button            | Press to set the current active input as the priority input. Press again to cancel priority input selection (see <a href="#">Section 7.1.1</a> ) |
| 6 | LOCK Button                | Press and hold to lock the front panel buttons. Press and hold again to unlock the buttons (see <a href="#">Section 7.1.3</a> )                  |
| 7 | AUDIO LEVEL Control        | Rotate clockwise to increase the audio level and anticlockwise to decrease the audio level of the audio output                                   |



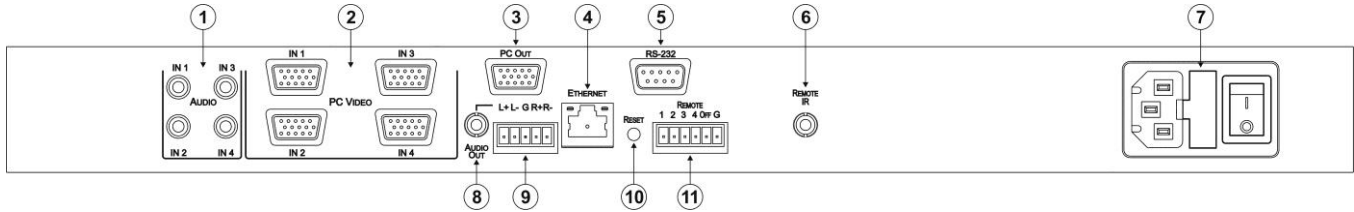


Figure 2: VP-4x1CS 4x1 PC Graphics Clean Switcher Rear Panel

| #  | Feature   | Function   |
|----|---|--|
| 1  | <i>AUDIO IN1~IN4</i> Unbalanced Stereo Audio 3.5mm Mini Jacks                 | Connect to up to 4 unbalanced, stereo audio sources  |
| 2  | <i>PC VIDEO IN1~IN4</i> UXGA 15-pin HD Connectors (F)                         | Connect to up to 4 PC graphics sources   |
| 3  | <i>PC OUT</i> UXGA 15-pin HD Connector (F)                                    | Connect to the PC graphics acceptor  |
| 4  | <i>ETHERNET</i> RJ-45 Connector   | Connect to a PC via a LAN to control the device (see <a href="#">Section 6.4</a> )   |
| 5  | <i>RS-232</i> Serial Port 9-pin D-sub Connector (F)                           | Connect to a PC/serial controller (see <a href="#">Section 6.3</a> )   |
| 6  | <i>REMOTE IR</i> Opening  | Connect to an external IR receiver for controlling the device using an IR remote controller (see <a href="#">Section 4.1</a> )   |
| 7  | Mains Power Connector, Fuse and Power Switch                                  | Plug in the power cord and switch the device on and off  |
| 8  | <i>AUDIO OUT</i> Unbalanced Stereo Audio 3.5mm Mini Jack                      | Connect to the unbalanced, stereo audio acceptor (see <a href="#">Section 6.2</a> )  |
| 9  | <i>AUDIO OUT</i> Balanced Stereo Audio 5-pin Terminal Block                   | Connect to the balanced, stereo audio acceptor   |
| 10 | <i>RESET</i> Button   | Press and hold while powering on to reset the device to factory default (see <a href="#">Section 4.1</a> )   |
| 11 | <i>REMOTE</i> Contact Closure Selector and Mute Switches 6-way Terminal Block | Connect pins 1 to 4 and G to up to 4 remote, input selector, contact closure switches. Connect the OFF and G pins to a remote mute switch (see <a href="#">Section 6.1</a> ) |

## 4.1 Using the IR Transmitter

You can use the **RC-IR3** IR transmitter to control the machine via the built-in IR receiver on the front panel or, instead, via an optional external IR receiver (for example, P/N C-A35M/IRR-50). The external IR receiver can be located up to 15m away from the machine. This distance can be extended to up to 60m when used with three extension cables (for example, P/N C-A35M/A35F-50).

Before using the external IR receiver, be sure to arrange for your Kramer dealer to insert the internal IR connection cable (for example, P/N: 505-70434010-S) with the 3.5mm connector that fits into the REMOTE IR opening on the rear panel. Connect the external IR receiver to the REMOTE IR 3.5mm connector.

## 5 Installing in a Rack

This section provides instructions for rack mounting the unit.

**Before installing in a rack**, be sure that the environment is within the recommended range:

|                        |                                |
|------------------------|--------------------------------|
| OPERATING TEMPERATURE: | 0° to +40°C (32° to 104°F)     |
| STORAGE TEMPERATURE:   | -40° to +70°C (-40° to 158°F)  |
| HUMIDITY:              | 10% to 90%, RHL non-condensing |



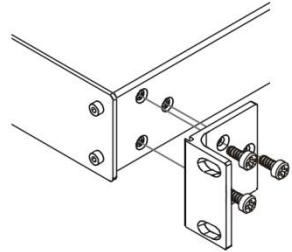
### CAUTION!

When installing on a 19" rack, avoid hazards by taking care that:

1. It is located within the recommended environmental conditions, as the operating ambient temperature of a closed or multi unit rack assembly may exceed the room ambient temperature.
2. Once rack mounted, enough air will still flow around the machine.
3. The machine is placed straight in the correct horizontal position.
4. You do not overload the circuit(s). When connecting the machine to the supply circuit, overloading the circuits might have a detrimental effect on overcurrent protection and supply wiring. Refer to the appropriate nameplate ratings for information. For example, for fuse replacement, see the value printed on the product label.
5. The machine is earthed (grounded) in a reliable way and is connected only to an electricity socket with grounding. Pay particular attention to situations where electricity is supplied indirectly (when the power cord is not plugged directly into the socket in the wall), for example, when using an extension cable or a power strip, and that you use only the power cord that is supplied with the machine.

### To rack-mount a machine:

1. Attach both ear brackets to the machine. To do so, remove the screws from each side of the machine (3 on each side), and replace those screws through the ear brackets.



2. Place the ears of the machine against the rack rails, and insert the proper screws (not provided) through each of the four holes in the rack ears.

#### Note:

- In some models, the front panel may feature built-in rack ears
- Detachable rack ears can be removed for desktop use
- Always mount the machine in the rack before you attach any cables or connect the machine to the power
- If you are using a Kramer rack adapter kit (for a machine that is not 19"), see the Rack Adapters user manual for installation instructions available from our Web site

## 6 Connecting the VP-4x1CS 4x1 PC Graphics Clean Switcher



Always switch off the power to each device before connecting it to your **VP-4x1CS**. After connecting your **VP-4x1CS**, connect its power and then switch on the power to each device.

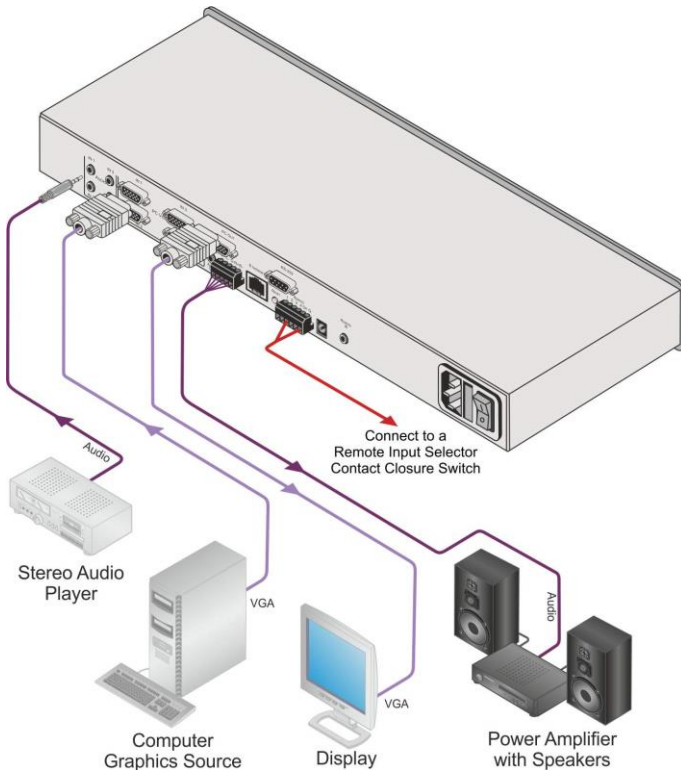


Figure 3: Connecting the VP-4x1CS 4x1 PC Graphics Clean Switcher

To connect the VP-4x1CS 4x1 PC Graphics Clean Switcher as illustrated in the example in [Figure 3](#):

1. Connect up to four audio sources (for example, stereo audio players) to the Audio In connectors.
2. Connect up to four PC graphics sources to the PC Video In connectors.

3. Connect the PC Out connector to the PC graphics acceptor (for example, a display).
4. Connect the Audio Out 5-pin terminal block to the balanced, stereo, audio acceptor.
5. Connect the Remote 6-pin terminal block (pins 1, 2, 3, 4, and G) to up to four remote, contact closure, input selector switches.
6. Connect the Remote 6-pin terminal block (pins Off and G) to a remote, contact closure, mute switch.
7. If required, connect a PC/controller to the RS-232 port (see [Section 7.1.2](#)) and/or the Ethernet port (see [Section 6.4](#)).
8. Connect the device to the mains electricity (not shown in [Figure 3](#)) and power the device on.

## 6.1 Connecting the Remote Selector and Mute Switches

You can connect:

- Up to four remote switches to enable remote input selection and,
- A remote output mute switch

The contact closure, remote selector pins operate in a similar way to the Input Selector buttons.

[Figure 4](#) illustrates how to connect remote, momentary-contact switches.

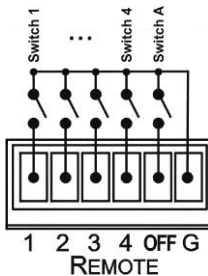


Figure 4: Remote Selector and Output Mute Switch Connection

In [Figure 4](#), the operation of Switches 1 and 4 select Inputs 1 and 4 respectively; operation of Switch A mutes the output.

**Note:** Do not connect more than one terminal to ground at a time.

## 6.2 Connecting a Balanced/Unbalanced Stereo Audio Output

[Figure 5](#) illustrates how to wire a balanced, stereo, audio output connection.

[Figure 6](#) illustrates how to wire an unbalanced, stereo, audio output connection.

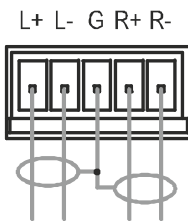


Figure 5: Balanced Stereo Audio Connection

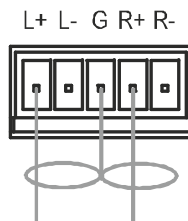


Figure 6: Unbalanced Stereo Audio Connection

## 6.3 Connecting to the VP-4x1CS via RS-232

You can connect to the **VP-4x1CS** via an RS-232 connection using, for example, a PC. Note that a null-modem adapter/connection is not required.

To connect to the **VP-4x1CS** via RS-232:

- Connect the RS-232 9-pin D-sub rear panel port on the **VP-4x1CS** unit via a 9-wire straight cable (only pin 2 to pin 2, pin 3 to pin 3, and pin 5 to pin 5 need to be connected) to the RS-232 9-pin D-sub port on your PC

## 6.4 Connecting to the VP-4x1CS via Ethernet

You can connect the **VP-4x1CS** via the Ethernet, using a crossover cable (see [Section 6.4.1](#)) for direct connection to the PC or a straight through cable (see [Section 6.4.2](#)) for connection via a network hub or network router.

After connecting the Ethernet port, you have to install and configure your Ethernet Port. For detailed instructions, see the "Ethernet Configuration (FC-11) guide.pdf" file in the technical support section at <http://www.kramerelectronics.com>.

## 6.4.1 Connecting the Ethernet Port Directly to a PC

You can connect the Ethernet port of the **VP-4x1CS** to the Ethernet port on your PC via a crossover cable with RJ-45 connectors.



This type of connection is recommended for identification of the factory default IP Address of the **VP-4x1CS** during the initial configuration

**After connecting the Ethernet port, configure your PC as follows:**

1. On your desktop, right-click the **My Network Places** icon.
2. Select **Properties**.
3. Right-click Local Area Connection Properties.
4. Select **Properties**.

The Local Area Connection Properties window appears.

5. Select the Internet Protocol (TCP/IP) and click the **Properties** Button (see [Figure 7](#)).

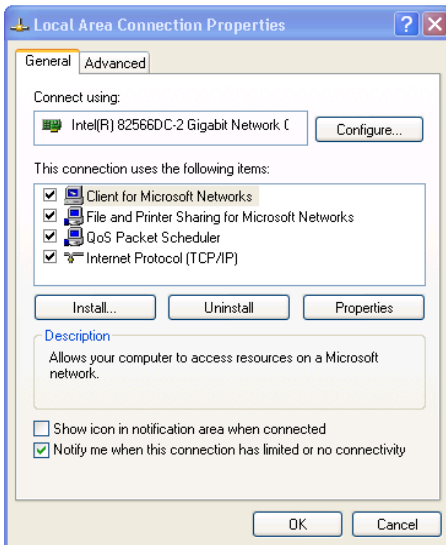


Figure 7: Local Area Connection Properties Window

6. Select Use the following IP Address, and fill in the details as shown in [Figure 8](#). You can use any IP address in the range 192.168.1.1 to 192.168.1.255 (excluding 192.168.1.39) that is provided by your IT department.
7. Click **OK**.

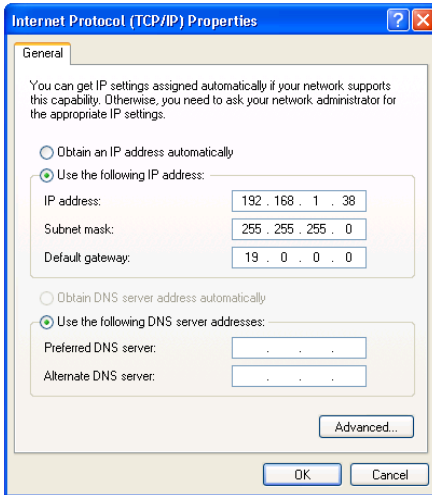


Figure 8: Internet Protocol (TCP/IP) Properties Window

## 6.4.2 Connecting the Ethernet Port via a Network Hub

You can connect the Ethernet port of the **VP-4x1CS** to the Ethernet port on a network hub or network router, via a straight through cable with RJ-45 connectors.

## 6.5 Ethernet Port Configuration

To configure the Ethernet port, use either the embedded Web pages (see [Section 7.2.7](#)) or the **K-Upload Software** which is available for download from <http://www.kramerelectronics.com>.



---

# 7 Operating the VP-4x1CS 4x1 PC Graphics Clean Switcher

The **VP-4x1CS** can be operated:

- Locally using the front panel buttons (see [Section 7.1](#))
- Remotely using:
  - The embedded Web pages (see [Section 7.2](#))
  - The **K-Single Application** (see [Section 7.3](#))

## 7.1 Operating the VP-4x1CS Locally

This section describes:

- Setting a priority Input (see [Section 7.1.1](#))
- Switching Between Protocol 2000 and Protocol 3000 (see [Section 7.1.2](#))
- Locking and unlocking the front panel buttons (see [Section 7.1.3](#))
- Resetting the device to factory default settings (see [Section 7.1.4](#))
- Upgrading the **VP-4x1CS** firmware (see [Section 7.1.5](#))
- EDID Handling (see [Section 7.1.6](#))

### 7.1.1 Setting a Priority Input

When a priority input is set, the **VP-4x1CS** cycles through the inputs from 1 to 4 (beginning with the priority input) looking for a live signal. If there is no signal on the priority input the device cycles through the inputs (from low to high) and selects the first input that is encountered with a live signal.

**Note:** When a priority Input is selected, the device does not perform clean switching.

**Note:** For clean switching, all extracted sources must be of the same resolution.

### **To set a priority Input:**

1. Press and hold the Priority button for a few seconds.  
The button flashes.
2. Press the required priority Input button.  
The selected Input button flashes.
3. Press the Priority button to save the selection.  
The selected Input is made the priority input. Both the Priority and the selected Priority Input buttons light.

**Note:** When a priority input is selected it is still possible to manually select an input; both LEDs remain lit.

### **To cancel the priority Input selection:**

- Press the lit Priority button.  
The priority Input is cancelled and the Priority button no longer lights

## **7.1.2 Switching Between Protocol 2000 and Protocol 3000**

### **To switch between Protocol 2000 and Protocol 3000 using the front panel buttons:**

1. Press INPUT SELECTOR buttons 1 and 3 at the same time.  
Protocol 3000 is active.
2. Press INPUT SELECTOR buttons 1 and 2 at the same time.  
Protocol 2000 is active.

## **7.1.3 Locking and unlocking the Front Panel Buttons**

### **To lock and unlock the front panel buttons:**

1. Press and hold the unlit Lock button.  
The front panel buttons are locked and the button LED lights.
2. Press and hold the lit Lock button.  
The front panel buttons are unlocked and the button LED no longer lights.

## 7.1.4 Resetting the Device to Factory Default Configuration

To reset the device to the factory default configuration:

1. Turn the device off.
2. Press and hold the Reset button on the rear panel of the device.
3. While holding the button depressed, turn the device on.
4. Hold the button depressed for a few seconds and release the button.  
The configuration is reset to the factory default.

## 7.1.5 Upgrading the Firmware

For instructions on upgrading the firmware refer to the “*K-Upload*” Guide (go to [http://www.kramerelectronics.com/support/product\\_downloads.asp](http://www.kramerelectronics.com/support/product_downloads.asp)).

## 7.1.6 EDID Handling

The monitor EDID is read and automatically written to all four inputs. When the monitor is changed, the EDID automatically updates. When there is no device connected to the output, the **VP-4x1CS** sends the EDID that was read from the last device connected to the output.

## 7.2 Operating the VP-4x1CS Remotely Using the Embedded Web Pages

You can use a Web browser to operate the **VP-4x1CS** using the embedded Web pages.

The embedded Web pages can be used to remotely operate the **VP-4x1CS** using a Web browser and an Ethernet connection.

Before attempting to connect:

- Perform the procedures in [Section 6.4](#)
- Ensure that the Java™ software is installed and functioning correctly on your computer. If not, download it from [www.java.com](http://www.java.com)

- Ensure that your browser is supported—Microsoft IE (V6.0 and higher), Google Chrome, Firefox (V3.0 and higher)

To check that Java is installed and running correctly, browse to <http://www.java.com/en/download/help/testvm.xml>

This page runs a test and displays a Java success (see [Figure 9](#)) or failure message.



Figure 9: Java Test Page Success Message

If you do not see the success message, follow the instructions on the page to:

- Load and enable Java
- Enable Javascript in your browser

### 7.2.1 To Log On to the VP-4x1CS Web Pages

To log on to VP-4x1CS Web pages:

1. Open your Internet browser.
2. Type the unit's IP number in the Address bar of your browser.



The Loading page appears.

**Note:** Opening the VP-4x1CS Web Page automatically switches the device to Protocol 3000.

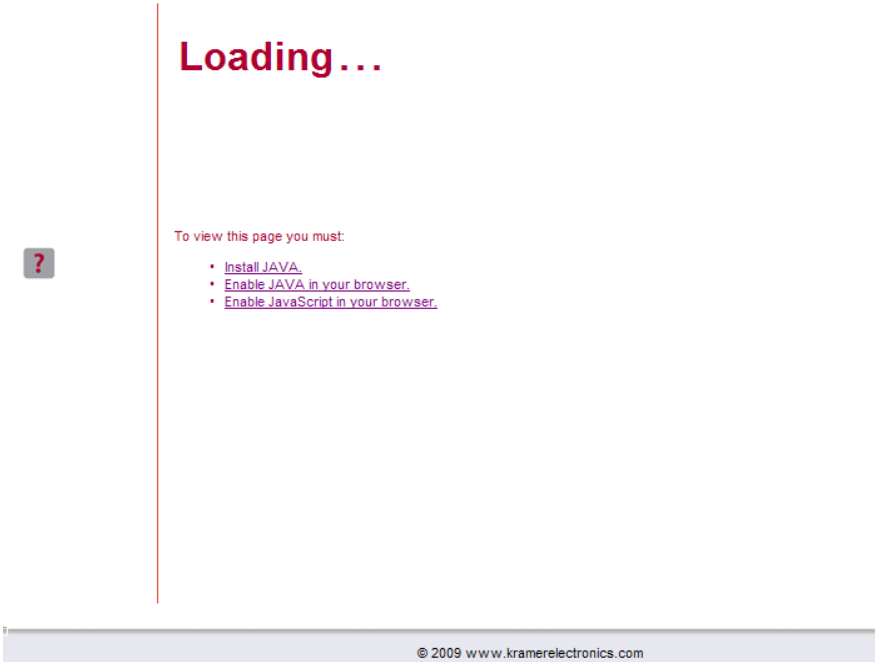


Figure 10: The Loading Page

The first time that you run the program, the Warning-Security screen appears.




Figure 11: First Time Security Warning

3. Click Run.

The main switching control Home page is displayed which shows a graphical interpretation of the front panel (see [Figure 12](#)).

The Web pages let you control the **VP-4x1CS** via the Ethernet. The menu appears on the left side of the screen. There are three remote operation Web pages:

- The switching matrix (see [Section 7.2.2](#))
- Audio gain (See [Section 7.2.5](#))
- Configuration (See [Section 7.2.7](#))

A description of each Web page is displayed if you place your mouse over the question mark  that appears on the left side of the screen.

## 7.2.2 The Switching Matrix Page

The **VP-4x1CS** switching matrix page lets you route any of the four inputs to the output by clicking the relevant square on the matrix.



Figure 12: VP-4x1CS Switching Matrix Page

From this page you can:

- Select an input by clicking on the matrix (see [Section 7.2.3](#))
- Operate in the At-Once or Confirm mode (see [Section 7.2.4](#))
- Lock and unlock the front panel buttons (see [Section 7.2.5](#))

## 7.2.3 Switching an Input to the Output

**To switch an input to the output (for example, input 3 to output 1):**

- Click on the required switching point within the matrix (In 3 to Out 1, see [Figure 13](#)).

The blue square moves to the In 3 to Out 1 switching matrix box, indicating that In 3 is now switched to Out 1.

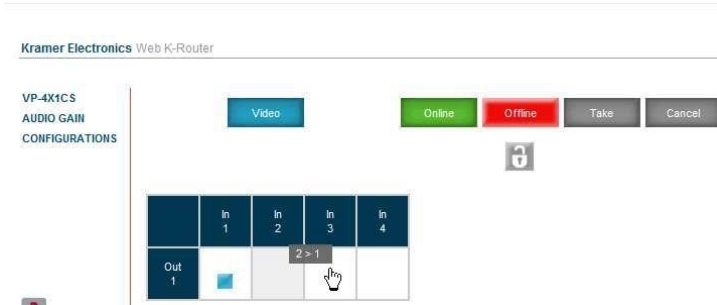


Figure 13: Switching an Input to an Output

## 7.2.4 Operating in the Confirm Mode

By default, the device is set to the At-Once mode.

**To operate in the Confirm mode:**

1. Click the red Offline button.  
The border of the button turns dark.
2. Click the desired Input in the switching matrix.  
The blue square indicator appears as an outline on the matrix and the Take and Cancel buttons turn blue.
3. Click either Take to accept the changes or Cancel to abandon the changes.
4. Click the Online button to exit the Confirm mode.  
If you click the Online button before you click the Take button, the warning shown in [Figure 14](#) appears.





Figure 14: Exiting Offline Warning

5. Click OK to cancel all changes made. Click Cancel to return to the switching matrix screen with the changes made but not saved.

## 7.2.5 Locking and Unlocking the Front Panel Buttons

**To lock and unlock the front panel buttons:**

1. Click on the unlocked icon .  
The front panel buttons are locked and the locked icon appears .
2. Click on the locked icon.  
The front panel buttons are unlocked and the unlocked button appears.

## 7.2.6 The Audio Gain Page

The Audio Gain screen lets you set the gain for the four inputs and the output.

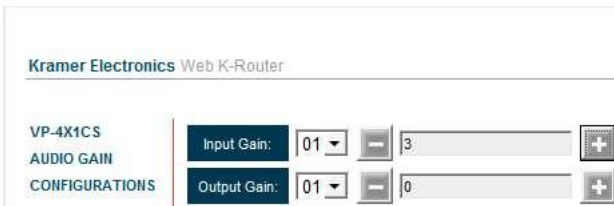


Figure 15: Audio Gain Page

**To change an input or output gain:**

1. Using the Input Gain drop-down list, select the channel number.
2. Click and hold the + or – button to increase or decrease the gain respectively.



## 7.2.7 The Configurations Page

The Configurations page lets you view some Ethernet settings and change others (see [Figure 16](#)). Fields with a white background are editable; fields with a blue background are read-only.

Kramer Electronics Web K-Router

VP-4X1CS  
AUDIO GAIN  
CONFIGURATIONS

Name: KRAMER\_1111  
Model: VP-4X1CS  
Serial Number: 1111111111  
Firmware version: 00.09.00.7172  
MAC Address: 00-1d-56-00-df-a5  
IP Address: 192.168.001.039  
DHCP:   
Gateway: 000.000.000.000  
Subnet Mask: 255.255.000.000

Submit Cancel

Figure 16: Configurations Page

### To change the configuration definitions:

1. Modify the values as required.
2. Click the blue Submit button to apply changes or Cancel to abandon them.  
A confirmation message appears asking if you are sure you want to change the network settings.
3. Click Yes.  
A message appears informing you that the configuration has been successfully changed.
4. Click OK.
5. If the IP address has been changed, close your browser and reload the Web page using the new IP address.

## 7.3 Using the K-Single Application

The **K-Single Application** can be used to operate the **VP-4x1CS**. Download it from [http://www.kramerelectronics.com/support/product\\_downloads.asp](http://www.kramerelectronics.com/support/product_downloads.asp).

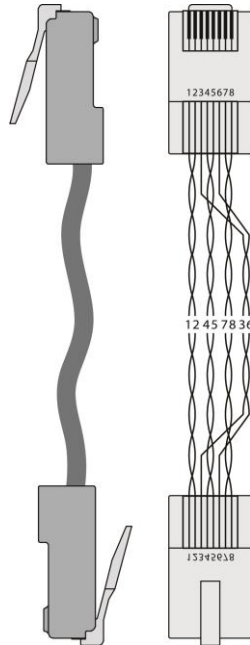
**Note:** As the **K-Single Application** will only work with Protocol 2000 so you must switch the **VP-4x1CS** to Protocol 2000 either from the front panel (see [section 7.1.2](#)) or from the Communication menu of the K-Single Application.

## 8 Wiring the TP RJ-45 Ethernet Connector

This section defines the TP pinout using a **straight** pin-to-pin cable with RJ-45 connectors.

| EIA /TIA 568B |                |
|---------------|----------------|
| PIN           | Wire Color     |
| 1             | Orange / White |
| 2             | Orange         |
| 3             | Green / White  |
| 4             | Blue           |
| 5             | Blue / White   |
| 6             | Green          |
| 7             | Brown / White  |
| 8             | Brown          |

Figure 17: TP Pinout Wiring



## 9 Technical Specifications

|  |   |
|--|---|
| INPUTS:  | 4 PC graphics on 15-pin HD (F) connectors<br>4 Unbalanced stereo audio on 3.5mm mini jack connectors  |
| OUTPUTS:   | 1 PC graphics on a 15-pin HD (F) connectors<br>1 Balanced stereo audio on a 5-pin terminal block<br>1 Unbalanced stereo audio on a 3.5mm mini jack                          |
| VIDEO BANDWIDTH:   | Up to UXGA (including WUXGA)  |
| VIDEO COUPLING:  | DC  |
| COLOR PHASE:   | 0 deg   |
| VIDEO INPUT IMPEDANCE:   | 75Ω   |
| VIDEO OUTPUT IMPEDANCE:  | 75Ω   |
| VIDEO S/N RATIO:   | >-52dB @5MHz unweighted   |
| VIDEO ISOLATION/CROSSTALK:   | <-54dB @5MHz unweighted   |
| AUDIO COUPLING:  | AC  |
| AUDIO INPUT IMPEDANCE:   | 100kΩ   |
| AUDIO OUTPUT IMPEDANCE:  | 150Ω  |
| DC OFFSET:   | 40mV  |
| AUDIO BANDWIDTH:   | 21kHz @-3dB   |
| AUDIO SIGNAL/NOISE RATIO:  | 86dB @1kHz A weighted   |
| THD + NOISE:   | 0.008% @1kHz A weighted   |
| AUDIO CROSSTALK:   | -72dB @1kHz   |
| POWER CONSUMPTION:   | 100-240V AC, 50/60Hz, 23VA  |
| CONTROLS:  | Front panel buttons, infrared remote control transmitter, RS-232, Ethernet, Audio level, Remote contact closure input selector switches, Remote contact closure mute switch |
| OPERATING TEMPERATURE:   | 0° to +40°C (32° to 104°F)  |
| STORAGE TEMPERATURE:   | -40° to +70°C (-40° to 158°F)   |
| HUMIDITY:  | 10% to 90%, RHL non-condensing  |
| DIMENSIONS:  | 19" x 7.28" x 1U (W, D, H)  |
| WEIGHT:  | 1.7kg (3.74lbs) approx.   |
| ACCESSORIES:   | Power cord, IR transmitter, rack "ears"   |
| OPTIONS:   | External remote IR receiver cable   |
| Specifications are subject to change without notice at <a href="http://www.kramerelectronics.com">http://www.kramerelectronics.com</a> |   |

# 10 Default Communication Parameters

| RS-232                         |   |  |   |
|--------------------------------|---|--|---|
| Protocol 2000                  |   | Protocol 3000 (Default)  |   |
| Baud Rate:                     | 9600  | Baud Rate:   | 115,200   |
| Data Bits:                     | 8   | Data Bits:   | 8   |
| Stop Bits:                     | 1   | Stop Bits:   | 1   |
| Parity:                        | None  | Parity:  | None  |
| Command Format:                | HEX   | Command Format:  | ASCII   |
| Example (Output 1 to Input 1): | 0x01, 0x81, 0x81, 0x81                              | Example (Output 1 to Input 1):   | #AV 1>1<CR>   |
| Switching Protocol             |   |  |   |
| P2000 -> P3000                 |   | P3000 -> P2000   |   |
| Command:                       | 0x38, 0x80, 0x83, 0x81                              | Command:   | #P2000<CR>  |
| Front Panel:                   | Press and hold Output 1 and Output 3 simultaneously | Front Panel:   | Press and hold Output 1 and Output 2 simultaneously |
| Ethernet                       |   |  |   |
| Default Settings               |   | Reset Settings   |   |
| IP Address: 192.168.1.39       |   | Power cycle the unit while holding in the Factory Reset button, located on the rear panel of the unit. |   |
| TCP Port #: 5000               |   |  |   |
| UDP Port #: 50000              |   |  |   |

# 11 Kramer Protocol 2000

The Kramer Protocol 2000 RS-232/RS-485 communication uses four bytes of information as defined below. All the values in the table are decimal, unless otherwise stated.

| MSB      |     |                |             |    |    |    |    | LSB |
|----------|-----|----------------|-------------|----|----|----|----|-----|
|          |     | DESTINATION    | INSTRUCTION |    |    |    |    |     |
| 0        | D   | N5             | N4          | N3 | N2 | N1 | N0 |     |
| 7        | 6   | 5              | 4           | 3  | 2  | 1  | 0  |     |
| 1st byte |     |                |             |    |    |    |    |     |
|          |     | INPUT          |             |    |    |    |    |     |
| 1        | I6  | I5             | I4          | I3 | I2 | I1 | I0 |     |
| 7        | 6   | 5              | 4           | 3  | 2  | 1  | 0  |     |
| 2nd byte |     |                |             |    |    |    |    |     |
|          |     | OUTPUT         |             |    |    |    |    |     |
| 1        | O6  | O5             | O4          | O3 | O2 | O1 | O0 |     |
| 7        | 6   | 5              | 4           | 3  | 2  | 1  | 0  |     |
| 3rd byte |     |                |             |    |    |    |    |     |
|          |     | MACHINE NUMBER |             |    |    |    |    |     |
| 1        | OVR | X              | M4          | M3 | M2 | M1 | M0 |     |
| 7        | 6   | 5              | 4           | 3  | 2  | 1  | 0  |     |
| 4th byte |     |                |             |    |    |    |    |     |

1st BYTE: Bit 7 – Defined as 0.

D – "DESTINATION": 0 - for sending information to the switchers (from the PC);

1 - for sending to the PC (from the switcher).

N5...N0 – "INSTRUCTION"

The function that is to be performed by the switcher(s) is defined by the INSTRUCTION (6 bits). Similarly, if a function is performed via the machine's keyboard, then these bits are set with the INSTRUCTION NO., which was performed. The instruction codes are defined according to the table below (INSTRUCTION NO. is the value to be set for N5...N0).

2nd BYTE: Bit 7 – Defined as 1.

I6...I0 – "INPUT".

When switching (ie. instruction codes 1 and 2), the INPUT (7 bits) is set as the input number which is to be switched.

Similarly, if switching is done via the machine's front-panel, then these bits are set with the INPUT NUMBER which was switched. For other operations, these bits are defined according to the table.

3rd BYTE: Bit 7 – Defined as 1.

O6...O0 – "OUTPUT".

When switching (ie. instruction codes 1 and 2), the OUTPUT (7 bits) is set as the output number which is to be switched.

Similarly, if switching is done via the machine's front-panel, then these bits are set with the OUTPUT NUMBER which was switched. For other operations, these bits are defined according to the table.

4th BYTE: Bit 7 – Defined as 1.

Bit 5 – Don't care.

OVR – Machine number override.

M4...M0 – MACHINE NUMBER.

Used to address machines in a system via their device numbers. When several machines are controlled from a single serial port, they are usually configured together with each machine having an individual machine number. If the OVR bit is set, then all machine numbers accept (implement) the command, and the addressed machine replies. For a single machine controlled via the serial port, always set M4...M0 = 1, and make sure that the machine itself is configured as MACHINE NUMBER = 1.

| Instruction Codes for Protocol 2000 |  |   |   |       |
|-------------------------------------|--|---|---|-------|
| Instruction                         |  | Definition for Specific Instruction   |   | Notes |
| #                                   | Description  | Input   | Output  |       |
| 0                                   | RESET VIDEO  | 0   | 0   | 1     |
| 1                                   | SWITCH VIDEO   | Set equal to video input that is switched (0 = disconnect)  | Set equal to video output that is switched (0 = to all the outputs)   | 2, 15 |
| 5                                   | REQUEST STATUS OF A VIDEO OUTPUT                           | Set as SETUP #  | Equal to output number whose status is required   | 4, 3  |
| 15                                  | REQUEST WHETHER SETUP IS DEFINED / VALID INPUT IS DETECTED | SETUP #<br>or<br>Input #<br>or<br>Output #  | 0 – For checking if setup is defined<br>1 – For checking if input is valid<br>2 – For checking if output is valid<br>3 – For checking if EDID output is valid   | 8     |
| 16                                  | ERROR / BUSY   | For invalid / valid input (i.e. OUTPUT byte = 4 or OUTPUT byte = 5), this byte is set as the input #;<br><br>For invalid / valid output (i.e. OUTPUT byte=7 or OUTPUT byte=8), this byte is set as the output#  | 0 – Error<br>1 – Invalid instruction<br>2 – Out of range<br>3 – Machine busy<br>4 – Invalid input<br>5 – Valid input<br>6 – RX buffer overflow<br>7 – Invalid output<br>8 – Valid output<br>9 – Valid EDID  | 9, 25 |
| 30                                  | LOCK FRONT PANEL   | 0 – Unlock panel<br>1 – Lock panel  | 0   | 2     |
| 31                                  | REQUEST WHETHER PANEL IS LOCKED                            | 0   | 0   | 16    |
| 61                                  | IDENTIFY MACHINE   | 1 – Video machine name<br>2 – Audio machine name<br>3 – Video software version<br>4 – Audio software version<br>5 – RS-422 controller name<br>6 – RS-422 controller version<br>7 – Remote control name<br>8 – Remote software version<br>9 – Protocol 2000 revision<br>10 – Control data machine name<br>11 – Control data software version | For names:<br>0 – Request first 4 digits<br>1 – Request first suffix<br>2 – Request second suffix<br>3 – Request third suffix<br>10 – Request first prefix<br>11 – Request second prefix<br>12 – Request third prefix<br><br>For versions:<br>0 – Main board<br>or the number of external board | 13    |
| 62                                  | DEFINE MACHINE   | 1 – Number of inputs<br>2 – Number of outputs<br>3 – Number of setups   | 1 – For video<br>2 – For audio<br>3 – For SDI<br>4 – For remote panel<br>5 – For RS-422 controller<br>6 – For control data  | 14    |

Notes on the above table:

**NOTE 1** - When the master switcher is reset, (e.g. when it is turned on), the reset code is sent to the PC. If this code is sent to the switchers, it resets according to the present power-down settings.

**NOTE 2** - These are bi-directional definitions. That is, if the switcher receives the code, it performs the instruction; and if the instruction is performed (due to a keystroke operation on the front panel), then these codes are sent. For example, if the HEX code:

01            85            88            83

was sent from the PC, then the switcher (machine 3) switches input 5 to output 8. If the user switched input 1 to output 7 via the front panel keypad, then the switcher sends HEX codes:

41            81            87            83

to the PC.

When the PC sends one of the commands in this group to the switcher, then, if the instruction is valid, the switcher replies by sending to the PC the same four bytes that it was sent (except for the first byte, where the DESTINATION bit is set high).

**NOTE 3** - SETUP # 0 is the present setting. SETUP # 1 and higher are the settings saved in the switcher's memory, (i.e. those used for Store and Recall).

**NOTE 4** - The reply to a "REQUEST" instruction is as follows: the same instruction and INPUT codes as were sent are returned, and the OUTPUT is assigned the value of the requested parameter. The replies to instructions 10 and 11 are as per the definitions in instructions 7 and 8 respectively. For example, if the present status of machine number 5 is breakaway setting, then the reply to the HEX code:

```
0B      80      80      85
would be HEX codes
4B      80      81      85
```

**NOTE 8** - The reply is as in TYPE 3 above, except that here the OUTPUT is assigned with the value 0 if the setup is not defined / no valid input is detected; or 1 if it is defined / valid input is detected.

**NOTE 13** - This is a request to identify the switcher/s in the system. If the OUTPUT is set as 0, and the INPUT is set as 1, 2, 5 or 7, the machine sends its name. The reply is the decimal value of the INPUT and OUTPUT. For example, for a 2216, the reply to the request to send the audio machine name would be (HEX codes):

```
7D      96      90      81 (i.e. 128dec+ 22dec for 2nd byte, and 128dec+ 16dec for 3rd byte).
```

If the request for identification is sent with the INPUT set as 3 or 4, the appropriate machine sends its software version number. Again, the reply would be the decimal value of the INPUT and OUTPUT - the INPUT representing the number in front of the decimal point, and the OUTPUT representing the number after it. For example, for version 3.5, the reply to the request to send the version number would be (HEX codes):

```
7D      83      85      81 (i.e. 128dec+ 3dec for 2nd byte, 128dec+ 5dec for 3rd byte).
```

If the OUTPUT is set as 1, then the ASCII coding of the lettering following the machine's name is sent. For example, for the VS-7588YC, the reply to the request to send the first suffix would be (HEX codes):

```
7D      D9      C3      81 (i.e. 128dec+ ASCII for "Y"; 128dec+ ASCII for "C").
```

**NOTE 14** - The number of inputs and outputs refers to the specific machine which is being addressed, not to the system. For example, if six 16X16 matrices are configured to make a 48X32 system (48 inputs, 32 outputs), the reply to the HEX code:

```
3E      82      81      82 (ie. request the number of outputs)
would be HEX codes:
7E      82      90      82
ie. 16 outputs
```

**NOTE 15** - When the OVR bit (4th byte) is set, then the "video" commands have universal meaning. For example, instruction 1 (SWITCH VIDEO) causes all units (including audio, data, etc.) to switch. Similarly, if a machine is in "FOLLOW" mode, it performs any "video" instruction.

**NOTE 16** - The reply to the "REQUEST WHETHER PANEL IS LOCKED" is as in NOTE 4 above, except that here the OUTPUT is assigned with the value 0 if the panel is unlocked, or 1 if it is locked.

## 11.1 Protocol 2000 Hex Codes

The following table lists the hex values to switch an input to the output for a single VP-4x1CS device.

|      | Video          | Audio          |
|------|----------------|----------------|
| IN 1 | 01, 81, 81, 81 | 02, 81, 81, 81 |
| IN 2 | 01, 82, 81, 81 | 02, 82, 81, 81 |
| IN 3 | 01, 83, 81, 81 | 02, 83, 81, 81 |
| IN 4 | 01, 84, 81, 81 | 02, 84, 81, 81 |

The following table lists the hex codes that increase or decrease audio input gain.

|          | IN 1        | IN 2        | IN 3        | IN 4        |
|----------|-------------|-------------|-------------|-------------|
| Increase | 18 81 86 81 | 18 82 86 81 | 18 83 86 81 | 18 84 86 81 |
| Decrease | 18 81 87 81 | 18 82 87 81 | 18 83 87 81 | 18 84 87 81 |

The following table lists the hex codes that set the audio input gain.



**Note:** Before sending any of these codes, the command **2A 86 80 81** must be sent.

| IN 1         | IN 2         | IN 3         | IN 4         | Level [Rel] |
|--------------|--------------|--------------|--------------|-------------|
| 16 81 80* 81 | 16 82 80* 81 | 16 83 80* 81 | 16 84 80* 81 | -63dB Mute  |
| ⋮            | ⋮            | ⋮            | ⋮            |             |
| 16 81 8D* 81 | 16 82 8D* 81 | 16 83 8D* 81 | 16 84 8D* 81 | -50dB       |
| ⋮            | ⋮            | ⋮            | ⋮            |             |
| 16 81 BF* 81 | 16 82 BF* 81 | 16 83 BF* 81 | 16 84 BF* 81 | 0dB         |
| ⋮            | ⋮            | ⋮            | ⋮            |             |
| 16 81 C6* 81 | 16 82 C6* 81 | 16 83 C6* 81 | 16 84 C6* 81 | +7dB (Max)  |

\* BYTE 3 = 0x80 + Gain Value (0x00-0x46)

The following table lists the hex codes that increase or decrease the audio output gain.

|          | OUT 1       | OUT 2       | OUT 3       | OUT 4       |
|----------|-------------|-------------|-------------|-------------|
| Increase | 18 81 80 81 | 18 82 80 81 | 18 83 80 81 | 18 84 80 81 |
| Decrease | 18 81 81 81 | 18 82 81 81 | 18 83 81 81 | 18 84 81 81 |

The following table lists the hex codes that set the audio output gain.

**Note:** Before sending any of these codes, the command **2A 87 80 81** must be sent.

| OUT 1        | Level [Rel] |
|--------------|-------------|
| 16 81 80* 81 | -30dB       |
| ⋮            |             |
| 16 81 9E* 81 | 0dB         |
| ⋮            |             |
| 16 81 B2* 81 | +20dB       |

\*BYTE 3 = 0x80 + Gain Value (0x00-0x32)

## 12 Protocol 3000

The **VP-4x1CS** can be operated using serial commands from a PC, remote controller or touch screen using the Kramer Protocol 3000.

This section describes:

- Kramer Protocol 3000 syntax (see [Section 12.1](#))
- Kramer Protocol 3000 commands (see [Section 12.2](#))

### 12.1 Kramer Protocol 3000 Syntax

#### 12.1.1 Host Message Format

| Start | Address (optional)     | Body           | Delimiter |
|-------|------------------------|----------------|-----------|
| #     | <i>Destination_id@</i> | <b>Message</b> | <b>CR</b> |

##### 12.1.1.1 Simple Command

Command string with only one command without addressing:

| Start | Body  | Delimiter |
|-------|---|-----------|
| #     | <b>Command</b> <b>SP</b> <i>Parameter_1,Parameter_2,...</i> | <b>CR</b> |

##### 12.1.1.2 Command String

Formal syntax with commands concatenation and addressing:

| Start | Address                | Body  | Delimiter |
|-------|------------------------|---|-----------|
| #     | <i>Destination_id@</i> | <b>Command_1</b> <i>Parameter1_1,Parameter1_2,...</i><br><b>Command_2</b> <i>Parameter2_1,Parameter2_2,...</i><br><b>Command_3</b> <i>Parameter3_1,Parameter3_2,...</i> ... | <b>CR</b> |

#### 12.1.2 Device Message Format

| Start | Address (optional) | Body           | delimiter           |
|-------|--------------------|----------------|---------------------|
| ~     | <i>Sender_id@</i>  | <b>Message</b> | <b>CR</b> <b>LF</b> |

##### 12.1.2.1 Device Long Response

Echoing command:

| Start | Address (optional) | Body   | Delimiter           |
|-------|--------------------|--|---------------------|
| ~     | <i>Sender_id@</i>  | <b>Command</b> <b>SP</b> [ <i>Param1 ,Param2 ...</i> ] <b>result</b> | <b>CR</b> <b>LF</b> |

**CR** = Carriage return (ASCII 13 = 0x0D)

**LF** = Line feed (ASCII 10 = 0x0A)

**SP** = Space (ASCII 32 = 0x20)

### 12.1.3 Command Terms

#### Command

A sequence of ASCII letters ('A'-'Z', 'a'-'z' and '-').

Command and parameters must be separated by at least one space.

#### Parameters

A sequence of alphanumeric ASCII characters ('0'-'9', 'A'-'Z', 'a'-'z' and some special characters for specific commands). Parameters are separated by commas.

#### Message string

Every command entered as part of a message string begins with a **message starting character** and ends with a **message closing character**.

**Note:** A string can contain more than one command. Commands are separated by a pipe ( '|') character.

#### Message starting character

'#' – For host command/query

'~' – For device response

#### Device address (Optional, for K-NET)

K-NET Device ID followed by '@'

#### Query sign

'?' follows some commands to define a query request.

#### Message closing character

**CR** – For host messages; carriage return (ASCII 13)

**CRLF** – For device messages; carriage return (ASCII 13) + line-feed (ASCII 10)

#### Command chain separator character

When a message string contains more than one command, a pipe ( '|') character separates each command.

Spaces between parameters or command terms are ignored.

### 12.1.4 Entering Commands

You can directly enter all commands using a terminal with ASCII communications software, such as HyperTerminal, Hercules, etc. Connect the terminal to the serial or Ethernet port on the Kramer device. To enter **CR** press the Enter key. (**LF** is also sent but is ignored by command parser).

For commands sent from some non-Kramer controllers like Crestron, some characters require special coding (such as, /X##). Refer to the controller manual.

### 12.1.5 Command Forms

Some commands have short name syntax in addition to long name syntax to allow faster typing. The response is always in long syntax.

### 12.1.6 Chaining Commands

Multiple commands can be chained in the same string. Each command is delimited by a pipe character (“|”). When chaining commands, enter the **message starting character** and the **message closing character** only once at the beginning of the string and at the end.

Commands in the string do not execute until the closing character is entered.

A separate response is sent for every command in the chain.

### 12.1.7 Maximum String Length

64 characters

## 12.2 Kramer Protocol 3000 Commands

| Command     | Short Form | Description                                 | Permission    |
|-------------|------------|---|---------------|
| #           |            | Protocol handshaking                        | End User      |
| ADL         |            | Set audio level in specific amplifier stage |               |
| ADL?        |            | Read audio volume level                     |               |
| AUD-LVL     | ADL        | Set audio level in specific amplifier stage |               |
| AUD-LVL?    | ADL?       | Read audio volume level                     |               |
| AV          |            | Switch audio and video                      |               |
| BUILD-DATE? |            | Read device build date                      | End User      |
| ETH-PORT    | ETHP       | Change protocol Ethernet port               |               |
| ETH-PORT?   | ETHP?      | Read protocol Ethernet port                 |               |
| FACTORY     |            | Reset to factory default configuration      |               |
| INFO-IO?    |            | Read in/out count                           | End User      |
| INFO-PRST?  |            | Read maximum preset count                   | End User      |
| LOCK-FP     | LCK        | Lock front panel                            | Administrator |
| LOCK-FP?    | LCK?       | Read Lock front panel                       | End User      |
| MODEL?      |            | Read device model                           | End User      |
| NET-DHCP    | NTDH       | Set DHCP mode                               |               |
| NET-DHCP?   | NTDH?      | Read subnet mask                            |               |
| NET-GATE    | NTGT       | Set gateway address                         |               |
| NET-GATE?   | NTGT?      | Read subnet mask                            |               |
| NET-IP      | NTIP       | Set IP address                              |               |
| NET-IP?     | NTIP?      | Read IP address                             |               |
| NET-MAC?    | NTMC       | Read MAC address                            |               |
| NET-MASK    | NTMSK      | Set subnet mask                             |               |
| NET-MASK?   | NTMSK?     | Read subnet mask                            |               |
| P2000       |            | Switch to Protocol 2000                     | End User      |
| P3000       |            | Switch to Protocol 3000                     | End User      |
| PRIO        |            | Set switching priority                      | End User      |
| PRIO?       |            | Get switching priority                      | End User      |
| PROT-VER?   |            | Read device protocol version                | End User      |
| RESET       |            | Reset device                                | Administrator |
| SIGNAL?     |            | Get valid/invalid status                    | End User      |
| SN?         |            | Read device serial number                   | End User      |
| VERSION?    |            | Read device firmware version                | End User      |
| VID         |            | Switch Video only                           | End User      |
| VID?        |            | Get Video switch state                      | End User      |
| VOL         |            | Set simple audio volume                     |               |
| VOL?        |            | Read simple audio level                     |               |
| VOLUM       | VOL        | Set simple audio volume                     |               |
| VOLUM?      | VOL?       | Read simple audio level                     |               |

## LIMITED WARRANTY

The warranty obligations of Kramer Electronics for this product are limited to the terms set forth below:

### What is Covered

This limited warranty covers defects in materials and workmanship in this product.

### What is Not Covered

This limited warranty does not cover any damage, deterioration or malfunction resulting from any alteration, modification, improper or unreasonable use or maintenance, misuse, abuse, accident, neglect, exposure to excess moisture, fire, improper packing and shipping (such claims must be presented to the carrier), lightning, power surges, or other acts of nature. This limited warranty does not cover any damage, deterioration or malfunction resulting from the installation or removal of this product from any installation, any unauthorized tampering with this product, any repairs attempted by anyone unauthorized by Kramer Electronics to make such repairs, or any other cause which does not relate directly to a defect in materials and/or workmanship of this product. This limited warranty does not cover cartons, equipment enclosures, cables or accessories used in conjunction with this product.

Without limiting any other exclusion herein, Kramer Electronics does not warrant that the product covered hereby, including, without limitation, the technology and/or integrated circuit(s) included in the product, will not become obsolete or that such items are or will remain compatible with any other product or technology with which the product may be used.

### How Long Does this Coverage Last

Seven years as of this printing; please check our Web site for the most current and accurate warranty information.

### Who is Covered

Only the original purchaser of this product is covered under this limited warranty. This limited warranty is not transferable to subsequent purchasers or owners of this product.

### What Kramer Electronics will do

Kramer Electronics will, at its sole option, provide one of the following three remedies to whatever extent it shall deem necessary to satisfy a proper claim under this limited warranty:

1. Elect to repair or facilitate the repair of any defective parts within a reasonable period of time, free of any charge for the necessary parts and labor to complete the repair and restore this product to its proper operating condition. Kramer Electronics will also pay the shipping costs necessary to return this product once the repair is complete.
2. Replace this product with a direct replacement or with a similar product deemed by Kramer Electronics to perform substantially the same function as the original product.
3. Issue a refund of the original purchase price less depreciation to be determined based on the age of the product at the time remedy is sought under this limited warranty.

### What Kramer Electronics will not do Under This Limited Warranty

If this product is returned to Kramer Electronics or the authorized dealer from which it was purchased or any other party authorized to repair Kramer Electronics products, this product must be insured during shipment, with the insurance and shipping charges prepaid by you. If this product is returned uninsured, you assume all risks of loss or damage during shipment. Kramer Electronics will not be responsible for any costs related to the removal or re-installation of this product from or into any installation. Kramer Electronics will not be responsible for any costs related to any setting up this product, any adjustment of user controls or any programming required for a specific installation of this product.

### How to Obtain a Remedy under this Limited Warranty

To obtain a remedy under this limited warranty, you must contact either the authorized Kramer Electronics reseller from whom you purchased this product or the Kramer Electronics office nearest you. For a list of authorized Kramer Electronics resellers and/or Kramer Electronics authorized service providers, please visit our web site at [www.kramerelectronics.com](http://www.kramerelectronics.com) or contact the Kramer Electronics office nearest you.

In order to pursue any remedy under this limited warranty, you must possess an original, dated receipt as proof of purchase from an authorized Kramer Electronics reseller. If this product is returned under this limited warranty, a return authorization number, obtained from Kramer Electronics, will be required. You may also be directed to an authorized reseller or a person authorized by Kramer Electronics to repair the product.

If it is decided that this product should be returned directly to Kramer Electronics, this product should be properly packed, preferably in the original carton, for shipping. Cartons not bearing a return authorization number will be refused.

### Limitation on Liability

THE MAXIMUM LIABILITY OF KRAMER ELECTRONICS UNDER THIS LIMITED WARRANTY SHALL NOT EXCEED THE ACTUAL PURCHASE PRICE PAID FOR THE PRODUCT. TO THE MAXIMUM EXTENT PERMITTED BY LAW, KRAMER ELECTRONICS IS NOT RESPONSIBLE FOR DIRECT, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES RESULTING FROM ANY BREACH OF WARRANTY OR CONDITION, OR UNDER ANY OTHER LEGAL THEORY. Some countries, districts or states do not allow the exclusion or limitation of relief, special, incidental, consequential or indirect damages, or the limitation of liability to specified amounts, so the above limitations or exclusions may not apply to you.

### Exclusive Remedy

TO THE MAXIMUM EXTENT PERMITTED BY LAW, THIS LIMITED WARRANTY AND THE REMEDIES SET FORTH ABOVE ARE EXCLUSIVE AND IN LIEU OF ALL OTHER WARRANTIES, REMEDIES AND CONDITIONS, WHETHER ORAL OR WRITTEN, EXPRESS OR IMPLIED. TO THE MAXIMUM EXTENT PERMITTED BY LAW, KRAMER ELECTRONICS SPECIFICALLY DISCLAIMS ANY AND ALL IMPLIED WARRANTIES, INCLUDING, WITHOUT LIMITATION, WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. IF KRAMER ELECTRONICS CANNOT LAWFULLY DISCLAIM OR EXCLUDE IMPLIED WARRANTIES UNDER APPLICABLE LAW, THEN ALL IMPLIED WARRANTIES COVERING THIS PRODUCT, INCLUDING WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, SHALL APPLY TO THIS PRODUCT AS PROVIDED UNDER APPLICABLE LAW.

IF ANY PRODUCT TO WHICH THIS LIMITED WARRANTY APPLIES IS A "CONSUMER PRODUCT" UNDER THE MAGNUSON-MOSS WARRANTY ACT (15 U.S.C.A. §2301, ET SEQ.) OR OTHER APPLICABLE LAW, THE FOREGOING DISCLAIMER OF IMPLIED WARRANTIES SHALL NOT APPLY TO YOU, AND ALL IMPLIED WARRANTIES ON THIS PRODUCT, INCLUDING WARRANTIES OF MERCHANTABILITY AND FITNESS FOR THE PARTICULAR PURPOSE, SHALL APPLY AS PROVIDED UNDER APPLICABLE LAW.

### Other Conditions

This limited warranty gives you specific legal rights, and you may have other rights which vary from country to country or state to state.

This limited warranty is void if (i) the label bearing the serial number of this product has been removed or defaced, (ii) the product is not distributed by Kramer Electronics or (iii) this product is not purchased from an authorized Kramer Electronics reseller. If you are unsure whether a reseller is an authorized Kramer Electronics reseller, please visit our Web site at [www.kramerelectronics.com](http://www.kramerelectronics.com) or contact a Kramer Electronics office from the list at the end of this document.

Your rights under this limited warranty are not diminished if you do not complete and return the product registration form or complete and submit the online product registration form. Kramer Electronics thanks you for purchasing a Kramer Electronics product. We hope it will give you years of satisfaction.



For the latest information on our products and a list of Kramer distributors, visit our Web site where updates to this user manual may be found.

**We welcome your questions, comments, and feedback.**

Web site: [www.kramerelectronics.com](http://www.kramerelectronics.com)

E-mail: [info@kramerel.com](mailto:info@kramerel.com)

CE



**SAFETY WARNING**

Disconnect the unit from the power supply before opening and servicing



P/N: 2900-300198



Rev: 4