# KRAMER

# USER MANUAL

**MODEL:**

## VP-439
Video Scaler

# VP-439 Quick Start Guide

This guide helps you install and use your product for the first time. For more detailed information, go to **http://www.kramerav.com/manual/VP-439** to download the latest manual or scan the QR code on the left.

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

- ☑ The **VP-439** Video Scaler
- ☑ 1 Power supply (5V DC)
- ☑ 4 Rubber feet
- ☑ 1 Quick start guide

## Step 2: Install the VP-439

Attach the rubber feet and place on a table or mount the **VP-439** in a rack (using an optional **RK-1** rack adapter).

## Step 3: Connect inputs and outputs

Always switch OFF the power on each device before connecting it to your **VP-439**.
For best results, we recommend that you always use Kramer high-performance cables to connect AV equipment to the **VP-439**.
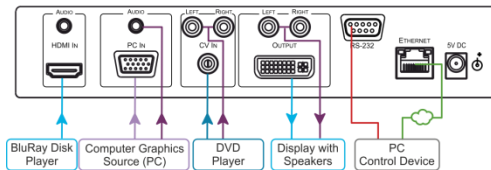


## Step 4: Connect the power

Connect the 5V DC power adapter to the rear of the **VP-439** and connect the adapter to the mains electricity

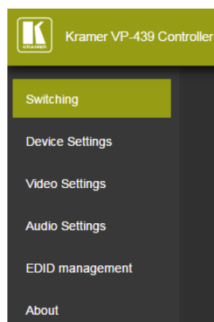## Step 5: Set operation parameters via OSD menu

Enter the OSD menu via the MENU button on the front panel. Select a menu item and set parameters as required.

If you cannot see any images, verify that the display, TV, or projector is in good working order and is connected to the **VP-439**. If you still don't see an image, press and hold the RESET TO XGA/720P button for 3 seconds to reset the output to XGA or 720p resolution.

| Menu Item | Function |
|-----------|----------|
| PICTURE | Set the contrast, brightness, red, green and blue levels. Set the hue, saturation, sharpness, noise reduction. When PC is the selected input, finetune the image |
| INPUT | Select the input |
| OUTPUT | Select the image size and the resolution |
| AUDIO | Set the input and output volumes and the audio delay time. Select the audio source for each HDMI input |
| OSD | Setup the OSD |
| ADVANCED | Set HDCP on input, auto sync off and the OSD parameters. Set auto input scan, the Ethernet parameters and the Timing shift |
| ABOUT | Display the input source and resolution, the output resolution, the IP address and the firmware version |
| FACTORY | Perform factory reset |

## Step 6: Operate via the front panel buttons and via the:

### Embedded Web Page:



Kramer VP-439 Controller

Switching

Device Settings

Video Settings

Audio Settings

EDID management

About

### RS-232 and Ethernet:

| RS-232 | |
|--------|--|
| Baud Rate: | 9,600 |
| Data Bits: | 8 |
| Stop Bits: | 1 |
| Parity: | None |
| **Ethernet** | |
| To reset the IP settings to the factory reset values go to : Menu-> Factory-> RESET->Change the option to YES and press Enter | |
| IP Address: | 192.168.1.39 |
| Subnet mask: | 255.255.0.0 |
| Default gateway: | 0.0.0.0 |
| Default UDP Port #: | 50000 |
| Maximum UDP Ports: | 1 |
| **Full Factory Reset** | |
| OSD | Go to : Menu-> Factory-> RESET->Change the option to YES and press Enter |
| **RS-232/Ethernet (UDP) Command Protocol** | |
| Command Format: | ASCII protocol 3000 |
| Example (Route the video input to the output): | #ROUTE 12,1,2<cr> |

# Contents

## Figures

# 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 14 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; GROUP 11: Sierra Video Products; GROUP 12: Digital Signage; GROUP 13: Audio; and GROUP 14: Collaboration.

Congratulations on purchasing your Kramer **VP-439** *Video Scaler*, which is ideal for the following typical applications:

- Education, small classrooms

# 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.kramerav.com/downloads/VP-439 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 Kramer **VP-439** 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 Kramer Electronics power supply that is provided with the unit

**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−439** is a high−performance digital scaler for computer graphics video, composite and HDMI signals, including audio. It up− or down−scales the selected HDMI, CV or computer graphics video/YPbPr input and outputs it to HDMI.

The audio input source is selectable from Web pages– either from the relevant analog audio input, or de-embedded from the HDMI input. The audio output can be delayed for lip-sync compensation, and is available on the analog stereo output, as well as being embedded onto the HDMI output.

More specifically, the **VP-439** features:

- HDTV compatibility and scales to resolutions up to 1080p/WUXGA

- Clean and quiet auto-switching that  searches for valid signal when the input signal is lost with no video glitches or audible clicks or noises

- Automatic detection and selection of the audio source for the HDMI input. Default selection is HDMI – if this is not present, then the machine uses the audio from the analog input

- Auto-power down if no valid input signal is detected for a period of 2 to 3 minutes, the HDMI output is shut down, and the PC output syncs are disabled

- HDCP enabling/disabling

- Analog audio inputs for the CV, PC and HDMI inputs

- Lip sync delay

- An On-Screen Display (OSD) for easy setup and adjustment, accessible via the front-panel buttons

- An OSD INFO screen showing the selected input source, input and output resolutions, HDCP status, firmware version, etc.

- A built-in ProcAmp for convenient adjustment of video parameters, such as brightness, contrast, color, sharpness and hue

- A non-volatile memory that retains the last settings used

- Convenient setup and control options – front panel buttons, OSD, Web page

## 3.1 Defining the VP-439 Video Scaler
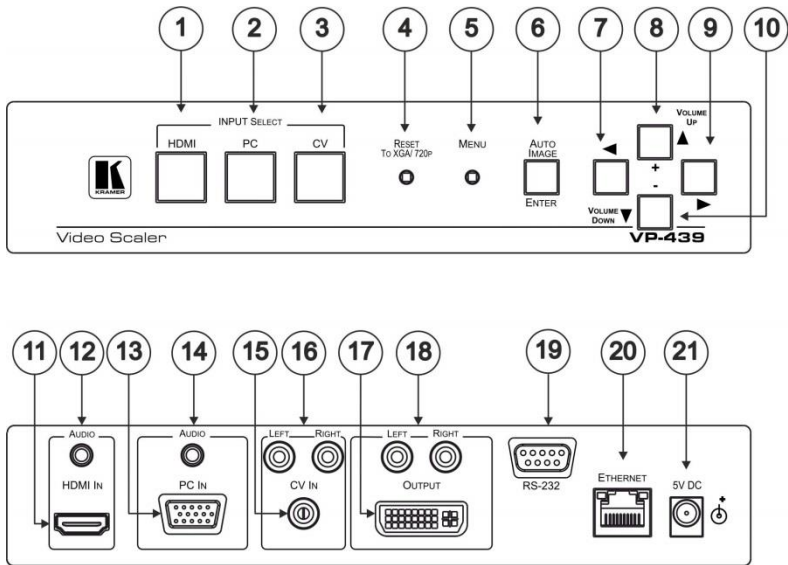


Figure 1: VP-439 Video Scaler

| # | Feature | | Function |
|---|---------|---|----------|
| 1 | *INPUT SELECT* Buttons | *HDMI* | Press to select the HDMI input |
| 2 | | *PC* | Press to select the PC/VGA input |
| 3 | | *CV* | Press to select the composite video input |
| 4 | *RESET TO XGA/720p* Button | | Toggles between reset to 720p and reset to XGA. If the button has not been pressed for more than 30 seconds, the first press resets to 720p |
| 5 | *MENU* Button | | Press to activate the on-screen display (OSD). The button is recessed to prevent unwanted tampering with the unit (use a small pointed tool) |
| 6 | AUTO IMAGE/ENTER Button | | Press to enter or confirm menu selections. When not in the OSD menu, press to auto-position the image on the screen. |
| 7 | ◄ Button | | Press to access the OSD menu, exit the OSD menu and, when in the OSD menu, move to the previous level in the OSD screen |
| 8 | ▲/VOLUME UP/+ Button | | Press to move up the menu list and to Increase numerical values. When not within the OSD menu mode, press to increase the output volume |
| 9 | ► Button | | Press to access sub-menu items and select from several settings |
| 10 | ▼/*VOLUME DOWN*/– Button | | Press to move down the menu list and to decrease numerical values. When not within the OSD menu mode, press to reduce the output volume |

| # | Feature | | Function |
|---|---------|--------|----------|
| 11 | HDMI | *HDMI IN* Connector | Connects to an HDMI source |
| 12 | | *AUDIO* 3.5mm Mini Jack Connector | Connects to an unbalanced stereo audio source |
| 13 | VGA | *PC IN* 15-pin HD Connector | Connects to a PC graphics source |
| 14 | | *AUDIO* 3.5mm Mini Jack Connector | Connects to an unbalanced stereo audio source |
| 15 | CV | *CV IN* RCA Connector | Connects to a composite video source |
| 16 | | *LEFT/RIGHT* RCA Connectors | Connects to the left and right unbalanced stereo audio source |
| 17 | HDMI Output | *OUTPUT* DVI Connector | Connects to an HDMI acceptor |
| 18 | | *LEFT/RIGHT* RCA Connectors | Connects to the left and right unbalanced stereo audio acceptor |
| 19 | *RS-232* 9-pin D-type Connector | | Connects to the PC or other controller |
| 20 | ETHERNET RJ-45 Connector | | Connects to a PC or other controller over a network |
| 21 | 5V DC Connector | | +5V DC connector for powering the unit |

# 4    Connecting the VP-439

Always switch off the power to each device before connecting it to your **VP-439**. After connecting your **VP-439**, connect its power and then switch on the power to each device.

To connect the **VP-439** as illustrated in the example in Figure 2:

1.  Connect an HDMI source (for example, from a Blu-ray player) to the *HDMI IN* HDMI connector.

2.  Connect a PC graphics and unbalanced stereo audio source (for example, from a laptop PC) to the *PC IN* 15-pin HD and 3.5mm mini jack connectors.

3.  Connect a composite video and unbalanced stereo audio source (for example, from a DVD payer) to the *CV IN* RCA and *LEFT/RIGHT* RCA connectors.

4.  Connect the HDMI *OUTPUT* on a DVI-I connector and the *LEFT/RIGHT* unbalanced stereo audio on two RCA connectors to an HDMI acceptor (for example, to a display with speakers).

5.  If desired, connect the *ETHERNET* RJ-45 connector to a control device (for example, a PC).
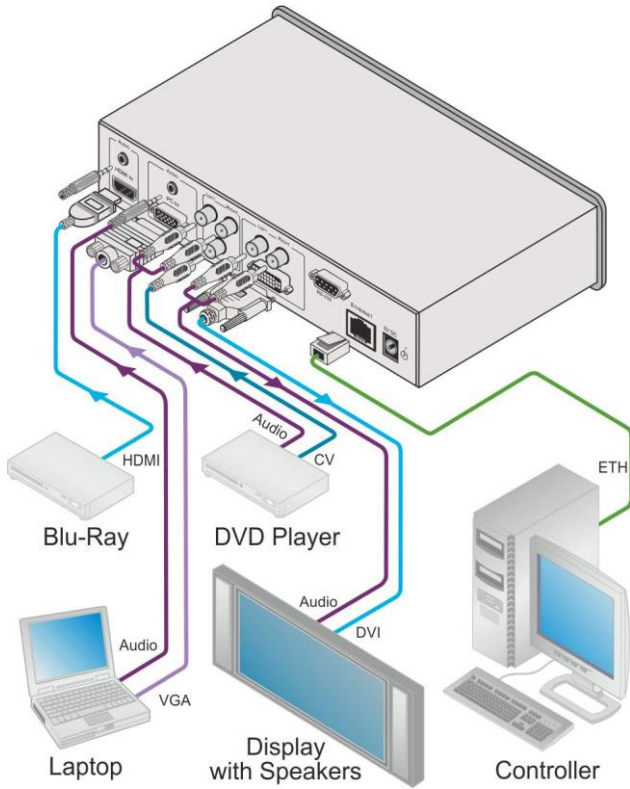
Figure 2: Connecting the VP-439 Video Scaler

# 5 Operating and Controlling the VP-439

You can operate the **VP-439** directly via the front panel buttons (see <u>Section 5.1</u>), via the OSD menu (see <u>Section 5.2</u>).

## 5.1 Using the Front Panel Buttons

Press the **VP-439** front panel buttons to select:

- The required INPUT (HDMI, PC or CV)

- A reset RESOLUTION (to XGA/720p)

- A control operation, using the MENU, ENTER (when in the OSD menu), + and – buttons

## 5.2 Using the CONTROL Buttons

The CONTROL buttons let you control the **VP-439** via the OSD menu. Press the:

- MENU button to enter the menu
  The default timeout is set to 10 seconds.

- ENTER (AUTO IMAGE) button to accept changes and to change the menu settings (a selected value parameter appears yellow and when set, changes back to blue)
  The ENTER function is active when in the OSD menu

- Arrow buttons to move through the OSD menu

On the OSD menu, select EXIT to exit the menu.

## 5.2.1 The OSD MENU

This table illustrates the MENU features and functions.

| LEVEL 1 | LEVEL 2 | LEVEL 3 | SELECTION | |
|---------|---------|---------|-----------|---|
| Picture | Contrast | | value | |
| | Brightness | | value | |
| | | | | |
| | For the PC input | Phase | value | |
| | | Clock | value | |
| | | H-Position | value | |
| | | V-Position | Off/Low/Middle/High | |
| | FineTune | HDMI | HUE | Sets the color hue |
| | | | SATURATION | Sets the color saturation |
| | | | SHARPNESS | Sets the sharpness of the picture |
| | | | NOISE REDUCTION | Selects the noise reduction level: OFF, HI, LOW and MID (middle) |
| | | PC | PHASE | Sets the clock phase |
| | | | CLOCK | Sets the clock frequency |
| | | | H-POSITION | Sets the horizontal position of the picture |
| | | | V-POSITION | Sets the vertical position of the picture |
| | | CV | HUE | Sets the color hue |
| | | | SATURATION | Sets the color saturation |
| | | | SHARPNESS | Sets the sharpness of the picture |
| | | | NOISE REDUCTION | Selects the noise reduction level: OFF, HI, LOW and MID (middle) |
| | | | H-POSITION | Sets the horizontal position of the picture |
| | | | V-POSITION | Sets the vertical position of the picture |
| | Color | Red | value | |
| | | Green | value | |
| | | Blue | value | |
| Input | Source | | HDMI, PC/YPbPr, Video (CV) | |
| Output | Size | | Full / Over Scan / Under Scan / Letter Box / Pan Scan /Best Fit | |

| LEVEL 1 | LEVEL 2 | LEVEL 3 | SELECTION | | | |
|---------|---------|---------|-----------|---|---|---|
| Output | Resolution | Select the output resolution from the menu: | | | | |
| | | Resolution: | Appears as: | Resolution: | Appears as: | |
| | | NATIVE | | 1600x900 | 1600x900 | |
| | | 640x480 | VGA | 480i | 480I | |
| | | 800x600 | SVGA | 480p | 480P | |
| | | 1024x768 | XGA | 720p60 | 720P60 | |
| | | 1280x1024 | SXGA | 1080i60 | 1080I60 | |
| | | 1600x1200 | UXGA | 1080p60 | 1080P60 | |
| | Resolution continued | 1366x768 | WXGA | 576i | 576I | |
| | | 1680x1050 | WSXGA | 576p | 576P | |
| | | 1920x1200 | WUXGA | 720p50 | 720P50 | |
| | | 1280x800 | 1280x800 | 1080i50 | 1080I50 | |
| | | 1440x900 | 1440x900 | 1080p50 | 1080P50 | |
| | | **NATIVE** - Select NATIVE to select the output resolution from the EDID of the connected HDMI monitor | | | | |
| Audio | Output Volume | | Set the output volume | | | |
| | Input Volume | | Set the input volume | | | |
| | Delay | | OFF/40ms/110ms/150ms/Auto | | | |
| | Input | | Automatic/Analog/Embedded | | | |
| OSD | H-Position | | value | | | |
| | V-Position | | value | | | |
| | Timer | | Off/5/6/7…/100 | | | |
| | Background | | Set the transparency of the OSD (100 is fully transparent) | | | |
| | Display | | Info/On/Off | | | |
| Advanced | HDCP On Input | | On/Off (disabled for PC and CV) | | | |
| | Auto SYNC Off | | Off/Fast/Slow | | | |
| | Auto Input Scan | | Off/On/HDMI+PC/HDMI+CV/CV+PC | | | |
| | Auto Image | | On/Off (disabled for HDMI and CV) | | | |
| | Freeze | | Freeze+Mute/Mute Only/Freeze Only | | | |
| | Ethernet | IP Mode | DHCP/Static | | | |
| | | Static IP | | | | |
| | | IP Address | xxx.xxx.xxx.xxx | | | |
| | | Subnet Mask | xxx.xxx.xxx.xxx | | | |
| | | Def. Gateway | xxx.xxx.xxx.xxx | | | |
| | | UDP Port | 50000 | | | |
| | | IP Address | xxx.xxx.xxx.xxx | | | |
| | | MAC Address | xx:xx:xx:xx:xx:xx | | | |
| | Timing Shift | | When ON (recommended), implements a small shift on the horizontal sync which may resolve instabilities seen on some displays working at specific resolutions | | | |

| LEVEL 1 | LEVEL 2 | LEVEL 3 | SELECTION |
|---------|---------|---------|-----------|
| About | Source | | The input source |
| | Input | | The input resolution |
| | Output | | The output resolution |
| | IP Address | | xxx.xxx.xxx.xxx |
| | Version | | Firmware version: x.xx |
| Factory | Reset | | NO / YES |

## 5.3    Connecting to the VP-439 via RS-232

You can connect to the **VP-439** 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-439** via RS-232, connect the RS-232 9-pin D-sub rear panel port on the product 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

## 5.4    Operating via Ethernet

You can connect to the **VP-439** via Ethernet using either of the following methods:

- Directly to the PC using a crossover cable (see Section 5.4.1)

- Via a network hub, switch, or router, using a straight-through cable (see Section 5.4.2)

**Note**: If you want to connect via a router and your IT system is based on IPv6, speak to your IT department for specific installation instructions.

### 5.4.1    Connecting the Ethernet Port Directly to a PC

You can connect the Ethernet port of the **VP-439** directly to the Ethernet port on your PC using a crossover cable with RJ-45 connectors.

This type of connection is recommended for identifying the **VP-439** with the factory configured default IP address.

After connecting the **VP-439** to the Ethernet port, configure your PC as follows:

1. Click **Start** > **Control Panel** > **Network and Sharing Center**.

2. Click **Change Adapter Settings**.

3. Highlight the network adapter you want to use to connect to the device and click **Change settings of this connection**.

The Local Area Connection Properties window for the selected network adapter appears as shown in Figure 3.
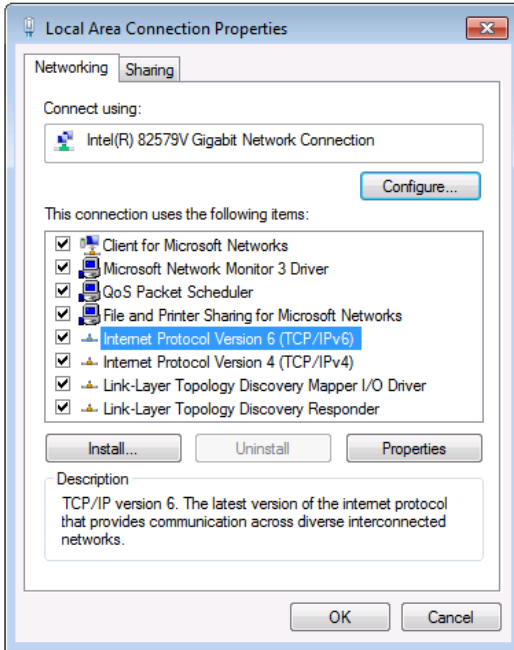


Figure 3: Local Area Connection Properties Window

4. Highlight either **Internet Protocol Version 6 (TCP/IPv6)** or **Internet Protocol Version 4 (TCP/IPv4)** depending on the requirements of your IT system.

5. Click **Properties**.

The Internet Protocol Properties window relevant to your IT system appears as shown in Figure 4 or Figure 5.
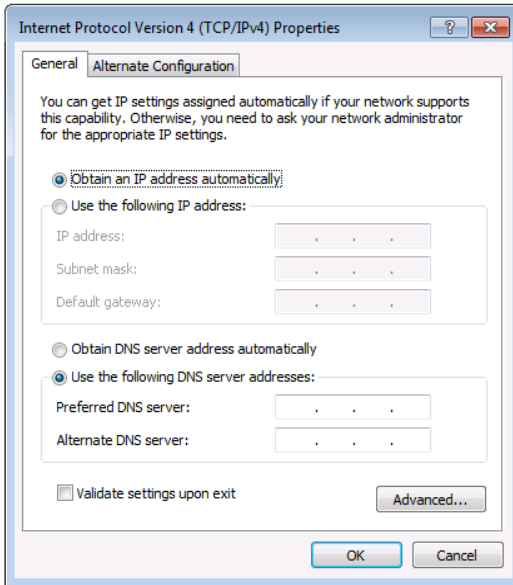
Figure 4: Internet Protocol Version 4 Properties Window
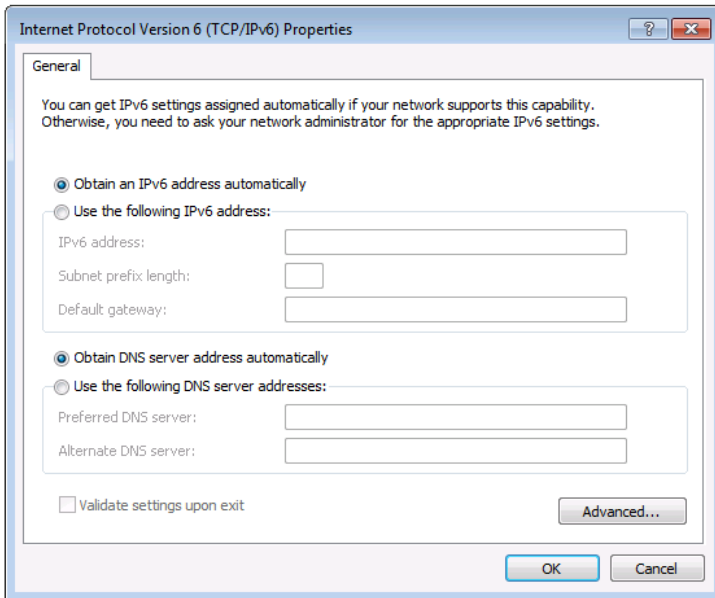


Figure 5: Internet Protocol Version 6 Properties Window

**VP-439 - Operating and Controlling the VP-439**

6. Select **Use the following IP Address** for static IP addressing and fill in the details as shown in Figure 6.
For TCP/IPv4 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.
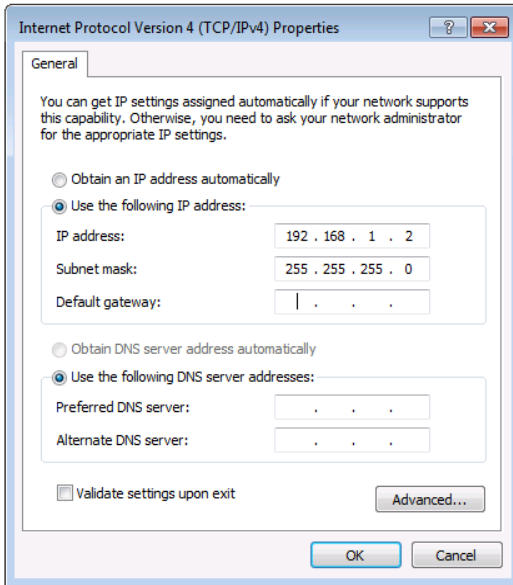


Figure 6: Internet Protocol Properties Window

7. Click **OK**.

8. Click **Close**.

### 5.4.2 Connecting the Ethernet Port via a Network Hub or Switch

You can connect the Ethernet port of the **VP-439 to** the Ethernet port on a network hub or using a straight-through cable with RJ-45 connectors.

### 5.4.3 Configuring the Ethernet Port

You can set the Ethernet parameters via the embedded Web pages.

# 6 Using the Embedded Web Pages

The **VP-439** can be operated remotely using the embedded Web pages. The Web pages are accessed using a Web browser and an Ethernet connection.

Before attempting to connect:

- Perform the procedures in <u>Section 5.4</u>
- Ensure that your browser is supported

The following operating systems and Web browsers are supported:

| Operating Systems | Applicable Browser Versions and Higher |
|---|---|
| Windows 7 | Chrome: 25<br>Internet Explorer: 9<br>Firefox 19<br>Opera: 11 |
| Mac (PC) | Chrome: 25<br>Firefox: 19<br>Opera: 11 |
| iOS | Chrome: 25<br>Safari (depends on the IOS version)<br>Opera: 11 |
| Android OS | Chrome: 25<br>Opera: 11 |

Note that some features might not be supported by some cellphone operating systems.

## 6.1 Browsing the VP-439 Web Pages

To browse the **VP-439** Web pages:

1. Open your Internet browser.

2. Type the IP number of the device in the Address bar of your browser. For example, the default IP number:



The Input Select Web page appears.

There are eight Web pages:

- The Input Select page (see Section 6.2)

- The Device Settings page (see Section 6.3)

- The Video Settings page (See Section 6.4)

- The Audio Settings page (see Section 6.5)

- The EDID Management page (see Section 6.6)

- The About page (see Section 6.7)

## 6.2 The Input Select Page

shows the Input Select page that is also the first Web page. The column on the left shows the Input Select page selected and below a list of all the other available Web pages.

The model name, FW version and IP number appear on the lower left side of the main page. The lower part of the screen lets you save the settings and upload a saved setting.
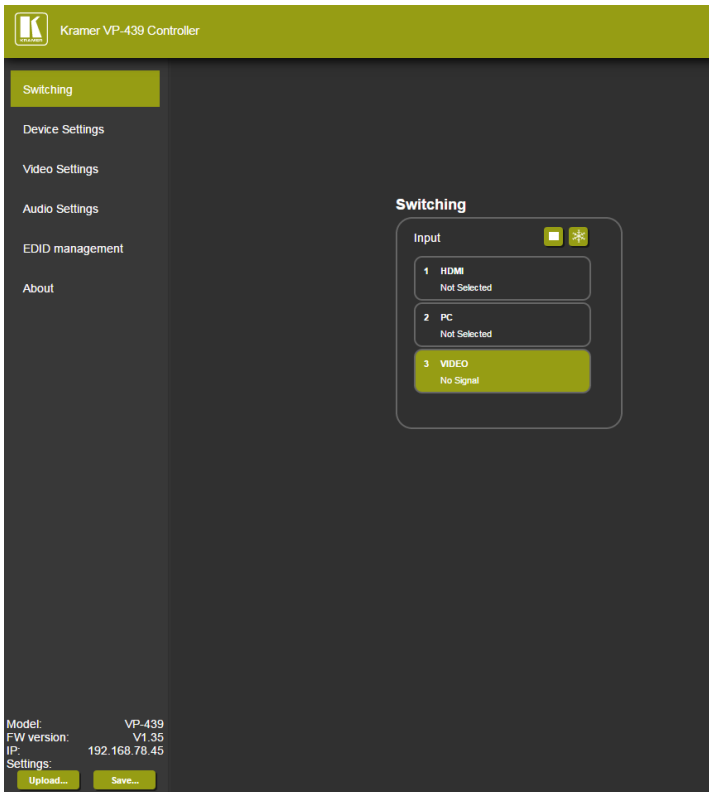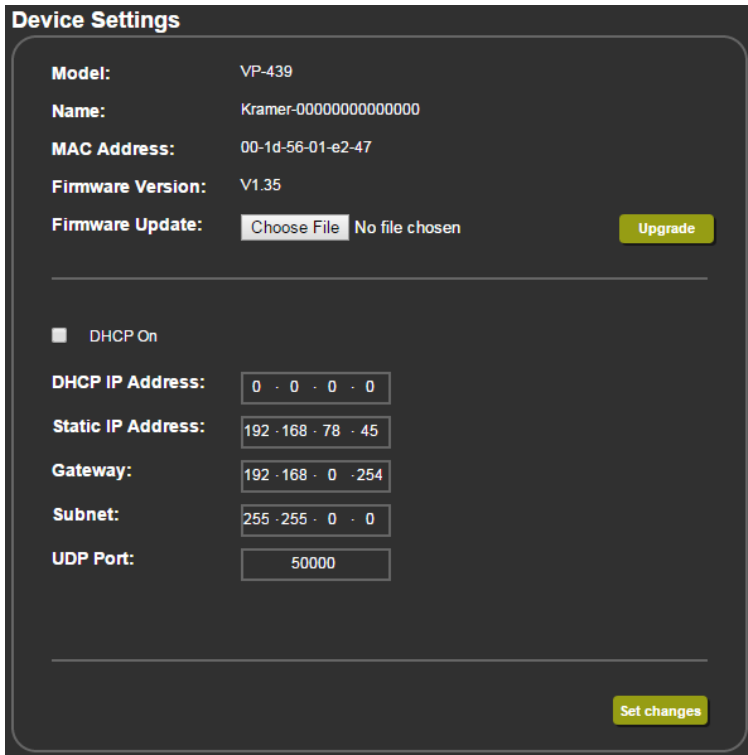


Figure 7: The Input Select Page

Use the freeze icon (❄) to freeze a selected input and the blank button (▢). Use

## 6.3 The Device Settings Page

The device Settings window (Figure 8) lets you upgrade the firmware and set the Ethernet parameters.



Figure 8: The Device Settings Page

Any change in the device settings requires confirmation, as illustrated in the example in Figure 9.



Figure 9: The Device Settings Page – Static IP Confirmation

### 6.3.1 Firmware Upgrade

You can upgrade the firmware via the Device Settings page. To do so:

1. Choose the firmware file by clicking the Choose File button in the Firmware upgrade line.
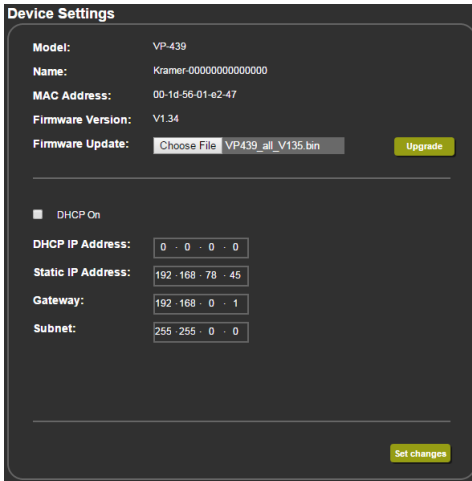


Figure 10: The Device Settings Page – Selecting the New Firmware File

2. Click the Upgrade button.

   The new firmware is uploaded:
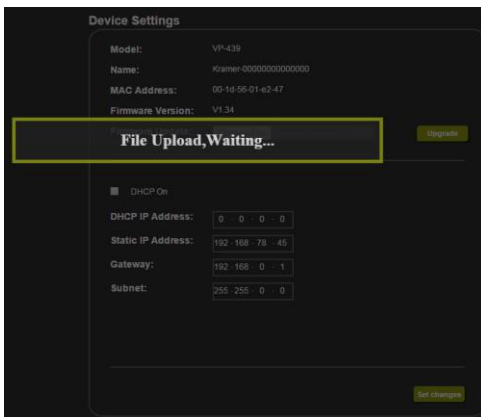


Figure 11: The Device Settings Page – Uploading the New Firmware File

VP-439 - Using the Embedded Web Pages

3. Once the file is uploaded follow the instructions on the Web page:

The new firmware is uploaded:
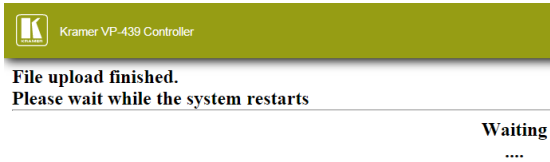


And then:
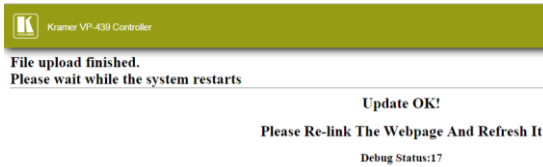


Figure 12: The Device Settings Page – Uploading the New Firmware File

4. After restarting the system you need to upload the Web page once again.

5. Make sure that the new version appears on the Web page lower left side:
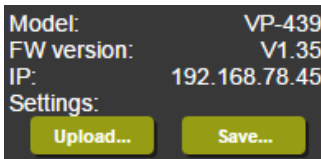


Figure 13: The Device Settings Page – New Firmware Updated

## 6.4 The Video Settings Page

shows the Output Settings page which varies for each selected input:

For the HDMI input:
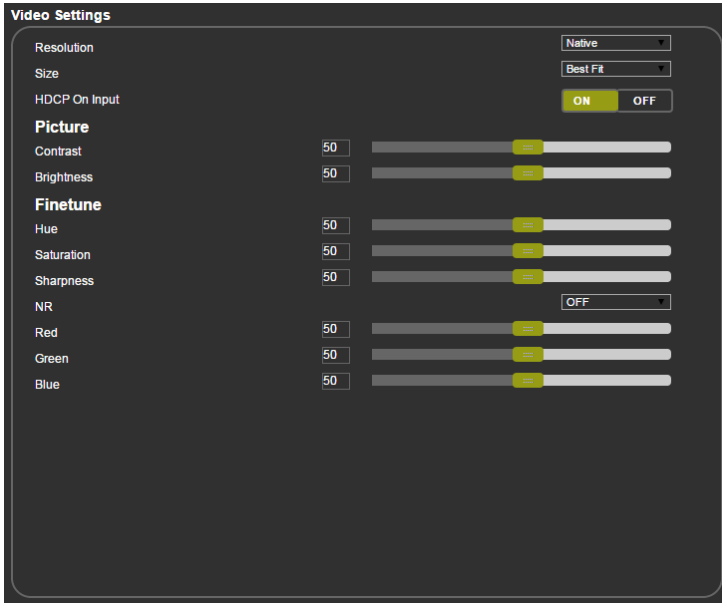


For the PC input:
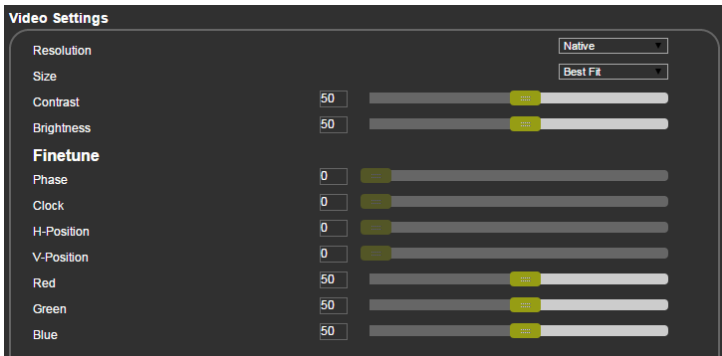


For the CV (Video) input:
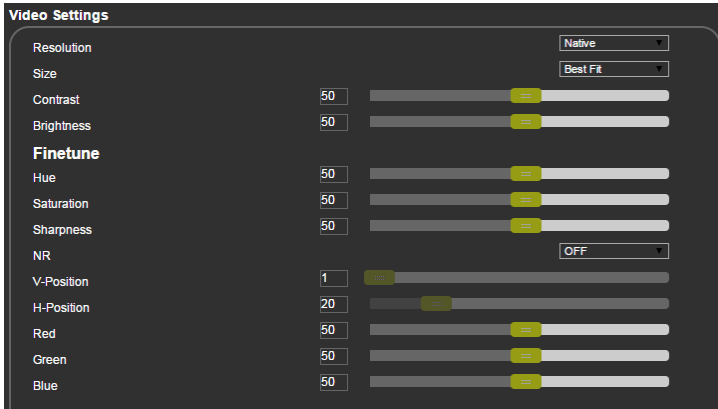
Figure 14: The Video Settings Page

The output settings, include the Resolution and Size, the Finetune items (which are enabled for VGA inputs), and the picture settings.

## 6.5    The Audio Settings Page
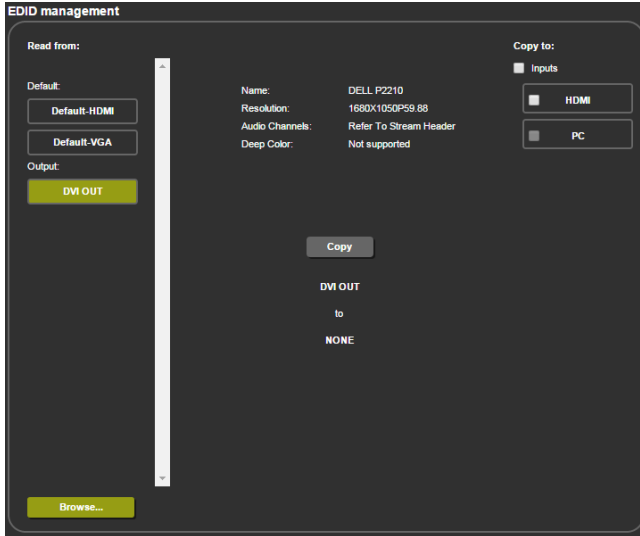
The audio settings page lets you define the input audio level separately for each input and the output level, you can set the Freeze state, the Delay and for the HDMI input set the audio source (automatic, analog or embedded).



Figure 15: The Audio Settings Page

## 6.6    The EDID Management Page

The EDID page lets you copy a selected resolution from the DVI output or the default resolution (Default HDMI or Default VGA) to one or both inputs (HDMI and PC).



Figure 16: The EDID Page

Figure 17 shows how to select a resolution (the DVI output in this example) and select one or both inputs. To copy, click the **Copy** button:
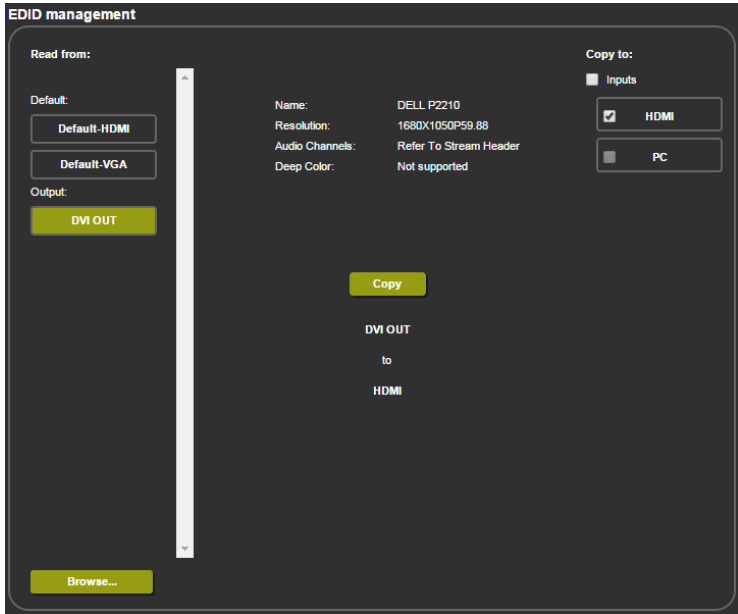
Figure 17: The EDID Page – Copying the Output

The EDID page displays the machine name, selected resolution, the audio channels and deep color support.

After clicking the **Copy** button, the EDID page shows the copy EDID results:
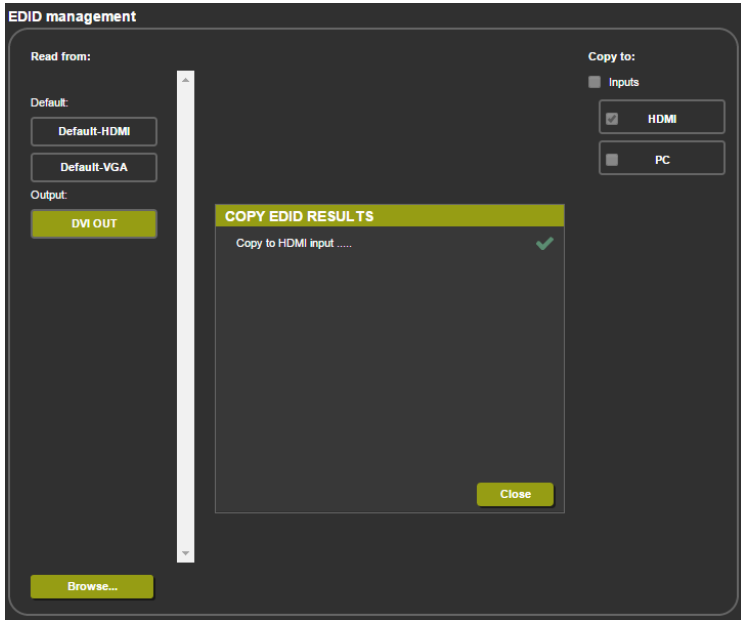
Figure 18: The EDID Page –The Copy EDID Results

Click Close to complete the EDID procedure.

In the same way you can read the default EDID:
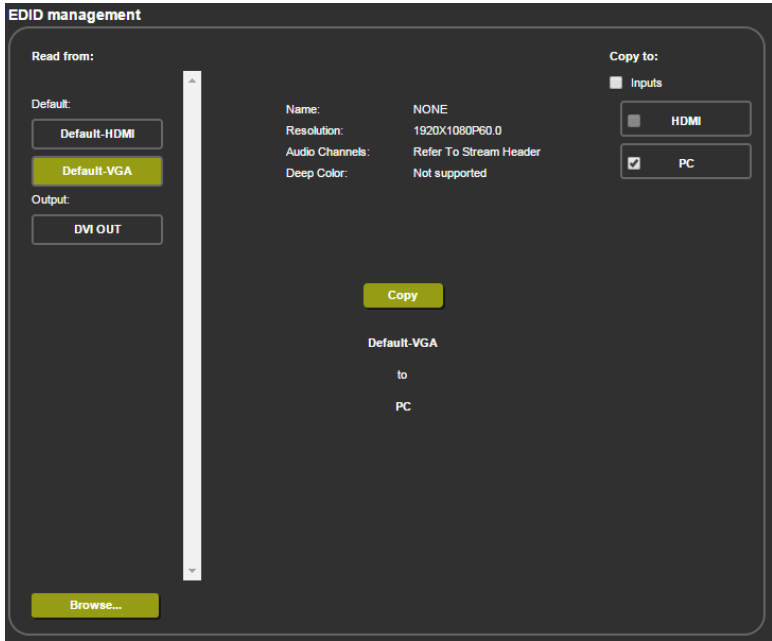
Figure 19: The EDID Page –Copying the Default EDID

## 6.7 The About Page

The **VP-439** About page lets you view the Web page version and Kramer Electronics Ltd details.



Figure 20: The About Page

# 7 Technical Specifications

| | |
|---|---|
| INPUTS: | 1 HDMI with unbalanced stereo on a 3.5mm mini jack, 1 PC/HD (RGBHV/YPbPr) on a 15-pin HD connector with unbalanced stereo on a 3.5mm mini jack, 1 composite video on an RCA connector with unbalanced stereo on 2 RCA connectors |
| OUTPUTS: | 1 HDMI + VGA on a DVI-I connector with unbalanced stereo on 2 RCA connectors |
| PORTS: | 1 Ethernet on an RJ-45 connector, 1 RS-232 on a 9-pin D-sub connector |
| OUTPUT COLORSPACE: | RGB/YPbPr |
| OUTPUT RESOLUTIONS: | 1080i, 1080p, 576i, 576p, 720p, 1080i, 1080p, WXGA, WSXGA, WUXGA, 1280x800, WXGA+, SXGA+, NATIVE, VGA, SVGA, XGA, SXGA, UXGA, 480i, 480p, 1600x900 |
| OUTPUT REFRESH RATE: | 60Hz for computer graphics resolutions, 50/60Hz for HDTV resolutions |
| PROCESSING DELAY: | 30ms approx. |
| CONTROLS: | Front panel buttons, menu-driven OSD control, Web page |
| POWER CONSUMPTION: | 5V DC, 1.1A |
| 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: | 21.5cm x 16.1cm x 4.36cm (8.46" x 6.34" x 1.7") W, D, H |
| WEIGHT: | 1.1kg (2.43lb) approx. |
| INCLUDED ACCESSORIES: | Power supply |
| OPTIONAL ACCESSORIES: | RK-1 19" rack adapter |
| Specifications are subject to change without notice at http://www.kramerelectronics.com | |

## 7.1 Default Communication Parameters

| RS-232 | |
|---|---|
| Baud Rate: | 9,600 |
| Data Bits: | 8 |
| Stop Bits: | 1 |
| Parity: | None |
| **Ethernet** | |
| To reset the IP settings to the factory reset values go to : Menu-> Factory-> RESET->Change the option to YES and press Enter | |
| IP Address: | 192.168.1.39 |
| Subnet mask: | 255.255.255.0 |
| Default gateway: | 192.168.0.254 |
| Default UDP Port #: | 50000 |
| Maximum UDP Ports: | 1 |
| **Full Factory Reset** | |
| OSD | Go to : Menu-> Factory-> RESET->Change the option to YES and press Enter |
| **RS-232/Ethernet (UDP) Command Protocol** | |
| Command Format: | ASCII protocol 3000 |
| Example (Route the video input to the output): | #ROUTE 12,1,2<cr> |

# 8 The RS-232/Ethernet (UDP) Communication Protocol

The **VP-439** can be operated using serial commands from a PC, remote controller, or touch screen. The unit communicates using the default Kramer Protocol 3000.

- Kramer Protocol 3000 syntax (see Section 8.1)

- Kramer Protocol 3000 commands (see Section 8.2)

- Kramer Protocol 3000 detailed commands (See Section 8.3)

## 8.1 Kramer Protocol 3000 Syntax

Protocol 3000 communicates at a data rate of 9,600 baud, no parity, 8 data bits and 1 stop bit.

### 8.1.1 Host Message Format

| Start | Address (optional) | Body | Delimiter |
|-------|--------------------|------|-----------|
| # | *Destination_id@* | **Message** | **CR** |

**Simple Command**

Command string with only one command without addressing:

| Start | | Body | Delimiter |
|-------|---|------|-----------|
| # | | **Command SP** *Parameter_1,Parameter_2,…* | **CR** |

**Command String**

Formal syntax with commands concatenation and addressing:

| Start | Address | Body | Delimiter |
|-------|---------|------|-----------|
| # | *Destination_id@* | **Command_1** *Parameter1_1,Parameter1_2,…*\|<br>**Command_2** *Parameter2_1,Parameter2_2,…*\|<br>**Command_3** *Parameter3_1,Parameter3_2,…*\|… | **CR** |

### 8.1.2 Device Message Format

| Start | Address (optional) | Body | delimiter |
|-------|--------------------|------|-----------|
| ~ | *Sender_id@* | **Message** | **CR** **LF** |

**Device Long Response**

Echoing command:

| Start | Address (optional) | Body | Delimiter |
|-------|--------------------|------|-----------|
| ~ | *Sender_id@* | **Command SP** [*Param1 ,Param2 …*] **result** | **CR** **LF** |

**CR** = Carriage return (ASCII 13 = 0x0D)
**LF** = Line feed (ASCII 10 = 0x0A)

$\boxed{\text{SP}}$ = Space (ASCII 32 = 0x20)

## 8.1.3    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 alphameric 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 machine 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**

$\boxed{\text{CR}}$ – For host messages; carriage return (ASCII 13)

$\boxed{\text{CRLF}}$ – For machine 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.

### 8.1.4 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.

### 8.1.5 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.

### 8.1.6 Command Chaining

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.

### 8.1.7 Maximum String Length

64 characters

## 8.2 Kramer Protocol 3000 – Command List

| Command | Short Form | Description |
|---|---|---|
| # | | Protocol handshaking |
| #HELP | | List of commands |
| #BUILD-DATE? | | Read device build date |
| #FACTORY | | Reset to factory default configuration |
| #MODEL? | | Read device model |
| #PROT-VER? | | Read device protocol version |
| #VERSION? | | Read device firmware version |
| #NET-MAC? | NTMC? | Get MAC address |
| #NET-IP | NTIP | Set device IP address |
| #NET-IP? | NTIP? | Get device IP address |
| #NET-GATE | NTGT | Set Gateway IP |
| #NET-GATE? | NTGT? | Get Gateway IP |
| #NET-MASK | NTMSK | Set device subnet mask |
| #NET-MASK? | NTMSK? | Get device subnet mask |
| #NET-DHCP | NTDH | Set DHCP mode |
| #NET-DHCP? | NTDH? | Get DHCP mode |
| #ROUTE | | Set input source |
| #ROUTE? | | Get input source |
| #DISPLAY? | | Get output HPD status |
| #HDCP-MOD | | Set input HDCP |
| #HDCP-MOD? | | Display input HDCP status |
| #VID-RES | | Set input/output resolution |
| #VID-RES? | | Get input/output resolution |
| #VFRZ | | Set freeze |
| #VFRZ? | | Display freeze status |
| #AUD-LVL | | Set audio level |
| #AUD-LVL? | | Get audio level |
| #MUTE | | Set audio mute |
| #MUTE? | | Display audio mute status |
| #SCLR-AS | | Set auto sync mode |
| #SCLR-AS? | | Display auto sync status |
| #IMAGE-PROP | | Set size mode |
| #IMAGE-PROP? | | Display size status |
| #SCLR-AUDIO-DELAY | | Set audio delay mode |
| #SCLR-AUDIO-DELAY? | | Display audio delay status |

## 8.3 Kramer Protocol 3000 – Detailed Commands

This section describes the detailed commands list (see Section 8.3.3) as well as the output resolutions key (see Section 8.3.1) and the input resolutions key (see Section 8.3.2).

## 8.3.1 Output Resolutions Key

| Resolution | Key | Resolution | Key | Resolution | Key |
|---|---|---|---|---|---|
| 640x480 | 200 | 1440x900 | 208 | 1080i60 | 216 |
| 800x600 | 201 | 1400x1050 | 209 | 1080p60 | 217 |
| 1024x768 | 202 | 1680x1050 | 210 | 576p | 218 |
| 1280x768 | 203 | 1600x1200 | 211 | 720p50 | 219 |
| 1360x768 | 204 | 1920x1080 | 212 | 1080i50 | 220 |
| 1280x720 | 205 | 1920x1200 | 213 | 1080p50 | 221 |
| 1280x800 | 206 | 480p | 214 | Native | 222 |
| 1280x1024 | 207 | 720p60 | 215 | | |

## 8.3.2 Input Resolutions Key

| Resolution | CV | PC | HDMI | YPbPr | Key |
|---|---|---|---|---|---|
| NTSC | ✔ | | | | 0 |
| PAL | ✔ | | | | 1 |
| 640x480 @60Hz (VGA) | | ✔ | ✔ | | 6 |
| 640x480 @72Hz (VGA) | | ✔ | ✔ | | 8 |
| 640x480 @75Hz (VGA) | | ✔ | ✔ | | 9 |
| 800x600 @56Hz (SVGA) | | ✔ | ✔ | | 11 |
| 800x600 @60Hz (SVGA) | | ✔ | ✔ | | 12 |
| 800x600 @72Hz (SVGA) | | ✔ | ✔ | | 14 |
| 800x600 @75Hz (SVGA) | | ✔ | ✔ | | 15 |
| 1024x768 @60Hz (XGA) | | ✔ | ✔ | | 20 |
| 1024x768 @70Hz (XGA) | | ✔ | ✔ | | 21 |
| 1024*768 @75Hz (XGA) | | ✔ | ✔ | | 23 |
| 1152x864 @75Hz (XGA+) | | ✔ | ✔ | | 27 |
| 1280x720 @60Hz | | ✔ | ✔ | | 30 |
| 1280x768 @60Hz | | ✔ | ✔ | | 33 |
| 1280x960 @60Hz | | ✔ | ✔ | | 36 |
| 1280x1024 @60Hz | | ✔ | ✔ | | 40 |
| 1280x1024 @75Hz | | ✔ | ✔ | | 41 |
| 1360x768 @60Hz | | ✔ | ✔ | | 43 |
| 1400x1050 @60Hz (SXGA+) | | ✔ | ✔ | | 48 |
| 1440x900 @60Hz (WXGA+) | | ✔ | ✔ | | 51 |
| 1600x1200 @60Hz (UXGA) | | ✔ | ✔ | | 56 |
| 1680x1050 RB @60Hz (WSXGA) | | ✔ | ✔ | | 61 |
| 1920x1080 @60Hz | | ✔ | ✔ | | 65 |
| 1920x1200 RB @60Hz | | ✔ | ✔ | | 66 |
| 1280x800 @60Hz | | ✔ | ✔ | | 70 |
| 480I | | | ✔ | ✔ | 74 |
| 576I | | | ✔ | ✔ | 76 |

| Resolution | CV | PC | HDMI | YPbPr | Key |
|---|---|---|---|---|---|
| 480P | | | ✓ | ✓ | 75 |
| 576P | | | ✓ | ✓ | 77 |
| 720P@50Hz | | | ✓ | ✓ | 78 |
| 720P@60Hz | | | ✓ | ✓ | 79 |
| 1080I@50Hz | | | ✓ | ✓ | 80 |
| 1080I@60Hz | | | ✓ | ✓ | 81 |
| 1080P@24Hz | | | ✓ | | 82 |
| 1080P@30Hz | | | ✓ | | 87 |
| 1080P@50Hz | | | ✓ | ✓ | 84 |
| 1080P@60Hz | | | ✓ | ✓ | 85 |

## 8.3.3    The Commands

| Command – HELP | | Command Type – System-mandatory | |
|---|---|---|---|
| **Command Name** | | **Permission** | **Transparency** |
| Set: | **-** | - | - |
| Get: | **HELP** | End User | - |
| **Description** | | **Syntax** | |
| Set: | - | - | |
| Get : | Get command list or help for specific command | 2 options:<br><br>1. #**HELP**[CR]<br><br>2. #**HELP**[SP]command_name[CR] | |

| Command – BUILD-DATE | | Command Type – System-mandatory | |
|---|---|---|---|
| **Command Name** | | **Permission** | **Transparency** |
| Set: | **BUILD-DATE** | End User | - |
| Get: | **-** | - | - |
| **Description** | | **Syntax** | |
| Set: | Read device build date | #BUILD-DATE?[CR] | |
| Get : | - | - | |
| **Response** | | | |
| ~[nn]@**BUILD-DATE**[SP]*date*[SP]*time*[CR LF] | | | |
| **Parameters** | | | |
| *date* – Format: YYYY/MM/DD where YYYY = Year, MM = Month, DD = Day<br>*time* – Format: hh:mm:ss where hh = hours, mm = minutes, ss = seconds | | | |

| Command – FACTORY | | Command Type – System-mandatory | |
|---|---|---|---|
| **Command Name** | | **Permission** | **Transparency** |
| Set: | **FACTORY** | End User | - |
| Get: | **-** | - | - |
| **Description** | | **Syntax** | |
| Set: | Reset device to factory defaults configuration | #FACTORY꜀ᵣ | |
| Get : | - | - | |
| **Response** | | | |
| ~nn@**FACTORY**[SP]*OK*[CR LF] | | | |
| **Notes** | | | |
| This command deletes all user data from the device. The deletion can take some time. | | | |

| Command – MODEL? | | Command Type – System-mandatory | |
|---|---|---|---|
| **Command Name** | | **Permission** | **Transparency** |
| Set: | **-** | - | - |
| Get: | **MODEL?** | End User | - |
| **Description** | | **Syntax** | |
| Set: | - | - | |
| Get : | Get device model | #MODEL?[CR] | |
| **Response** | | | |
| ~nn@**MODEL**[SP]*model_name*[CR LF] | | | |
| **Parameters** | | | |
| model_name – String of up to 19 printable ASCII chars | | | |

| Command – PROT-VER? | | Command Type – System-mandatory | |
|---|---|---|---|
| **Command Name** | | **Permission** | **Transparency** |
| Set: | **-** | - | - |
| Get: | **PROT-VER?** | End User | - |
| **Description** | | **Syntax** | |
| Set: | - | - | |
| Get : | Get protocol version | #PROT-VER?[CR] | |
| **Response** | | | |
| ~nn@**PROT-VER**[SP]3000:*version*[CR LF] | | | |
| **Parameters** | | | |
| *Version* – Format: XX.XX where X is a decimal digit | | | |

| Command –VERSION? | | Command Type – System-mandatory | |
|---|---|---|---|
| **Command Name** | | **Permission** | **Transparency** |
| Set: | - | - | - |
| Get: | **VERSION?** | End User | - |
| **Description** | | **Syntax** | |
| Set: | - | - | |
| Get : | Get version number | #VERSION?[CR] | |
| **Response** | | | |
| ~[nn]@**VERSION**[SP]firmware_version[CR LF] | | | |
| **Parameters** | | | |
| *firmware_version* – Format: XX.XX.XXXX where the digits group are: major.minor.build version | | | |

| Command – NET-MAC? | | Command Type – Communication | |
|---|---|---|---|
| **Command Name** | | **Permission** | **Transparency** |
| Set: | - | - | - |
| Get: | **NET-MAC?** | End User | - |
| **Description** | | **Syntax** | |
| Set: | | | |
| Get : | Get MAC address | #NET-MAC?[CR] | |
| **Response** | | | |
| ~[nn]@**NET-MAC**[SP]*mac_address*[CR LF] | | | |
| **Parameters** | | | |
| *mac_address* – Unique MAC address. Format: XX-XX-XX-XX-XX-XX where X is hex digit. | | | |

| Command – NET-IP | | Command Type – Communication | |
|---|---|---|---|
| **Command Name** | | **Permission** | **Transparency** |
| Set: | **NET-IP** | Administrator | - |
| Get: | **NET-IP?** | End User | - |
| **Description** | | **Syntax** | |
| Set: | Set device IP address | #**NET-IP**[SP] P1 [CR] | |
| Get : | Get device IP address | #**NET-IP?**[CR] | |
| **Response** | | | |
| Set: ~[nn]@ **NET-IP** [SP] *ip_address* [SP]**OK**[CR LF] | | | |
| Get: ~[nn]@ **NET-IP** [SP] *ip_address* [CR LF] | | | |
| **Parameters** | | | |
| *P1 (valid IP address)*= xxx.xxx.xxx.xxx | | | |
| **Notes** | | | |
| For proper settings consult your network administrator. | | | |

| Command – NET-GATE | | Command Type – Communication | |
|---|---|---|---|
| **Command Name** | | **Permission** | **Transparency** |
| Set: | **NET-GATE** | Administrator | - |
| Get: | **NET-GATE?** | End User | - |
| **Description** | | **Syntax** | |
| Set: | Set Gateway IP | #**NET-GATE** `SP` P1 `CR` | |
| Get : | Get Gateway IP | #NET-GATE? `CR` | |
| **Response** | | | |
| Set: ~`nn`@ **NET-GATE** `SP` P1 `SP` **OK** `CR LF`  <br> Get: ~`nn`@ **NET-GATE** `SP` *ip_address* `CR LF` | | | |
| **Parameters** | | | |
| P1 (valid IP address)=xxx.xxx.xxx.xxx | | | |
| **Notes** | | | |
| A network gateway connects the device via another network and maybe over the Internet. Be careful of security problems. For proper settings consult your network administrator | | | |

| Command – NET-MASK | | Command Type – Communication | |
|---|---|---|---|
| **Command Name** | | **Permission** | **Transparency** |
| Set: | **NET-MASK** | Administrator | - |
| Get: | **NET-MASK?** | End User | - |
| **Description** | | **Syntax** | |
| Set: | Set device subnet mask | #**NET-MASK** `SP` *net_mask* `CR` | |
| Get : | Get device subnet mask | #**NET-MASK?** `CR` | |
| **Response** | | | |
| Set: ~`nn`@**NET-MASK** `SP` P1 `SP` **OK** `CR LF`  <br> Get: ~`nn`@**NET-MASK** `SP` *net_mask* `CR LF` | | | |
| **Parameters** | | | |
| P1 (valid IP address)=xxx.xxx.xxx.xxx | | | |
| **Response triggers** | | | |
| The subnet mask limits the Ethernet connection within the local network.  <br> For proper settings consult your network administrator. | | | |

| Command – NET-DHCP | | Command Type – Communication | |
|---|---|---|---|
| **Command Name** | | **Permission** | **Transparency** |
| Set: | **NET-DHCP** | Administrator | - |
| Get: | **NET-DHCP?** | End User | - |
| **Description** | | **Syntax** | |
| Set: | Set DHCP mode | #**NET-DHCP** `SP` P1 `CR` | |
| Get : | Get DHCP mode | #**NET-DHCP?** `CR` | |
| **Response** | | | |
| Set: ~ `nn` @ **NET-DHCP** `SP` P1 `SP` **OK** `CR LF` | | | |
| Get: ~ `nn` @ **NET-DHCP** `SP` *mode* `CR LF` | | | |
| **Parameters** | | | |
| P1 – 0=Static IP; 1=DHCP<br>0 – Use static IP.<br>1 – Use DHCP. If unavailable, use IP as above. | | | |
| **Notes** | | | |
| Connecting Ethernet to devices with DHCP may take more time in some networks.<br>To connect with a randomly assigned IP by DHCP, specify the device DNS name (if available) using the command "NAME". You can also get an assigned IP by direct connection to USB or RS-232 protocol port if available.<br>For proper settings consult your network administrator. | | | |

| Command – ROUTE | | Command Type – | |
|---|---|---|---|
| **Command Name** | | **Permission** | **Transparency** |
| Set: | **ROUTE** | End User | - |
| Get: | **ROUTE?** | End User | - |
| **Description** | | **Syntax** | |
| Set: | Set layer routing | # ROUTE `SP` P1,P2,P3 `CR` | |
| Get : | Get layer routing | # ROUTE? `SP` P1,P2 `CR` | |
| **Response** | | | |
| ~ `nn` @ **ROUTE** `SP` P1,P2,P3 `CR LF` | | | |
| **Parameters** | | | |
| P1 (Layer number) –12=Video+Audio<br>P2 – 1=Scaler<br>P3 – video inputs (0~2) – 0=HDMI; 1=PC; 2=Video (CV); | | | |
| **Notes** | | | |
| This command replaces all other routing commands. | | | |

| Command – DISPLAY? | | Command Type - System | |
|---|---|---|---|
| **Command Name** | | **Permission** | **Transparency** |
| Set : | - | - | - |
| Get | **DISPLAY?** | End User | Public |
| **Description** | | **Syntax** | |
| Set: | - | - | |
| Get: | Get output HPD status | **#DISPLAY?** `SP` P1 `CR` | |
| **Response** | | | |
| ~ `nn`@**DISPLAY** `SP` P1 `CR LF` | | | |
| **Parameters** | | | |
| P1 (Output number) – 0=DVI | | | |
| **Response triggers** | | | |
| After execution, response is sent to the com port from which the **Get** was received<br>Response is sent after every change in output HPD status ON to OFF<br>Response is sent after every change in output HPD status OFF to ON and ALL parameters (new EDID, etc.) are stable and valid | | | |

| Command – HDCP-MOD | | Command Type – System | |
|---|---|---|---|
| **Command Name** | | **Permission** | **Transparency** |
| Set: | **HDCP-MOD** | Administrator | Public |
| Get: | **HDCP-MOD?** | End User | Public |
| **Description** | | **Syntax** | |
| Set: | Set HDCP mode | **#HDCP-MOD** `SP` P1,P2,P3 `CR` | |
| Get : | Get HDCP mode | **#HDCP-MOD?** `SP` P1,P2 `CR` | |
| **Response** | | | |
| Set / Get : ~ `nn`@**HDCP-MOD** `SP` *P1,P2,P3* `CR LF` | | | |
| **Parameters** | | | |
| P1 (Input/Output) – 0=Input<br>P2 (Scaler number) –0=HDMI<br>P3 (Status) – Input: 0=Off; 1=On | | | |
| **Response triggers** | | | |
| Response is sent to the com port from which the **Set** (before execution) **/ Get** command was received<br>Response is sent to all com ports after execution if HDCP-MOD was set any other external control device (button press, device menu and similar) or genlock status changed | | | |
| **Notes** | | | |
| Set HDCP working mode **on device input** :<br>HDCP supported      – HDCP_ON  [default]<br>HDCP not supported – HDCP OFF<br>HDCP support changes following detected sink – MIRROR OUTPUT | | | |

| Command – VID-RES | | Command Type - Video | |
|---|---|---|---|
| **Command Name** | | **Permission** | **Transparency** |
| Set: | **VID-RES** | End User | Public |
| Get: | **VID-RES?** | End User | Public |
| **Description** | | **Syntax** | |
| Set: | Set video resolution | #**VID-RES** `SP` P1,P2,P3,P4 `CR` | |
| Get: | Get video resolution | #**VID-RES?** `SP` P1,P2,P3 `CR` | |
| **Response** | | | |
| ~ `nn` @**VID-RES** `SP` P1,P2,P3,P4 `CR LF` | | | |
| **Parameters** | | | |
| P1 –0=Input; 1=Output<br>P2 – 1=Scaler<br>P3 – 0<br>P4 - video resolutions – see output resolutions in <u>Section 8.3.1</u> and input resolutions in <u>Section 8.3.2</u> | | | |
| **Response triggers** | | | |
| After execution, response is sent to the com port from which the **Set /Get** was received | | | |
| After execution, response is sent to all com ports if **VID-RES** was set by any other external control device (button press, device menu and similar) | | | |
| **Notes** | | | |
| 1. "Set" command is only applicable for **stage=Output**<br>2. "Set" command with *is_native*=ON sets native resolution on selected output (resolution index sent = 0). Device sends as answer actual VIC ID of native resolution<br>3. "Get" command with *is_native*=ON returns native resolution VIC, with *is_native*=OFF returns current resolution<br>4. To use "custom resolutions" (entries 100-105), define them using command DEF-RES | | | |

| Command - VFRZ | | Command Type - Multiviewer | |
|---|---|---|---|
| **Command Name** | | **Permission** | **Transparency** |
| Set: | **VFRZ** | End User | Public |
| Get: | **VFRZ?** | End User | Public |
| **Description** | | **Syntax** | |
| Set: | Set freeze on selected  output | #**VFRZ**`SP`*P1,P2*`CR` | |
| Get: | Get output freeze status | #**VFRZ?**`SP`*P1*`CR` | |
| **Response** | | | |
| ~ `nn` @**VFRZ**`SP`*P1, P2*`CR LF` | | | |
| **Parameters** | | | |
| P1 – 1=Scaler<br>P2 – 0=Off; 1=On | | | |
| **Response Triggers** | | | |
| After execution, response is sent to the com port from which the Set/Get was received | | | |
| After execution, response is sent to all com ports if VFRZ was set by any other external control device (button press, device menu and similar) | | | |

| Command – AUD-LVL | | Command Type – Audio | |
|---|---|---|---|
| **Command Name** | | **Permission** | **Transparency** |
| Set: | **AUD-LVL** | End User | - |
| Get: | **AUD-LVL?** | End User | - |
| **Description** | | **Syntax** | |
| Set: | Set audio level in specific amplifier stage | #**AUD-LVL** `SP` P1,P2,P3 `CR` | |
| Get : | Get audio level in specific amplifier stage | #**AUD-LVL?** `SP` P1,P2 `CR` | |
| **Response** | | | |
| ~`nn`@**AUD-LVL** `SP` P1,P2 `CR LF` | | | |
| **Parameters** | | | |
| P1 (Input/Output)– 0=Input; 1=Output<br>P2 N/A<br>P3 – Input=0 to 100, ++/--; Output=0 to 110, ++/-- | | | |

| Command – Mute | | Command Type – [Audio] | |
|---|---|---|---|
| **Command Name** | | **Permission** | **Transparency** |
| Set: | **MUTE** | End User | Public |
| Get: | **MUTE?** | End User | Public |
| **Description** | | **Syntax** | |
| Set: | Mute the selected output | # **MUTE** `SP` P1,P2 `CR` | |
| Get : | Mute the selected output | # **MUTE?** `SP` P1 `CR` | |
| **Response** | | | |
| Set / Get : ~ `nn` @ **MUTE** `SP` *P1,P2.* `CR LF` | | | |
| **Parameters** | | | |
| P1 – 1=Scaler<br>P2 – 0=Off; 1=On | | | |
| **Response triggers** | | | |
| Response is sent to the com port from which the **Set** (before execution) **/ Get** command was received<br>After execution, response is sent to all com ports if CMD-NAME was set any other external control device (button press, device menu and similar) or genlock status was changed | | | |
| **Notes** | | | |
| Mutes the selected audio output | | | |

| Command – Scaler As? | | Command Type – [Audio] | |
|---|---|---|---|
| **Command Name** | | **Permission** | **Transparency** |
| Set: | **SCLR-AS** | End User | Public |
| Get: | **SCLR-AS?** | End User | Public |
| **Description** | | **Syntax** | |
| Set: | Set the auto sync off timer | # **SCLR-AS** `SP` P1,P2 `CR` | |
| Get : | Get the auto sync off timer definition | # **SCLR-AS?** `SP` P1 `CR` | |
| **Response** | | | |
| Set / Get : ~ `nn` @ **SCLR-AS** `SP` *P1,P2….* `CR LF` | | | |
| **Parameters** | | | |
| P1 (Scaler Number) –1=Scaler<br>P2 (Off/On) – 0=Off; 1=Fast; 2=Slow | | | |
| **Response triggers** | | | |
| Response is sent to the com port from which the **Set** (before execution) **/ Get** command was received | | | |
| After execution, response is sent to all com ports if CMD-NAME was set any other external control device (button press, device menu and similar) or genlock status was changed | | | |
| **Notes** | | | |
| Sets the Auto Sync features for the selected Scaler | | | |


| Command – IMAGE PROP | | Command Type – [Video] | |
|---|---|---|---|
| **Command Name** | | **Permission** | **Transparency** |
| Set: | **IMAGE-PROP** | End User | Public |
| Get: | **IMAGE-PROP?** | End User | Public |
| **Description** | | **Syntax** | |
| Set: | Set the image size | # **IMAGE-PROP** `SP` P1 `CR` | |
| Get : | Get the image size | # **IMAGE-PROP?** `SP` P1,…,P6 `CR` | |
| **Response** | | | |
| Set / Get : ~ `nn` @ **IMAGE-PROP** `SP` *P1,P2….* `CR LF` | | | |
| **Parameters** | | | |
| P1 (Scaler number) – 1=Scaler<br>P2 (Status) – 0=Full; 1=Over Scan; 2=Under Scan; 3=Letter Box; 4=PanScan; 5=Best Fit | | | |
| **Response triggers** | | | |
| Response is sent to the com port from which the **Set** (before execution) **/ Get** command was received | | | |
| After execution, response is sent to all com ports if CMD-NAME was set any other external control device (button press, device menu and similar) or genlock status was changed | | | |
| **Notes** | | | |
| Sets the image properties of the selected scaler | | | |

| Command – SCALER-AUDIO-DELAY | | Command Type – [Audio] | |
|---|---|---|---|
| **Command Name** | | **Permission** | **Transparency** |
| Set: | **SCLR-AUDIO-DELAY** | End User | Public |
| Get: | **SCLR-AUDIO-DELAY?** | End User | Public |
| **Description** | | **Syntax** | |
| Set: | Set the scaler audio delay | # **SCLR-AUDIO-DELAY** `SP` P1,P2 `CR` | |
| Get : | Get the scaler audio delay | # **SCLR-AUDIO-DELAY?** `SP` P1 `CR` | |
| **Response** | | | |
| Set / Get : ~ `nn` @ **SCLR-AUDIO-DELAY** `SP` *P1,P2* `CR LF` | | | |
| **Parameters** | | | |
| P1 (Audio output number) –1=Scaler <br> P2 (Level selection) – 0=Off; 1=40ms; 2=110ms; 3=150ms; 4=Auto | | | |
| **Response triggers** | | | |
| Response is sent to the com port from which the Set (before execution) / Get command was received <br> After execution, response is sent to all com ports if CMD-NAME was set any other external control device (button press, device menu and similar) or genlock status was changed | | | |
| **Notes** | | | |
| Sets the audio delay for the selected audio output | | | |

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## ⚠ SAFETY WARNING

Disconnect the unit from the power supply before opening and servicing

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.

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