KRAMER ELECTRONICS LTD.

USER MANUAL

MODEL:

VP-444

Presentation Switcher/Scaler

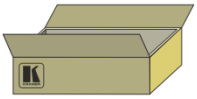
P/N: 2900-300305 Rev 3

VP-444 Quick Start Guide

This guide helps you install and use your product for the first time. For more detailed information, go to http://bit.ly/k-prod-downloads to download the latest manual or scan the QR code on the left.

Step 1: Check what's in the box

- The **VP-444** Presentation Switcher/Scaler
- IR remote control transmitter with batteries
- 1 Power cord
- 4 Rubber feet
- 1 Set of rack ears
- 1 Quick start guide



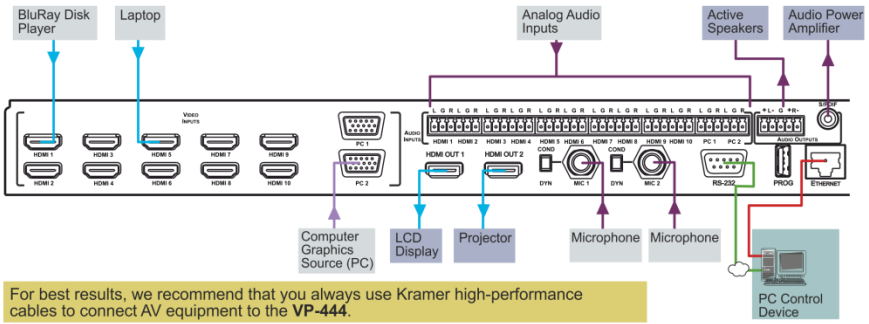
Save the original box and packaging materials in case you need to return your product for service.

Step 2: Install the VP-444

Mount the machine in a rack or place on a table.

Step 3: Connect inputs and outputs

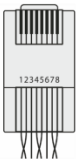
Always switch OFF the power on each device before connecting it to your **VP-444**.



For best results, we recommend that you always use Kramer high-performance cables to connect AV equipment to the **VP-444**.

RJ-45 Pinout

For the Ethernet connector, see the proper wiring diagram below:

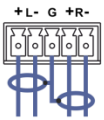


EIA / TIA 568B	
PIN	Wire Color
1	Orange / White
2	Orange
3	Green / White
4	Blue
5	Blue / White
6	Green
7	Brown / White
8	Brown

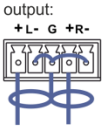
For optimum range and performance use Kramer's BC-DGKat524 (CAT 5 24 AWG), the Kramer: BC-DGKat623 (CAT 6 23 AWG cable), and the Kramer: BC-DGKat7a23 (CAT 7a 23 AWG cable). These specially built cables significantly outperform regular CAT 5 / CAT 6 / CAT 7a cables.

Connect the audio output:

To a balanced input/output:

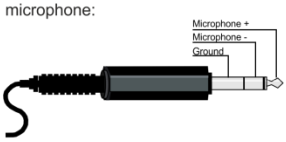


To an unbalanced output:

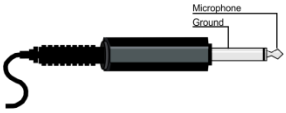


The Microphone Pinout:

For a condenser microphone:



For a dynamic microphone:



Step 4: Connect the power

Connect AC power to the rear of the **VP-444**, switch on its power and then switch on the power on each device.

Step 5: Set operation parameters via OSD menu

Enter the OSD menu via the MENU button on the front panel or the IR remote control transmitter. 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-444**. 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
OUTPUT	Select the input, the image size and the resolution
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
AUDIO	Set the input and output volumes, the audio delay time and mute/unmute. Select the audio source for each HDMI input. set the microphone mixer mode and the microphone volume
ADVANCED	Set HDCP on input and on output, auto sync off and the OSD parameters. Set the mute behavior, the auto switch mode and the Ethernet parameters
FACTORY RESET	Perform factory reset
INFORMATION	Display the input resolution, the output resolution, input HDCP (HDCP/no HDCP), output 1/2 HDCP (HDCP/no HDCP) version and the IP address

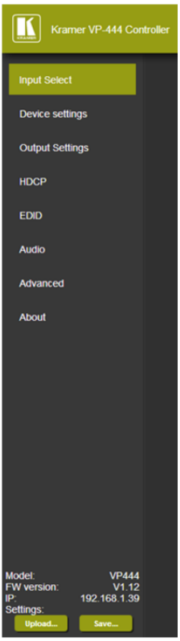
Step 6: Operate via the front panel buttons and via the:

IR Remote Controller:

RS-232 and Ethernet:

RS-232	
Baud Rate:	9,600
Data Bits:	8
Stop Bits:	1
Parity:	None
Command Format:	ASCII
Example (Route the video from the HDMI3 input to the output ports):	#ROUTE 12,1,2<cr>
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:	192.168.1.254
TCP Port #:	Not supported
Default UDP Port #:	50000
Maximum UDP Ports:	4
Full Factory Reset	
OSD	Go to : Menu-> Factory-> RESET->Change the option to YES and press Enter

Embedded Web Page:



Contents

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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-444** Presentation Switcher/Scaler. This product, which incorporates HDMI™ technology, is ideal for:

- Projection systems in conference rooms, boardrooms, hotels and churches
- Home theater up-scaling

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 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-444** 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-444** is a high−performance presentation scaler/switcher for HDMI and computer graphics signals. The unit scales the video, embeds the audio, and outputs the signal to two HDMI (with embedded audio) outputs (with S/PDIF and balanced stereo audio) simultaneously.

The **VP-444** features:

- PixPerfect™ scaling technology – Kramer's precision pixel mapping and high quality scaling technology. High-quality 3:2 and 2:2 pull down de-interlacing and full up and down scaling of all video input signals
- HDTV compatibility
- HDCP compliance - The HDCP (High Definition Content Protection) license agreement allows copy−protected data on the HDMI input to pass only to the HDMI outputs
- 12 video inputs - 10 HDMI on HDMI connectors, 2 computer graphics video on 15−pin HD connectors
- Two HDMI scaled outputs
- Up to UXGA/1080p output resolutions
- Two microphone inputs that can be used by mixing, switching or talk-over
- Companion AFV (Audio-Follow-Video) - stereo audio for every input (on terminal blocks)
- 12 unbalanced stereo inputs on terminal blocks as well as embedded audio for the HDMI inputs, each with individual level controls
- Audio outputs – one S/PDIF on an RCA connector, one balanced stereo audio on a terminal block as well as embedded audio on the HDMI outputs
- Multiple aspect ratio selections - full, best fit, over scan, under scan, letter box and pan scan
- Powerful audio features via DSP technology including audio equalization, mixing, delay and so on
- Built-in ProcAmp - color, hue, sharpness, noise, contrast and brightness

- Supports 4:4:4 (RGB and YUV) as well as 4:4:2 (YUV) color sampling
- Maintains constant output sync – there is no disruption on the output while switching between inputs and when no video is detected
- Front panel control - audio mute and freeze frame
- Front panel lockout
- Non-volatile memory - saves final settings

Control your **VP-444**:

- Directly, via the front panel push buttons
- By RS-232 serial commands transmitted by a touch screen system, PC, or other serial controller
- Remotely, from the infrared remote control transmitter with OSD (on-screen display)
- Via the Ethernet with built-in Web pages

The **VP-444** is housed in a 19" 1U rack mountable enclosure, with rack "ears" included, and is fed from a 100-240 VAC universal switching power supply.

3.1 Defining the VP-444 Presentation Switcher/Scaler

This section defines the **VP-444**.

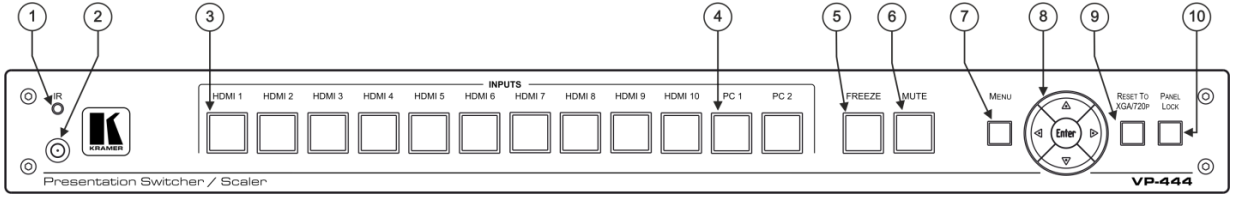


Figure 1: VP-444 Presentation Switcher/Scaler Front Panel

#	Feature		Function
1	IR LED		Lights when the unit accepts IR remote commands
2	IR Receiver		Receives signals from the remote control transmitter
3	INPUT Selector Buttons	HDMI	Press to select the HDMI input (from 1 to 10)
4		PC	Press to select the computer graphics input (from 1 to 2)
5	FREEZE Button		Press to freeze/unfreeze the output video image; can be programmed to follow MUTE (see Section 6.2.1)
6	MUTE Button		Press to toggle between muting (blocking out the sound) and enabling the audio output
7	MENU Button		Displays the OSD menu (see Section 6.2)
8	Navigation Buttons	◄	Press to decrease numerical values or select from several definitions When not within the OSD menu mode, press to reduce the output volume
		▲	Press to move up the menu list values (see Section 6.2)
		►	Press to increase numerical values or select from several definitions When not within the OSD menu mode, press to increase the output volume
		▼	Press to move down the menu list (see Section 6.2)
		ENTER	Press to accept changes and change the SETUP parameters (see Section 6.2)
9	RESET TO XGA/720p Button		Press to reset the video resolution to XGA or 720p Press and hold for about 5 seconds to toggle between switching to XGA or 720p
10	PANEL LOCK Button		Press and hold for about 5 seconds to lock/unlock the front panel buttons

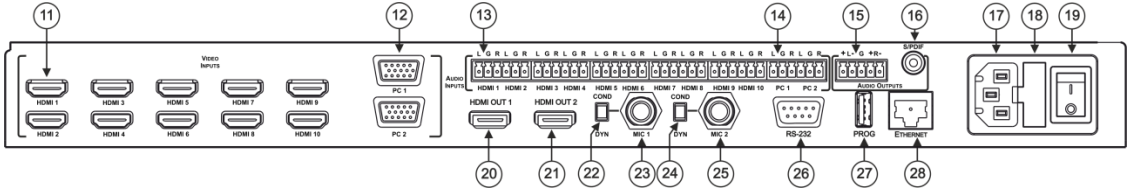


Figure 2: VP-444 Presentation Switcher/Scaler Rear Panel

#	Feature		Function
11	VIDEO INPUT Connectors	HDMI	Connect to the HDMI source (from 1 to 10)
12		PC 15-pin HD	Connect to the computer graphics source (from 1 to 2)
13	AUDIO INPUT Unbalanced Stereo Terminal Blocks	HDMI	Connect to the analog audio HDMI source (from 1 to 10)
14		PC	Connect to the analog audio computer graphics source (from 1 to 2)
15	AUDIO OUTPUTS	Balanced Stereo Terminal Block	Connects to the balanced stereo analog audio acceptor
16		S/PDIF 3.5 Mini Jack Connector	Connects to a digital audio acceptor
17	Mains Socket		Connect the mains power cord
18	Mains Fuse Holder		Fuse for protecting the device
19	Power Switch		Switch for turning the unit ON or OFF
20	HDMI OUT 1		Connect to the HDMI acceptor 1
21	HDMI OUT 2		Connect to the HDMI acceptor 2
22	COND / DYN Switch for MIC 1		Move up to select a condenser type microphone; down to select a dynamic type microphone
23	MIC 1 6mm Jack		Connect to the microphone source 1
24	COND / DYN Switch for MIC 2		Move up to select a condenser type microphone; down to select a dynamic type microphone
25	MIC 2 6mm Jack		Connect to the microphone source 2
26	RS-232 9-pin D-sub Port		Connect to the PC or the remote controller
27	PROG		For factory use only
28	ETHERNET Connector		Connects to the PC or other Serial Controller through computer networking

4 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:	0º to +40ºC (32º to 104ºF)
STORAGE TEMPERATURE:	-40º to +70ºC (-40º to 158ºF)
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.

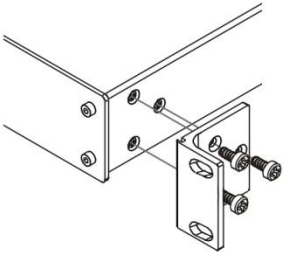
3. The machine is placed straight in the correct horizontal position.

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

5 Connecting the VP-444

Always switch off the power to each device before connecting it to your **VP-444**. After connecting your **VP-444**, connect its power and then switch on the power to each device.

You do not have to connect all the inputs and outputs, connect only those that are required.

To connect the **VP-444**, as illustrated in the example in Figure 3, do the following:

1. Connect an HDMI source (for example, a BluRay disk player) to the HDMI VIDEO INPUT connector (from 1 to 10).
   Alternatively, you can connect the DVI connector on the DVD player to the HDMI connector on the VP-444 via a DVI-HDMI adapter. When using this adapter, you can connect the audio signal via the terminal block connector
2. Connect a computer graphics source to the PC 1 15-pin HD VIDEO INPUT connector (from 1 to 2).
3. Connect the audio input signals to the AUDIO IN terminal block connectors, as required (not shown in Figure 3).
4. Connect the HDMI OUT 1 connector to an HDMI acceptor (for example, an LCD display), from 1 to 2.
5. Connect the audio output signals to the OUT stereo analog audio acceptor and/or the digital audio acceptor, as required (not shown in Figure 3).
6. Connect the power cord (not shown in Figure 3).
7. If required, connect:
   - A PC via RS-232, see Section 6.3
   - The ETHERNET port, see Section 6.4

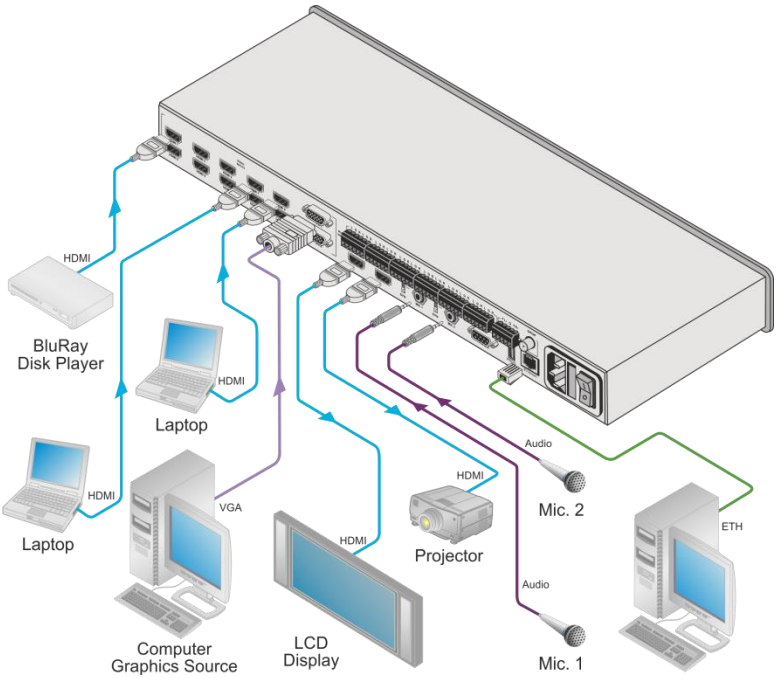


Figure 3: Connecting the VP-444 Presentation Switcher / Scaler

5.1 Connecting the Balanced Stereo Audio Output

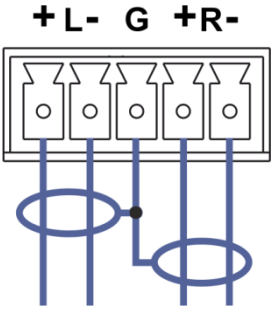


Figure 4: Connecting the Balanced Stereo Audio Output

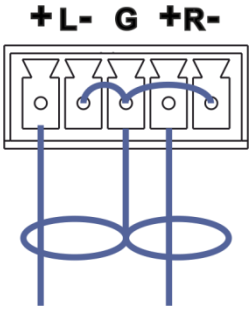


Figure 5: Connecting an Unbalanced Stereo Audio Acceptor to the Balanced Output

5.2 Microphone Pinout

The microphone 6mm jack pinout for a condenser microphone.

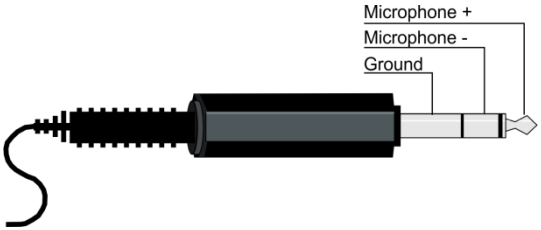


Figure 6: Condenser Microphone Pinout

The microphone 6mm jack pinout for a Dynamic microphone.

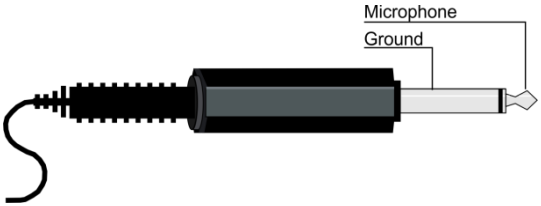


Figure 7: Dynamic Microphone Pinout

6 Controlling the VP-444

The **VP-444** can be controlled via:

- The front panel buttons (see Section 6.1)
- The OSD menu (see Section 6.2)
- RS-232 serial commands transmitted by a touch screen system, PC, or other serial controller (see Section 6.3)
- The ETHERNET (see Section 6.4)
- The infrared remote control transmitter (see Section 6.5)

6.1 Controlling via the Front Panel Buttons

The **VP-444** includes the following front panel buttons:

- Input selector buttons for selecting the required input: HDMI (1 to 10) and PC (1 and 2)
- MUTE and FREEZE buttons
- MENU, ENTER, and up, down, left and right arrow buttons
- RESET TO XGA/720p and PANEL LOCK buttons

6.1.1 The Auto Adjust Feature

The auto adjust feature is implemented every time the input is switched to VGA or when the input resolution changes, via the FINETUNE menu (see Section 6.2.1).

6.2 Using the OSD Menu

The control buttons let you control the **VP-444** via the OSD menu. Press the:

- MENU button to enter the menu
  The default timeout is set to 10 seconds
- ENTER button to accept changes and to change the menu settings
- Arrow buttons to move through the OSD menu, which is displayed on the video output

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

6.2.1 The MAIN MENU

<table>
<tr><th>Mode</th><th>Function</th></tr>
<tr><td colspan="2">OUTPUT</td></tr>
<tr><td>SOURCE:</td><td>Select the input: HDMI 1, HDMI 2, HDMI 3, HDMI 4, HDMI 5, HDMI 6, HDMI 7, HDMI 8, HDMI 9, HDMI 10, PC1 or PC2</td></tr>
<tr><td>SIZE:</td><td>Select the image size: FULL, OVER SCAN, UNDER 1, UNDER 2, LETTER BOX, PAN SCAN or BEST FIT</td></tr>
<tr><td>RESOLUTION:</td><td>Select the output resolution from the menu:
<table>
<tr><th>Output resolution:</th><th>Appears as:</th><th>Output resolution:</th><th>Appears as:</th></tr>
<tr><td>NATIVE OUT1</td><td></td><td>1680x1050 @60Hz</td><td>1680x1050 60</td></tr>
<tr><td>NATIVE OUT2</td><td></td><td>1600x1200 @60Hz</td><td>1600x1200 60</td></tr>
<tr><td>640x480 @60Hz</td><td>640x480 60</td><td>1920x1080 @60Hz</td><td>1920x1080 60</td></tr>
<tr><td>800x600 @60Hz</td><td>800x600 60</td><td>1920x1200 @60Hz</td><td>1920x1200 60</td></tr>
<tr><td>1024x768 @60Hz</td><td>1024x768 60</td><td>480p @60Hz</td><td>720x480P 60</td></tr>
<tr><td>1280x768 @60Hz</td><td>1280x768 60</td><td>720p @60Hz</td><td>1280x720P 60</td></tr>
<tr><td>1360x768 @60Hz</td><td>1360x768 60</td><td>1080i @60Hz</td><td>1920x1080I 60</td></tr>
<tr><td>1280x720 @60Hz</td><td>1280x720 60</td><td>1080p @60Hz</td><td>1920x1080P 60</td></tr>
<tr><td>1280x800 @60Hz</td><td>1280x800 60</td><td>576p @50Hz</td><td>720x576P 50</td></tr>
<tr><td>1280x1024 @60Hz</td><td>1280x1024 60</td><td>720p @50Hz</td><td>1280x720P 50</td></tr>
<tr><td>1440x900 @60Hz</td><td>1440x900 60</td><td>1080i @50Hz</td><td>1920x1080I 50</td></tr>
<tr><td>1400x1050 @60Hz</td><td>1400x1050 60</td><td>1080p @50Hz</td><td>1920x1080P 50</td></tr>
</table>
NATIVE - Select NATIVE to select the output resolution from the EDID of the connected HDMI monitor</td></tr>
<tr><td colspan="2">PICTURE</td></tr>
<tr><td>CONTRAST:</td><td>Set the contrast (the range and default values vary according to the input signal)</td></tr>
<tr><td>BRIGHTNESS:</td><td>Set the brightness (the range and default values vary according to the input signal)</td></tr>
<tr><td>RED</td><td>Set the red shade</td></tr>
<tr><td>GREEN</td><td>Set the green shade</td></tr>
<tr><td>BLUE</td><td>Set the blue shade</td></tr>
<tr><td>HUE</td><td>Set the color hue (not applicable for VGA inputs)</td></tr>
<tr><td>SATURATION</td><td>Set the color saturation (not applicable for VGA inputs)</td></tr>
<tr><td>SHARPNESS</td><td>Set the sharpness of the picture (not applicable for VGA inputs)</td></tr>
<tr><td>NOISE REDUCTION</td><td>Select the noise reduction: OFF, LOW, MID (middle) and HIGH (not applicable for VGA inputs)</td></tr>
<tr><td>FINETUNE</td><td>Enabled for VGA: AUTO ADJUST (NO/YES), H-POSITION, V-POSITION, PHASE, CLOCK, WXGA/XGA, RESET (NO/YES)</td></tr>
<tr><td colspan="2">AUDIO</td></tr>
<tr><td>INPUT VOLUME:</td><td>Set the volume separately for each input: HDMI 1, HDMI 2, HDMI 3, HDMI 4, HDMI 5, HDMI 6, HDMI 7, HDMI 8, HDMI 9, HDMI 10, PC1 and PC2
Not applicable for embedded HDMI inputs</td></tr>
<tr><td>OUTPUT VOLUME:</td><td>Set the output volume</td></tr>
<tr><td>DELAY</td><td>Select the audio delay time: OFF, 40ms, 110ms and 150ms</td></tr>
<tr><td>MUTE</td><td>Select the sound mute options: ON, OFF</td></tr>
<tr><td>EMBEDDED AUDIO:</td><td>Select the audio source of the HDMI 1 to HDMI 10 inputs:
AUTOMATIC: the embedded audio on the HDMI input is selected for an HDMI signal, or the analog audio input is selected if the input is not HDMI (for example, for a DVI input signal)</td></tr>
</table>

Mode	Function	
	EMBEDDED: the embedded audio in the HDMI signal is selected **ANALOG**: the analog audio input is selected	
MIXER:	Set to OFF to disable mixing of the microphone with the audio output, MIC1, MIC2 or both to mix either MIC 1, MIC 2 or both microphones with the audio output	
MIC VOLUME	Set the microphone volume for MIC1 and MIC2	
ADVANCED		
HDCP ON INPUT	Select the HDCP option for the HDMI input: either ON (the default) or OFF. Setting HDCP support to enabled (ON) on the HDMI input allows the source to transmit a non-HDCP signal if required (for example, when working with a Mac computer)	
HDCP ON OUTPUT	Set HDMI OUT1 and HDMI OUT2: Select FOLLOW INPUT or FOLLOW OUTPUT to define whether the HDCP will follow the input or the output When FOLLOW INPUT is selected, it changes its HDCP output setting (for the HDMI output) according to the HDCP of the input. This option is recommended when the HDMI output is connected to a splitter/switcher When FOLLOW OUTPUT is selected, the scaler matches its HDCP output to the HDCP setting of the HDMI acceptor to which it is connected	
AUTO SYNC OFF	Turn to OFF, FAST (for almost immediate shut down if no input is present – about 10 seconds) or SLOW (for shutdown after about 2 minutes). This is useful, for example, when the output is connected to a projector, and the projector will automatically shut down when it has no input	
OSD	H POSITION	Set the horizontal position of the OSD
	V POSITION	Set the vertical position of the OSD
	TIMER	Set the timeout period in seconds
	TRANSPARENCY	Set the OSD background between 100 (transparent) and 0 (opaque)
	DISPLAY	Select the information shown on the screen during operation: **INFO**: the information is shown for 10 seconds **ON**: the information is shown permanently **OFF**: the information is not shown
MUTE FOLLOWS FREEZE	Set to ON to have MUTE follow FREEZE. Otherwise set to OFF	
MUTE BUTTON DEFINE:	Define the MUTE button to function as MUTE, BLANK or BLANK AND MUTE	
AUTO SWITCHING	MODE	Set the auto switching mode to OFF, AUTO SCAN or LAST CONNECTED. PRIORITY (below) is enabled when AUTO SCAN is selected When one of the auto switching modes is selected (AUTO SCAN or LAST CONNECTED), audio is enabled only when a video signal is detected
	SCAN PRIORITY	Set to HDMI to begin scan with HDMI1 or to PC to begin scan with PC1
ETHERNET	IP MODE	Set the IP mode to DHCP or STATIC IP
	STATIC IP ADDRESS (fill in if STATIC IP (above) is selected:	
	IP ADDRESS	Enter the IP address
	SUBNET	Enter the subnet
	GATEWAY	Enter the gateway
	CONTROL PORT	Enter the control port
	MAC ADDRESS	MAC address

Mode	Function
FACTORY RESET	
	Select NO or YES
INFORMATION	
	Displays the INPUT RESOLUTION, the OUTPUT RESOLUTION, INPUT HDCP (HDCP/NONE), OUTPUT 1/2 HDCP (HDCP/NONE) VERSION and the IP ADDRESS

6.3 Connecting to the VP-444 via RS-232

You can connect to the **VP-444** 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-444** 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

6.4 Operating via Ethernet

You can connect to the **VP-444** via Ethernet using either of the following methods:

- Directly to the PC using a crossover cable (see Section 6.4.1)
- Via a network hub, switch, or router, using a straight-through cable (see Section 6.4.2)

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.

6.4.1 Connecting the Ethernet Port Directly to a PC

You can connect the Ethernet port of the **VP-444** 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-444** with the factory configured default IP address.

After connecting the **VP-444** 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 8.

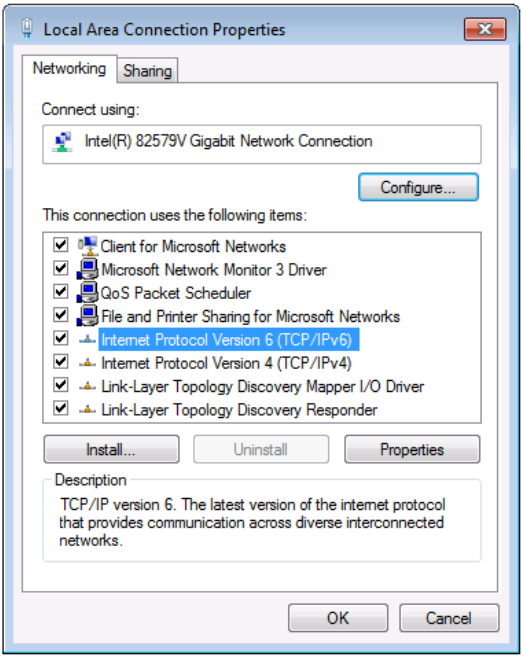


Figure 8: Local Area Connection Properties Window

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 9 or Figure 10.

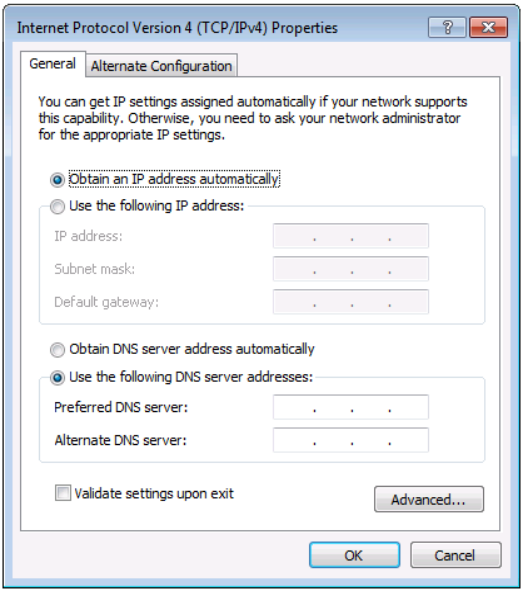


Figure 9: Internet Protocol Version 4 Properties Window

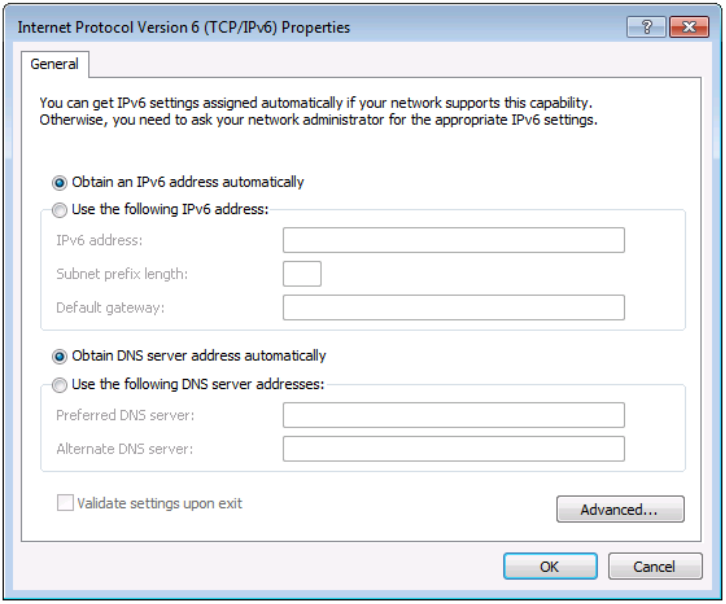


Figure 10: Internet Protocol Version 6 Properties Window

6. Select **Use the following IP Address** for static IP addressing and fill in the details as shown in Figure 11.
   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.

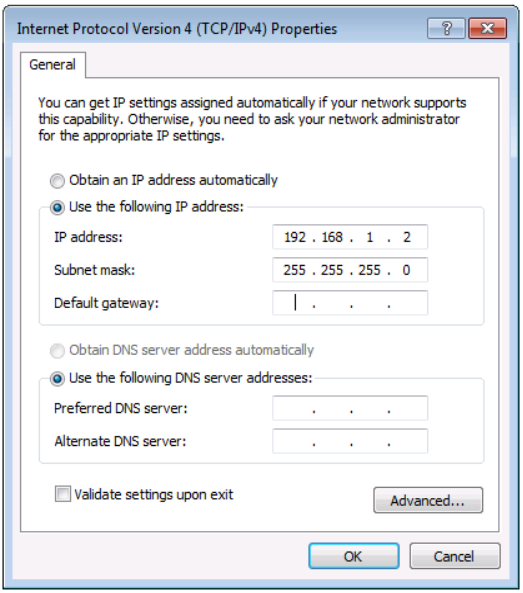


Figure 11: Internet Protocol Properties Window

7. Click **OK**.

8. Click **Close**.

6.4.2 Connecting the Ethernet Port via a Network Hub or Switch

You can connect the Ethernet port of the **VP-444** to the Ethernet port on a network hub or using a straight-through cable with RJ-45 connectors.

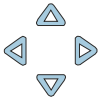
6.4.3 Configuring the Ethernet Port

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

6.5 Controlling via the Infrared Remote Control Transmitter

You can control the **VP-444** from the infrared remote control transmitter:

Figure 12: Infrared Remote Control Transmitter

Keys	Function
POWER	Toggle the power save mode ON or OFF
HDMI	Select the HDMI input (from 1 to 10)
PC1	Select the PC 1 input
PC2	Select the PC 2 input
XGA Reset	Reset the resolution to XGA
720p Reset	Reset the resolution to 720p
	Four navigation keys When not in the OSD, the left and right arrows also control the output volume
OK	Press to accept changes Press also to auto adjust the picture (see Section 6.1.1)
MENU	Enter the OSD menu
EXIT	EXIT the menu
FREEZE	Freeze/unfreeze the output video image
Panel Lock	Lock/unlock the front panel buttons
MUTE	Toggle between muting (blocking out the sound) and enabling the audio output

7 Using the Embedded Web Pages

The **VP-444** 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 Section 6.4.
- Ensure that your browser is supported

The following operating systems and Web browsers are supported:

Windows 7:

- Chrome version 35
- Internet Explorer version 10
- Firefox version 30

Mac (PC):

- Chrome version 35
- Firefox version 27

iOS:

- Chrome version 35
- Safari (depends on the IOS version)

Android OS:

- Chrome version 35

7.1 Browsing the VP-444 Web Pages

To browse the **VP-444** 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 7.2)
- The Device Settings page (see Section 7.3)
- The Output Settings page (See Section7.4)
- The HDCP page (see Section 7.5)
- The EDID page (see Section 7.6)
- The Audio page (see Section 7.7)
- The Advanced page (see Section 7.8)
- The About page (see Section 7.9)

7.2 The Input Select Page

Figure 13 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 Input Select area lets you select an input to the outputs (audio, video or audio-follow-video) the Audio out (below Output) shows the audio input that is routed to the line and monitor outputs. The volume area lets you control the Line and Monitor output audio level.

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.

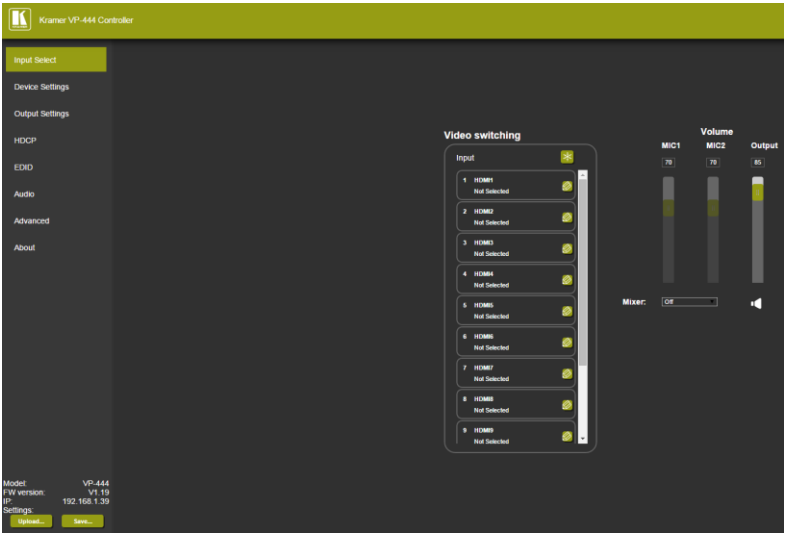


Figure 13: The Input Select Page

On the right side you can set the volume of the microphones and the output; you can select the mixer mode (the selection disables/enables the Mic 1/Mic 2 volume slides). The speaker icon ( ) lets you mute ( ) or unmute the audio output level.

Use the freeze icon ( ) to freeze a selected input. Use the edit icon ( ) to edit the input.

To edit an input button, select that button and click the edit icon. The input edit window appears:

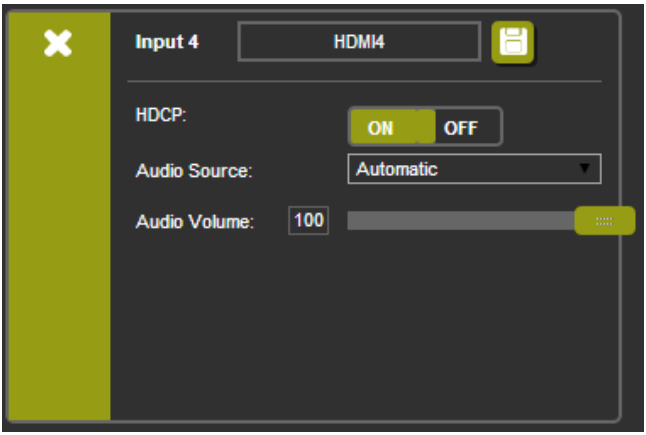


Figure 14: Edit Input Buttons

The input edit window lets you set the HDCP, change the name of the input as it will appear on the Web page and save it, and also set the audio source and its volume. When selecting a PC input you can change the inputs' name and set the input volume. Upon completion, save the changes and click the exit icon ( ).

7.3 The Device Settings Page

The device Settings window (Figure 15) lets you upgrade the firmware and set the Ethernet parameters.

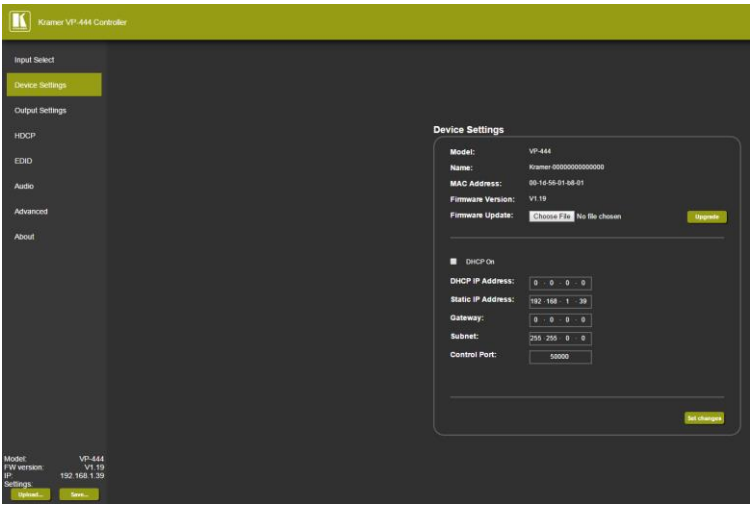


Figure 15: The Device Settings Page

Any change in the device settings requires confirmation, as illustrated in the example in Figure 16.

Figure 16: The Device Settings Page – Static IP Confirmation.

7.3.1 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.
2. Click the Upgrade button.
   The new firmware is uploaded:

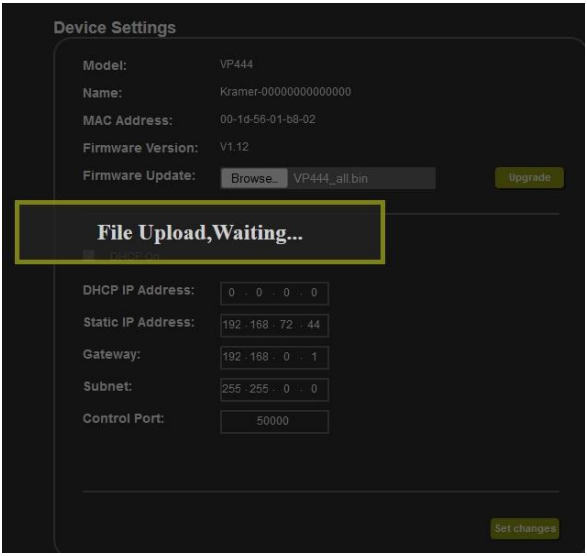


Figure 17: The Device Settings Page – Uploading the New Firmware File

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

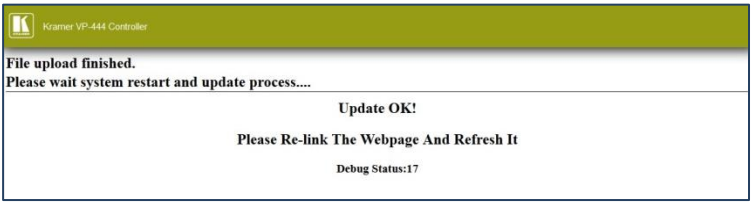


Figure 18: The Device Settings Page – Uploading the New Firmware File

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:

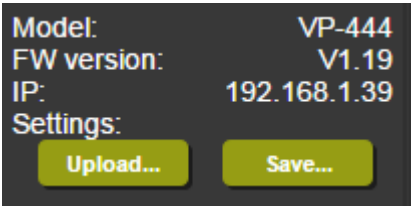


Figure 19: The Device Settings Page – New Firmware Updated

7.4 The Output Settings Page

Figure 20 shows the Output Settings page:

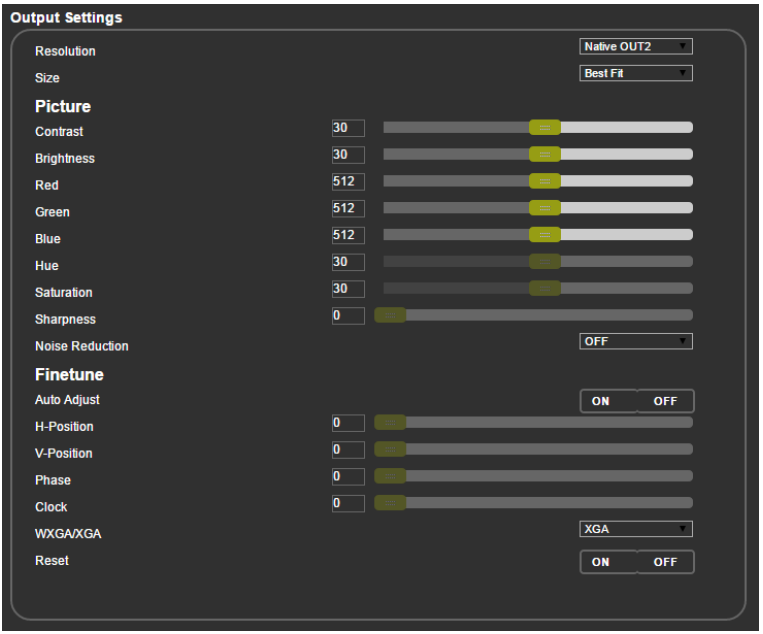


Figure 20: The Output Settings Page

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

7.5 The HDCP Page

The HDCP page lets you set the HDCP on the output (follow input or follow output) and the HDCP status for each of the HDMI inputs. Figure 21 shows the HDCP page:

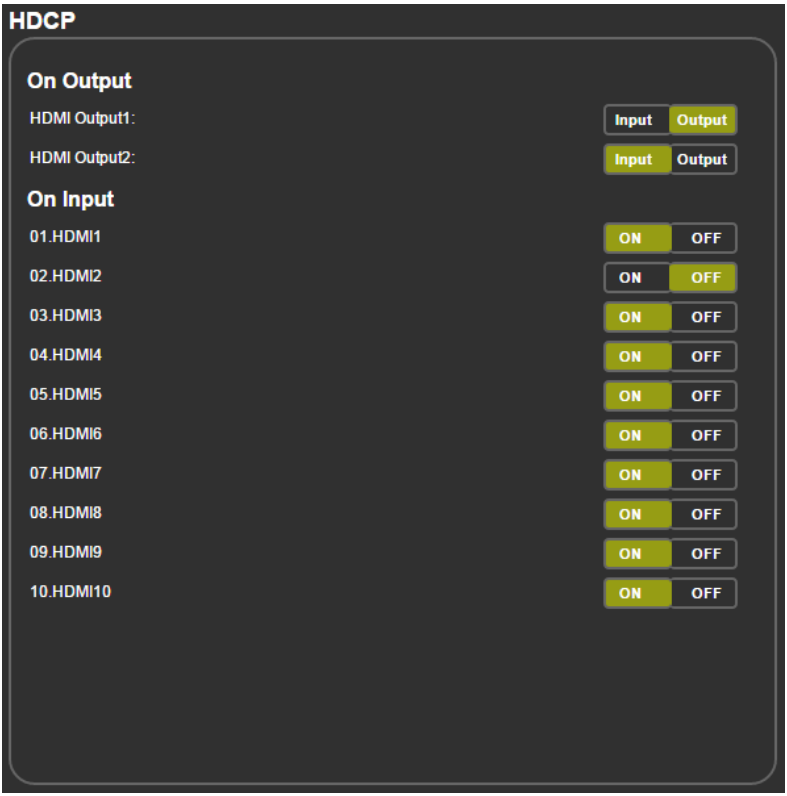


Figure 21: The HDCP Page

7.6 The EDID Page

The EDID page lets you copy a selected resolution (Native Timing) or the default resolution (HDMI or VGA) to one or more selected inputs.

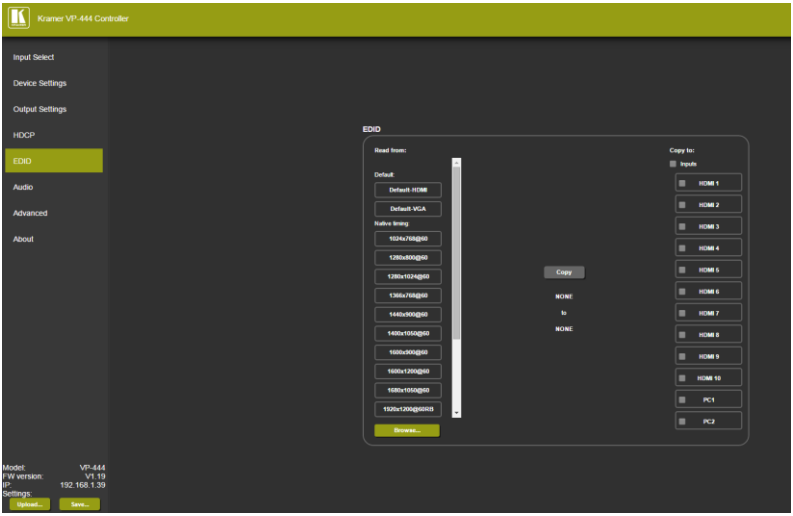


Figure 22: The EDID Page

Figure 23 shows how to select a resolution from the list and select one or more inputs. To copy, click the **Copy** button:

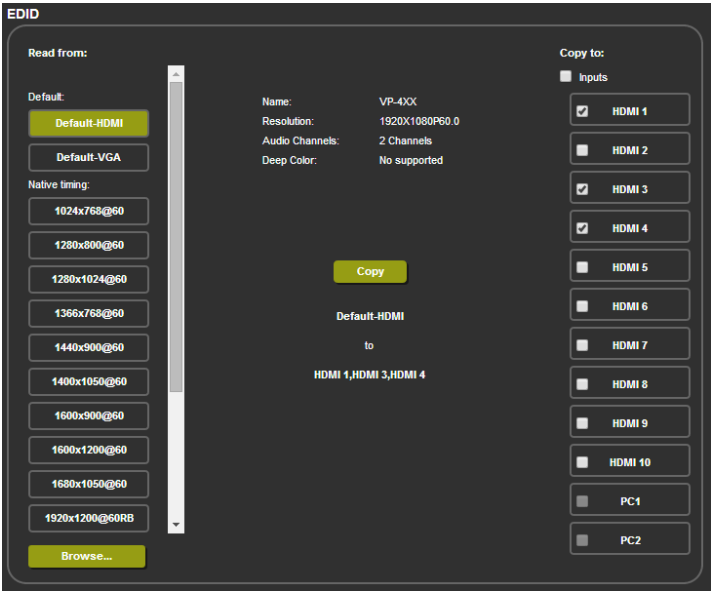


Figure 23: The EDID Page – Copying the Default

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:

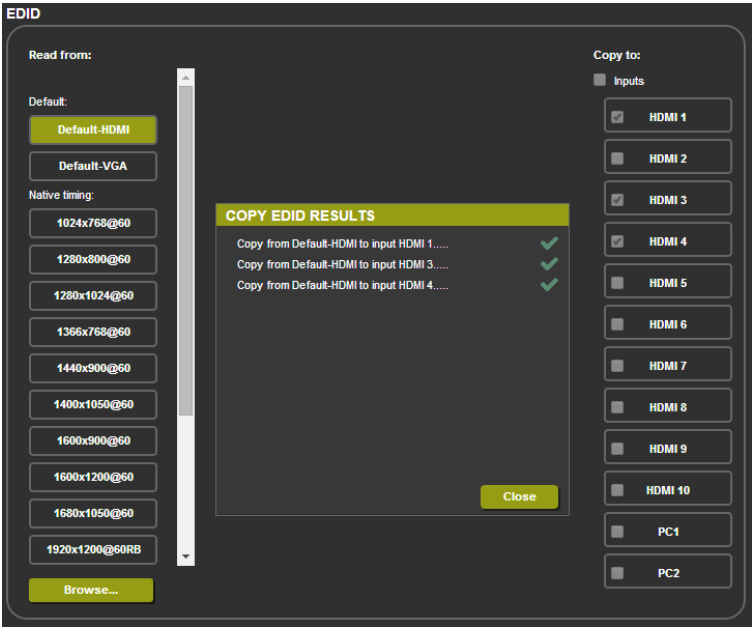


Figure 24: The EDID Page –The Copy EDID Results

Click Close to complete the EDID procedure.

7.7 The Audio Settings Page

The audio settings page lets you define the audio parameters for the inputs, outputs (1 and 2 together), and the microphone inputs (Mic 1 and Mic 2), as illustrated in Figure 25.

Set Mute follow freeze and Lip sync as well as the audio source (automatic, analog or embedded for the HDMI inputs) and volume level for each input.

Figure 25: The Audio Settings Page

7.8 The Advanced Page

The Advanced setting page lets you set the auto sync off speed (either slow or fast) or disable it (Off), set the auto switching to Off, Auto Scan or Last Connected and set the input priority to PC or HDMI (once the auto scan is enabled), see Figure 26.

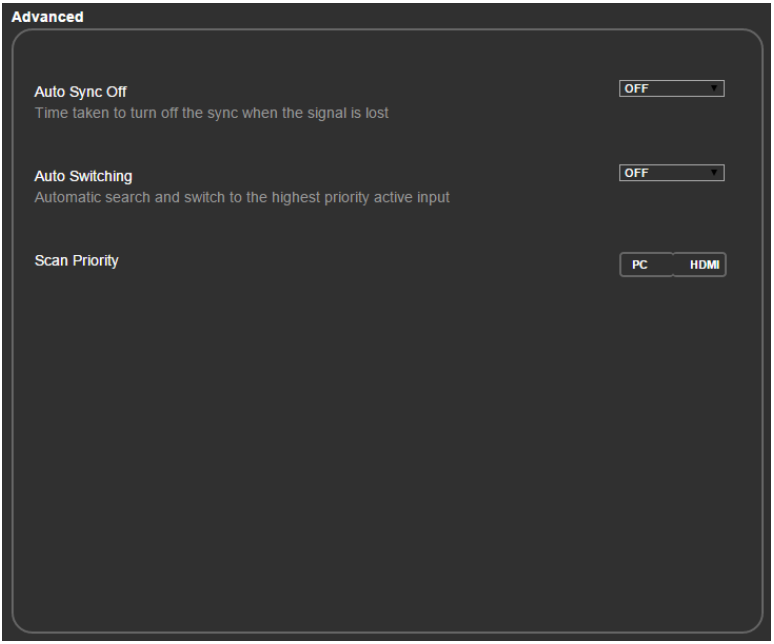


Figure 26: The Advanced Page

7.9 The About Page

The **VP-444** About page lets you view the Web page version and Kramer Electronics Ltd details.

Figure 27: The About Page

8 Technical Specifications

INPUTS:	10 HDMI connectors (HDMI, HDCP version 1.1) 2 VGA on a 15-pin HD connector Unbalanced stereo audio on 12 3-pin terminal block connectors 2 Mic on 6mm jack connectors (with selectable 48V phantom power)
OUTPUTS:	2 HDMI connectors (HDMI, HDCP version 1.1) 1 S/PDIF on an RCA connector Unbalanced stereo audio on a 5-pin terminal block connector
BANDWIDTH:	Up to 1080p, UXGA
SWITCHING TIME BETWEEN INPUTS:	2 to 3 seconds
VIDEO LATENCY:	Less than 2 frames
OUTPUT RESOLUTIONS:	Native, 640x480 @60Hz, 800x600 @60Hz, 1024x768 @60Hz, 1280x768 @60Hz, 1360x768 @60Hz, 1280x720 @60Hz, 1280x800 @60Hz, 1280x1024 @60Hz, 1440x900 @60Hz, 1400x1050 @60Hz, 1680x1050 @60Hz, 1600x1200 @60Hz, 1920x1080 @60Hz, 1920x1200 @60Hz, 480p @60Hz, 720p @60Hz, 1080i @60Hz, 1080p @60Hz, 576p @50Hz, 720p @50Hz, 1080i @50Hz, 1080p @50Hz
CONTROLS	HDMI 1 to HDMI 10 and PC 1 to PC 2 input selector buttons; Freeze, mute buttons; Menu and navigation buttons, Reset to XGA/720p and lock buttons, RS-232, IR, Ethernet (OSD and Web pages) USB for firmware upgrading
POWER CONSUMPTION:	100-240V AC, 22VA max.
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" x 1U (W, D, H) rack mountable
WEIGHT:	2.7kg (6lbs) approx.
INCLUDED ACCESSORIES:	Power cord, rack ears, IR remote control
Specifications are subject to change without notice at http://www.kramerelectronics.com	

8.1 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:	192.168.1.254
TCP Port #:	Not supported
Default UDP Port #:	50000
Maximum UDP Ports:	4
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 HDMI3 input to the output ports):	#ROUTE 12,1,2<cr>

8.2 Input Resolutions

Resolution/Refresh Rate	PC 1/PC 2	HDMI 1-10
640x480 (60/72/75/85Hz)	Yes	Yes
800x600 (56/60/72/75/85Hz)	Yes	Yes
1024x768 (60/70/75/85Hz)	Yes	Yes
1280x720 60Hz	Yes	Yes
1280x800 60Hz	Yes	Yes
1280x1024 (60/75/85Hz)	Yes	Yes
1366x768 60Hz	Yes	Yes
1400x1050 60Hz	Yes	Yes
1440x900 60Hz	Yes	Yes
1600x1200 60Hz	Yes	Yes
1600x900 RB 60Hz	Yes	Yes
1680x1050 RB 60Hz	Yes	Yes
1920x1080 60Hz	Yes	Yes
1920x1200 RB 60Hz	Yes	Yes
480I/576I	No	Yes
480P/576P	No	Yes
720P(50/60Hz)	No	Yes
1080I(50/60Hz)	No	Yes
1080P(24/25/30Hz)	No	Yes
1080P(50/60Hz)	No	Yes

9 The RS-232/Ethernet (UDP) Communication Protocol

The **VP-444** 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 9.1)
- Kramer Protocol 3000 commands (see Section 9.2)
- Kramer Protocol 3000 detailed commands (See Section 9.3)

9.1 Kramer Protocol 3000 Syntax

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

9.1.1 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,…*| **Command_2** *Parameter2_1,Parameter2_2,…*| **Command_3** *Parameter3_1,Parameter3_2,…*|…	CR

9.1.2 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)
SP = Space (ASCII 32 = 0x20)

9.1.3 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

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

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.

9.1.4 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.

9.1.5 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.

9.1.6 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.

9.1.7 Maximum String Length

64 characters

9.2 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		
#ROUTE?		
#DISPLAY?		Get output HPD status
#LOCK-FP	LCK	Lock front panel
#LOCK-FP?	LCK?	GET Lock front panel
#HDCP-MOD		
#HDCP-MOD?		
#VID-RES		Set input/output resolution
#VID-RES?		Get input/output resolution
#VFRZ		
#VFRZ?		
#AUD-LVL		Set audio level
#AUD-LVL?		Get audio level
#MIX		
#MIX?		
#MUTE		
#MUTE?		
#SCLR-AS		
#SCLR-AS?		
#IMAGE-PROP		
#IMAGE-PROP?		
#SCLR-PCAUTO		
#SCLR-AUDIO-DELAY		
#SCLR-AUDIO-DELAY?		
#MIC-GAIN		
#MIC-GAIN?		

9.3 Kramer Protocol 3000 – Detailed Commands

This section describes the detailed commands list (see Section 9.3.3) as well as the Port number key (see Section 9.3.1) and the video resolutions key (see Section 9.3.2).

9.3.1 Port Number Key

Video	#
HDMI 1	0
HDMI 2	1
HDMI 3	2
HDMI 4	3
HDMI 5	4
HDMI 6	5
HDMI 7	6
HDMI 8	7
HDMI 9	8
HDMI 10	9
PC 1	10
PC 2	11

Audio input	#
HDMI 1	0
HDMI 2	1
HDMI 3	2
HDMI 4	3
HDMI 5	4
HDMI 6	5
HDMI 7	6
HDMI 8	7
HDMI 9	8
HDMI 10	9
PC 1	10
PC 2	11

Video Output	#
HDMI 1	0
HDMI 2	1

9.3.2 The Output Resolutions key

Number	Resolution	Number	Resolution
0	640x480 @60Hz	12	1920x1080 @60Hz
1	800x600 @60Hz	13	1920x1200 @60Hz
2	1024x768 @60Hz	14	480p @60Hz
3	1280x768 @60Hz	15	720p @60Hz
4	1360x768 @60Hz	16	1080i @60Hz
5	1280x720 @60Hz	17	1080p @60Hz
6	1280x800 @60Hz	18	576p @50Hz
7	1280x1024 @60Hz	19	720p @50Hz
8	1440x900 @60Hz	20	1080i @50Hz
9	1400x1050 @60Hz	21	1080p @50Hz
10	1680x1050 @60Hz	22	NATIVE OUT1
11	1600x1200 @60Hz	23	NATIVE OUT2

9.3.3 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: 1. #**HELP**[CR] 2. #**HELP**[SP]command_name[CR]	
Response			
1. Multi-line: ~[nn]@**Device available protocol 3000 commands :**[CR LF]*command*,[SP]*command*…[CR LF] **To get help for command use : HELP (COMMAND_NAME)**[CR LF] 2. Multi-line: ~[nn]@**HELP**[SP]*command* **:**[CR LF]*description*[CR LF]**USAGE :** *usage* [CR LF]			

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 *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[CR]	
Get :	-	-	
Response			
~[nn]@**BUILD-DATE**[SP]*date*[SP]*time*[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**SP3000:*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**SPfirmware_versionCR 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]			
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]			
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. 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 0 – Use static IP. 1 – Use DHCP. If unavailable, use IP as above.			
Notes			
Connecting Ethernet to devices with DHCP may take more time in some networks. 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. 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 P2 – 1=Scaler P3 (Route from, valid values are in accordance to the selected layer and Route to selected according to P1 and P2) – video inputs = (0~11); see Section 9.3.1			
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=HDMI1; 1=HDMI2			
Response triggers			
• After execution, response is sent to the com port from which the **Get** was received • Response is sent after every change in output HPD status **ON to OFF** • Response is sent after every change in output HPD status **OFF to ON** and ALL parameters (new EDID, etc.) are stable and valid			

Command – LOCK-FP		Command Type – System	
Command Name		**Permission**	**Transparency**
Set:	**LOCK-FP**	End User	-
Get:	**LOCK-FP?**	End User	-
Description		**Syntax**	
Set:	Lock front panel	#**LOCK-FP**[SP]P1[CR]	
Get :	Get front panel lock state	#**LOCK-FP?**[CR]	
Response			
nn@**LOCK-FP**[SP]P1[SP]**OK**[CR LF]			
Parameters			
P1– 0=No; 1=Yes			

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; 1=Output P2 (Scaler number) – Input 0-9=HDMI 1 – HDMI 10; Output 0-1=HDMI 1, HDMI 2 P3 (Status) – Input: 0=Off; 1=On; Output: 2=Follow In, 3=Follow Out			
Response triggers			
• Response is sent to the com port from which the **Set** (before execution) **/ Get** command was received • 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** : HDCP supported – HDCP_ON [default] HDCP not supported – HDCP OFF 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 –1=Output P2 – 1=Scaler P3 – 0=Off P4 - video resolutions – 0~23, see Section 9.3.2			
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** 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 3. "Get" command with *is_native*=ON returns native resolution VIC, with *is_native*=OFF returns current resolution 4. To use "custom resolutions" (entries 100-105), define them using command DEF-RES			

Command – VFRZ		Command Type – Video	
Command Name		**Permission**	**Transparency**
Set:	**VFRZ**	End User	-
Get:	**VFRZ?**	End User	-
Description		**Syntax**	
Set:	Set freeze video on output	# **VFRZ** SP P1,P2 CR	
Get :	Get freeze on output status	# VFRZ? SP P1 CR	
Response			
Set / Get : ~ nn@ **VFRZ** SP P1,P2 CR LF			
Parameters			
P1 (Scaler number) – 1=Scaler P2 (Off/On) – 0=Off; 1=On			

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 P2 (Input/Output number valid according to the selected Input/Output according to P1) – audio inputs=0~11; Audio outputs=0; (see Section 9.3.1) P3 – 0~100			

Command – MIX		Command Type – Audio	
Command Name		**Permission**	**Transparency**
Set:	**MIX**	End User	-
Get:	**MIX?**	End User	-
Description		**Syntax**	
Set:	Set audio MIX	#**MIX**SP P1,P2 CR	
Get :	Get audio MIX	#MIX?SP P1 CR	
Response			
~nn@**MIX**SP channel, mix_mode CR LF			
Parameters			
P1 (Output number) – 1=Scaler P2 (Off/On)– 0=Off; 1=Mic 1; 2=Mic 2; 3=both			

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 – 0: 1=Scaler P2 – 0=Off; 1=On			
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			
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 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 Proportions		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 P2 (Status) – 0=Over Scan; 1=Full; 2=Best Fit; 3=PanScan; 3=Letter Box; 5=Under 2; 6=Under 1			
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 – PC Auto Sync		Command Type – [Video]	
Command Name		**Permission**	**Transparency**
Set:	**SCLR-PCAUTO**	End User	Public
Get:		End User	Public
Description		**Syntax**	
Set:	Set	# **SCLR-PCAUTO** SP P1,P2 CR	
Get :			
Response			
Set / Get : ~ nn@ **SCLR-PCAUTO** SP *P1,P2….* CR LF			
Parameters			
P1 (Scaler number) –1=Scaler P2 (Off/On) –1=Yes			
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 PC Auto sync 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 P2 (Level selecetion) – 0=Off; 1=40ms; 2=110ms; 3=150ms			
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 audio delay for the selected audio output			

Command – Microphone Gain		Command Type – [Audio]	
Command Name		**Permission**	**Transparency**
Set:	**MIC-GAIN**	End User	Public
Get:	**MIC-GAIN?**	End User	Public
Description		**Syntax**	
Set:	Set the microphone gain	# **MIC-GAIN** SP P1,P2,P3 CR	
Get :	Get the microphone gain	# **MIC-GAIN?** SP P1 CR	
Response			
Set / Get : ~ nn@ **MIC-GAIN** SP *P1,P2,* CR LF			
Parameters			
P1 (always 0) – 0 P2 - 0=Mic 1; 1=Mic 2 P3 (level) – 0 to 100			
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 Microphone input audio gain			

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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 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.

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E-mail: info@kramerel.com

SAFETY WARNING
Disconnect the unit from the power supply before opening and servicing

P/N: 2900-300305 Rev: 3