KRAMER

USER MANUAL

MODEL:

VP-732

Presentation Switcher/Dual Scaler

P/N: 2900-300327 Rev 2

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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 the video, audio, presentation, and broadcasting professional 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-732** Presentation Switcher/Dual Scaler, which is ideal for the following typical applications:

- Presentation applications that require a preview option
- Projection systems in conference rooms, boardrooms, auditoriums, hotels and churches, production studios, rental and staging
- Any application where high quality conversion and switching of multiple and different video signals to graphical data signals is required for display or projection purposes

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-732 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

- 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 neighbouring electrical appliances that may adversely influence signal quality
- Position your Kramer **VP-732** 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 Kramer **VP-732** is a 10-input *Presentation Matrix Switcher / Dual Scaler* for a wide variety of presentation and multimedia applications. The **VP-732** has four HDMI, two DisplayPort and four user definable (universal) analog video inputs (each can be set as computer graphics, composite video, s-Video (Y/C) or component video). It up- or down scales to selectable output resolutions (up to 4K/UHD) and provides glitch-free switching between sources through fast FTB™ (fade-thru-black) switching technology. Independent Program and Preview outputs are available simultaneously: A DP and an HDMI connector show the Program Output; a 15-pin HD computer graphics video connector shows the Preview Output; while an additional HDMI connector can show either of the 2 outputs. Alternatively, all 4 outputs are identical, and can include a PIP window showing any one of the input sources. Rich audio support is also included, with digital audio embedding and de-embedding, as well as 10 analog stereo inputs; and analog, S/PDIF, and speaker outputs.

The **VP-732** features:

- PixPerfect™ Scaling Technology – Kramer's precision pixel mapping and high quality scaling technology
- Fast Fade-Thru-Black (FTB™) Switching – Video switching transitions are clean and fast. The video fades to black and the new input fades from black for smooth, glitch-free switching. The output signal provides constant sync so the display never glitches
- K-IIT XL™ Picture-in-Picture Image Insertion Technology – ultra stable picture-in-picture, picture-and-picture, and split screen capability. Any video source can be inserted into or positioned next to any other video source with window positioning and sizing controls
- Dual scalers—with independent outputs
- A PREVIEW MODE button that toggles between the PIP mode and the PREVIEW mode. When pressed (button is illuminated), the selected PREVIEW input is scaled to the PREVIEW outputs. When in the PIP mode, it can be inserted in a picture-in-picture window on all the outputs

- Features 10 PREVIEW input buttons for switching a selected input to the PREVIEW output (in PREVIEW mode) and 10 PROGRAM input buttons for switching a selected input to the PROGRAM output. In PIP mode, the 10 PREVIEW input buttons select the PIP source. There is no limitation on the PIP and main window source combinations
- Output resolutions – supports up to 4K@30Hz/UHD on the Program output (and up to 720P on the Preview output)
- Scaled video outputs – 2xHDMI, DP and 15-pin HD computer graphics video
- Multiple computer graphics output resolutions – including a user-defined output resolution
- Multiple aspect ratio selections
- Audio breakaway and AFV (audio-follow-video) operation support
- Embedded audio on the HDMI and DisplayPort inputs and outputs
- Built-in noise reduction and picture enhancement features
- Powerful audio features via DSP technology including audio equalization, mixing, delay and so on
- One stereo speaker output, 10W per channel into 8Ω, on a 4-pin terminal block connector
- Auto-switching and auto-scanning of inputs
- Efficient power-saving features
- Built-in Time Base Corrector – stabilizes video sources with unstable sync
- Built-in video Proc-Amp – color, hue, sharpness, contrast, and brightness are set individually for each input
- BLANK and FREEZE buttons for the preview and program modes, a RESET TO XGA/720P button (to hardware-reset the output resolution); and a PANEL LOCK button
- User-friendly AP for Text Overlay support
- Firmware Upgrade – Ethernet-based, via a user-friendly software upgrade tool
- An OSD (On-Screen Display) – for making adjustments

- A USB port – for downloading splash-screen logo; and for storing / downloading the machine configurations via a flash drive

In addition, the **VP-732**:

- Includes non-volatile memory that retains the last settings, after switching the power off and then on again
- Is specifically designed to improve video quality by reducing chroma noise
- Includes numerous filters and algorithms for eliminating picture artifacts
- Scales and zooms (to up to 400% of the original size)
- Features advanced EDID management per input

Control your **VP-732** directly via the front panel push buttons (with on-screen menus), or:

- By RS-232 serial commands transmitted by a touch screen system, PC, or other serial controller
- Remotely, from the infrared remote control transmitter
- Via the Ethernet using built-in user-friendly Web pages

The **VP-732** 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-732 Presentation Switcher/Dual Scaler

This section defines the **VP-732**.

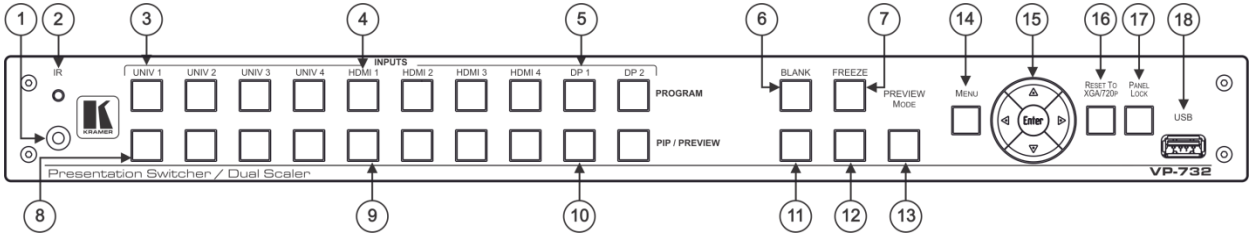


Figure 1: VP-732 Presentation Switcher/Dual Scaler Front Panel

#	Feature		Function
1	IR Receiver		Receives signals from the remote control transmitter
2	LED		Lights red when the unit accepts IR remote commands
3	PROGRAM INPUT Selector Buttons (illuminated green when selected)	UNIV 1	Press to select the computer graphics/composite video / s-Video / component video source (configured via the OSD menu, see Section 7.1) and the appropriate audio source (from 1 to 4)
4		HDMI 1	Press to select the HDMI source (from 1 to 4)
5		DP 1	Press to select the DP source (from 1 to 2)
6	Program *BLANK* Button		Press to toggle between a blank screen (blue or black) and the program display. The BLANK button can be programmed to mute the audio signal at the same time (see Section 7.6.3)
7	Program *FREEZE* Button		Press to freeze/unfreeze the program output video image, The FREEZE button can be programmed to mute the audio signal at the same time (see Section 7.6.3)
8	PIP / PREVIEW INPUT Selector Buttons illuminated yellow when selected)	UNIV 1	Press to select the computer graphics/composite video / s-Video / component video source (configured via the OSD menu, see Section 7.1) and the appropriate audio source (from 1 to 4)
9		HDMI 1	Press to select the HDMI source (from 1 to 4)
10		DP 1	Press to select the HDMI source (from 1 to 2)
11	Preview *BLANK* Button		Press to toggle between a blank screen (blue or black) and the preview display. The BLANK button can be programmed to mute the audio signal at the same time (see Section 7.6.3)
12	Preview *FREEZE* Button		Press to freeze/unfreeze the preview output video image, The FREEZE button can be programmed to mute the audio signal at the same time (see Section 7.6.3)
13	PREVIEW MODE Button		Press to toggle between PIP and Preview Mode operation
14	*MENU* Button		Press to display the OSD menu screen. Press again to return to normal operation

#	Feature	Function
15	*ENTER* Button	Press to move to the next level in the OSD screen or to accept a new parameter
	◄ Button	Decreases the range by one step in the OSD screen or moves to the previous level in the OSD screen. Decreases the volume level, when not in the OSD menu
	▲ Button	Moves up one step (in the same level) in the OSD screen, or moves to the previous slide when running a slideshow (see Section 7.6.1)
	► Button	Increases the range by one step in the OSD screen Increases the volume level, when not in the OSD menu
	▼ Button	Moves down one step (in the same level) in the OSD screen, or moves to the next slide when running a slideshow (see Section 7.6.1)
16	RESET TO XGA/720p Button	Press and hold to reset to the default resolution (toggles between RESET TO XGA and 720p)
17	PANEL LOCK Button	Press and hold to lock/unlock the front panel to prevent unintentional operation
18	*USB* Connector	Connects to a USB drive to download a Logo and save settings (see Section 7.6.3)

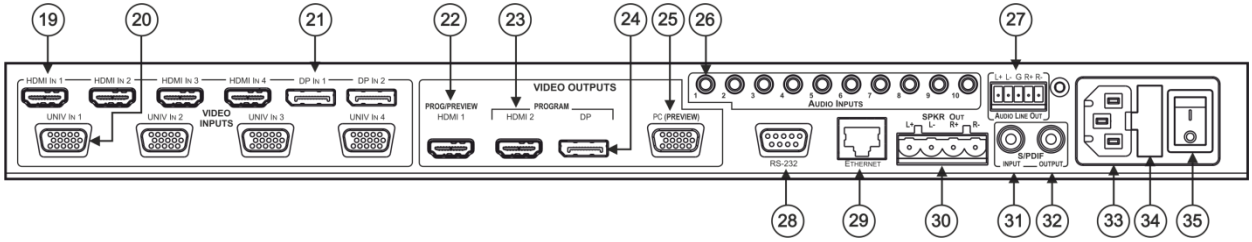


Figure 2: VP-732 Presentation Switcher/Dual Scaler Rear Panel

#	Feature		Function
19	HDMI IN 1 Connector		Connect to the HDMI 1 source (from 1 to 4)
20	UNIV IN 1 15-pin HD Connector		Connects to the video source that can be computer graphics, composite video, s-Video (Y/C) or component video (from 1 to 4)
21	DP IN 1 DisplayPort Connector		Connect to the DP 1 source (from 1 to 2)
22	VIDEO OUTPUTS	PROG/PREVIEW HDMI 1 Connector	Connect to an HDMI acceptor (selectable PREVIEW or PROGRAM)
23		PROGRAM HDMI 2 Connector	Connect to a PROGRAM HDMI 2 acceptor
24		PROGRAM DP Connector	Connect to a PROGRAM DP acceptor
25		PREVIEW PC 15-pin HD Connector	Connect to a PREVIEW computer graphics acceptor
26	AUDIO INPUTS 3.5 Mini Jack Connectors		Connect to the unbalanced stereo analog audio sources from 1 to 10
27	AUDIO LINE OUT 5-pin Terminal Block		Connect to the balanced stereo analog audio acceptor (see Section 5.4)
28	RS-232 9-pin D-sub Connector		Connect to PC or Serial Controller
29	ETHERNET Port		Connect to your LAN Local Area Network – that is computers sharing a common communications line or wireless link, which often share a server within a defined geographic area
30	SPKR OUT 4-pin Terminal Block		Connect to a pair of loudspeakers
31	S/PDIF INPUT 3.5 Mini Jack Connector		Connect to a digital audio source
32	S/PDIF OUTPUT 3.5 Mini Jack Connector		Connect to a digital audio acceptor
33	Mains Power Connector		Connect to the mains power
34	Mains Power Fuse		Fuse for protecting the device
35	Mains power switch		Switch for turning the unit ON or OFF

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.

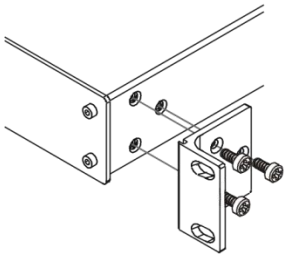
3. The machine is placed straight in the correct horizontal position.

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-732

Always switch off the power to each device before connecting it to your **VP-732**. After connecting your **VP-732**, connect its power and then switch on the power to each device.

To connect the **VP-732** as illustrated in the example in Figure 3, do the following:

1. Connect the video sources:
   - A laptop to the UNIV IN 1 15-pin HD computer graphics video connector

     Note that the UNIV IN 15-pin HD connector pinout is defined in Section 5.1).
   - A computer graphics source to the HDMI 1 connector.
   - An HDMI source (for example, a DVD player) to the HDMI 3 IN connector

     Alternatively, you can connect the DVI connector on the DVD player to the HDMI connector on the **VP-732** via a DVI-HDMI adapter
   - A DisplayPort video source (for example, a notebook) to the DP IN connector

     Although this connecting example shows only several inputs that are connected, you can connect all the inputs simultaneously.
2. Connect the analog stereo inputs (from 1 to 10), not shown in Figure 3.
3. Connect the video outputs:
   - The HDMI 1 PROGRAM/PREVIEW connector (can be configured via the OSD menu, Section 7.3) to an HDMI acceptor (for example, an LCD display)
   - The HDMI 2 PROGRAM connector to an HDMI acceptor (for example, an LCD display)

     Note that the HDMI 1 and HDMI 2 can be set to output HDMI, DVI or can be set to Auto, see Section 7.3.

- The DP program connector to an HDMI acceptor (for example, a display)
- The PC PREVIEW 15-pin HD computer graphics video connector to a video acceptor (for example, an analog display)

  In the HDTV mode, the signal is outputted as a component video signal (YPbPr) and goes out via three PINS: PIN 1 is Red or Pr, PIN 2 is Green or Y, PIN 3 is Blue or Pb. In other modes, it is outputted as a VGA signal (RGBHV) (see Section 5.1)

4. Connect the S/PDIF INPUT RCA connector to a digital audio source (for example, a DVD player.

5. Connect the AUDIO LINE OUT Terminal Block connector to a balanced audio acceptor and the S/PDIF OUTPUT RCA connector to a digital audio acceptor.

6. Connect the SPKR OUT block connector to a pair of loudspeakers, by connecting the left loudspeaker to the “L+” and the “L-” terminal block connectors, and the right loudspeaker to the “R+” and the “R-” terminal block connectors. **Do not Ground the loudspeakers**.

7. Connect the power cord.
   We recommend that you use only the power cord that is supplied with this machine

8. If required, connect:
   - A PC via RS-232, see Section 5.2
   - The ETHERNET port, see Section 5.3

The USB connector, audio sources and acceptors, and power cord are not shown in Figure 3.

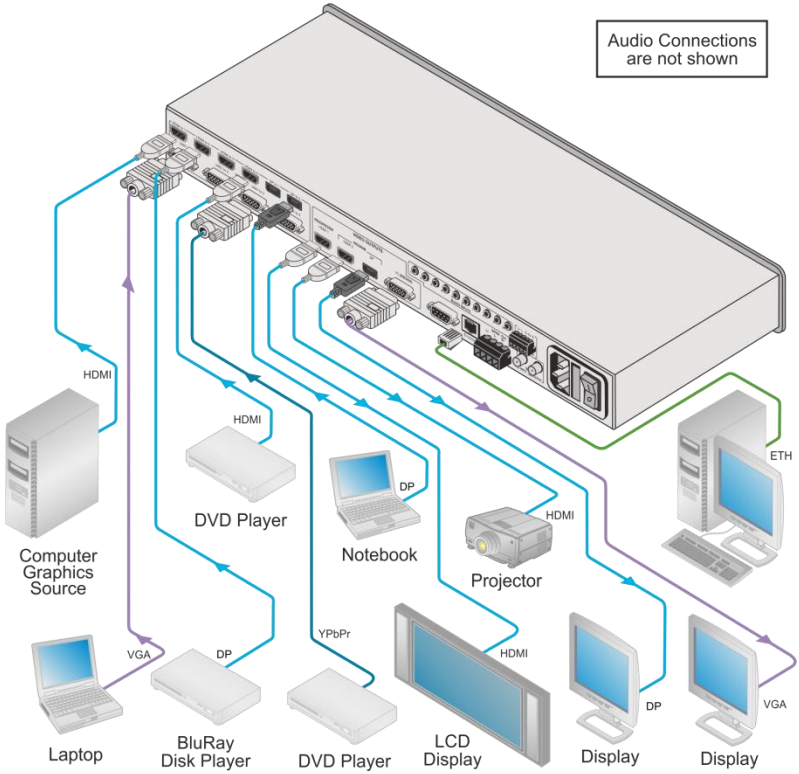


Figure 3: Connecting to the VP-732 Rear Panel

5.1 Universal Connector Pinout

This section describes the UNIV connectors from 1 to 4. Each connector can be set as computer graphics, composite video, s-Video (Y/C) or component video.

Figure 4 and the table below define the connector pinout:

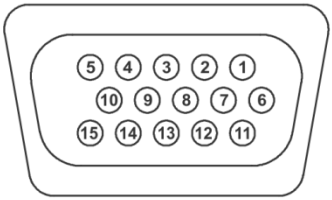


Figure 4: UNIV 15-pin HD Connector Pinout

PIN #	VGA	COMP	s-Video	CV
1	R	Pr		
2	G	Y	S_Y	Composite video
3	B	Pb	S_C	
9	+5VD			
12	EDID_SDA			
13	H_Sync			
14	V_Sync			
15	EDID_SCL			
Note that PINs 5, 6, 7, 8 and 10 are GND				

5.2 Connecting to the VP-732 via RS-232

You can connect to the **VP-732** 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-732** via RS-232:

- Connect the RS-232 9-pin D-sub rear panel port on the **VP-732** 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

5.3 Connecting the VP-732 via the ETHERNET Port

You can connect to the **VP-732** via Ethernet using either of the following methods:

- Directly to the PC using a crossover cable (see Section 5.3.1)
- Via a network hub, switch, or router, using a straight-through cable (see Section 5.3.2)

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.

5.3.1 Connecting the Ethernet Port Directly to a PC

You can connect the Ethernet port of the **VP-732** 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-732** with the factory configured default IP address.

After connecting the **VP-732** 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 5.

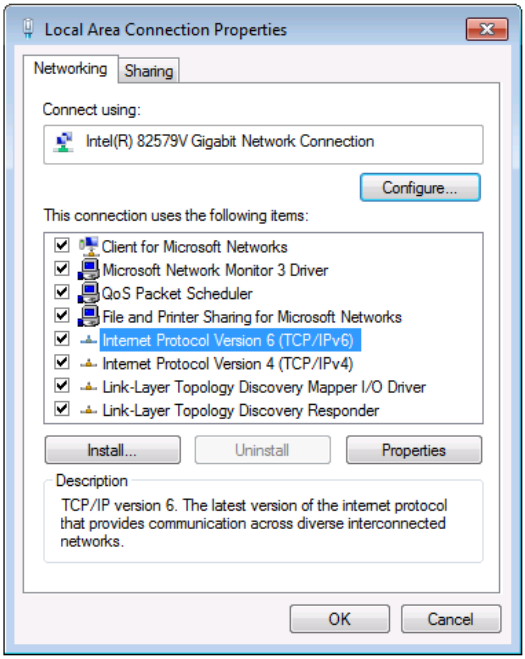


Figure 5: Local Area Connection Properties Window

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 6 or Figure 7.

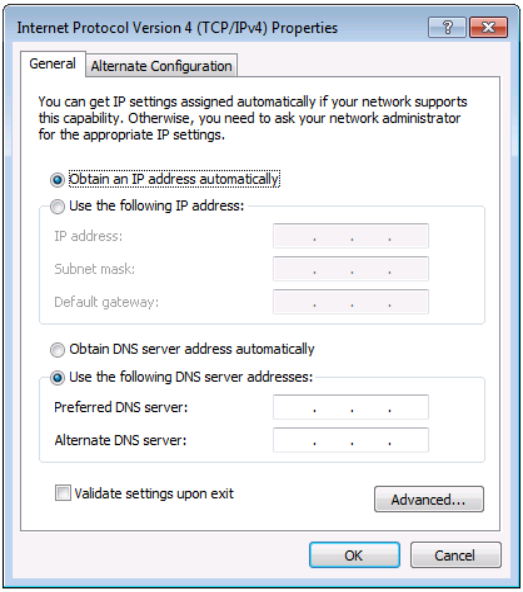


Figure 6: Internet Protocol Version 4 Properties Window

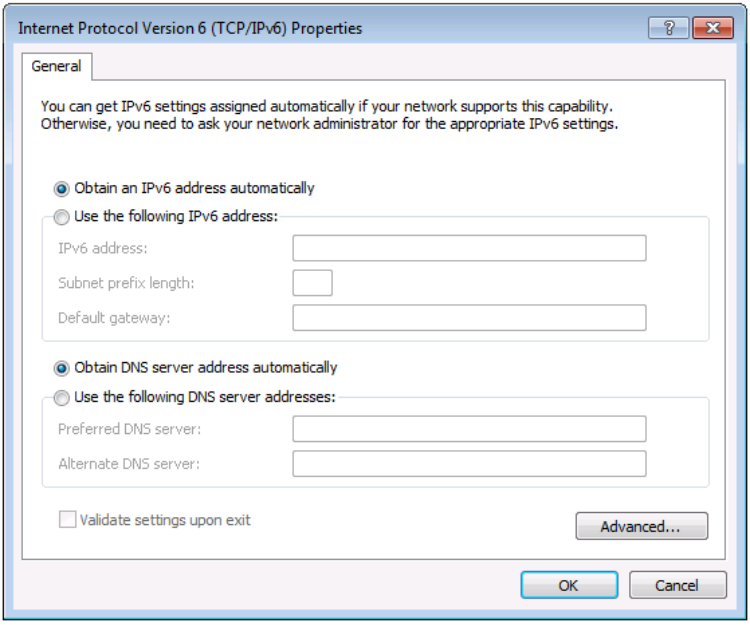


Figure 7: Internet Protocol Version 6 Properties Window

6. Select **Use the following IP Address** for static IP addressing and fill in the details as shown in Figure 8.
   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.

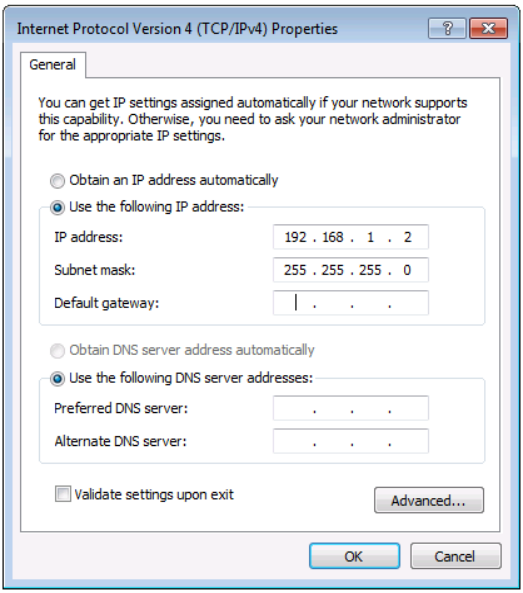


Figure 8: Internet Protocol Properties Window

7. Click **OK**.

8. Click **Close**.

5.3.2 Connecting the Ethernet Port via a Network Hub or Switch

You can connect the Ethernet port of the **VP-732** to the Ethernet port on a network hub or using a straight-through cable with RJ-45 connectors.

5.3.3 Control Configuration via the Ethernet Port

To control several units via Ethernet, connect the Master unit (Device 1) via the Ethernet port to the Ethernet port of your PC. Use your PC provide initial configuration of the settings (see Section 5.3).

5.4 Connecting the Balanced/Unbalanced Stereo Audio Output

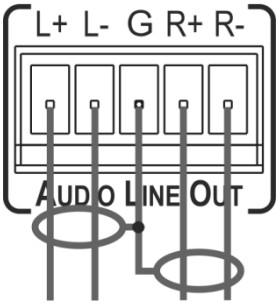


Figure 9: Connecting the Balanced Stereo Audio Output

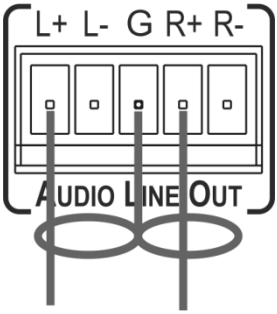


Figure 10: Connecting an Unbalanced Stereo Audio Acceptor to the Balanced Output

6 Presentation Switcher / Scaler Buttons

The **VP-732** includes the following front panel buttons:

- Ten PROGRAM INPUT selector buttons
- Ten PIP/PREVIEW INPUT selector buttons
- A PREVIEW MODE button to toggle between the PIP and PREVIEW modes
- PROGRAM and PREVIEW separate BLANK and FREEZE buttons
- Menu navigation buttons
- A RESET TO XGA/720p button
- A PANEL LOCK button

6.1 Switching the Inputs

This section defines the PROGRAM and PREVIEW buttons.

6.1.1 Program Buttons

You can switch an input to the program outputs by pressing the relevant PROGRAM INPUT front panel button. The PROGRAM BLANK and FREEZE buttons are dedicated to the PROGRAM outputs only.

6.1.2 PIP / Preview Buttons

To toggle the PIP / Preview operation mode, press the PREVIEW MODE button:

- When in the PREVIEW operation mode, the PREVIEW MODE button illuminates
- When in the PIP operation mode, the PREVIEW MODE button does not illuminate

The PIP / PREVIEW BLANK and FREEZE buttons are dedicated to the PREVIEW/PIP outputs only.

6.2 Preview/Program Operation Mode

The PREVIEW input buttons can be used to output scaled images (up to 720p) when the PREVIEW MODE button is illuminated. The selected PREVIEW input is routed to the PREVIEW output(s) in this case. When not illuminated, the selected PIP input appears as an insert over the program display when the PIP is ON (see Section 6.3).

The **VP-732** has several outputs: two PROGRAM outputs (HDMI 2 and DP) one PREVIEW output (PC) and HDMI 1 which can be assigned to be either PROGRAM or PREVIEW (see Section 7.3).

The HDMI signal is usually HDCP protected. We recommend using an HDCP compliant display, otherwise the HDMI output may not appear on the screen

6.3 The PIP Operation Mode

The Picture-in-Picture inserter (PIP) uses K-IIT XL™ image insertion technology to present any input image over any other main image. The main and PIP images appear simultaneously on all outputs (both PREVIEW and PROGRAM outputs).

The **VP-732** supports four PIP layouts:

- Picture-in-Picture, with a smaller window superimposed over a full screen image
- Picture + Picture, where both images are placed side-by-side with the same height
- Split, where both images appear side-by-side and the aspect ratios of both images are maintained
- A single window showing the Program image only

6.3.1 Activating the PIP Feature

Activate the PIP feature in any of the following ways:

- Press the PREVIEW MODE front panel button until it no longer illuminates and then select the PIP input by pressing a PIP/PREVIEW input button
- Press the PREV key on the IR remote control transmitter (see Section 6.5) and then select the PIP input by pressing a PIP/Preview Source input button – check
- Access the OSD PIP menu (see Figure 17) and select PIP On

6.3.2 Selecting the PIP Source

To easily select the PIP source, press a PREVIEW INPUT front panel button.
For example, to select DP 2 as the graphic PIP source over an HDMI background, make sure that the PREVIEW MODE button is not illuminated and press the DP 2 PIP/PREVIEW front panel button.

To select the PIP source using the IR remote controller, press the desired PIP source on the remote controller.
For example, if you want to select HDMI 2 as the PIP source, press the HDMI 2 button in the PIP/Preview Source area on the IR remote controller.

To set the PIP source via the OSD menu, do the following:

1. Press the MENU button to enter the OSD menu.
2. Press the ► button to move to the PIP icon (see Figure 17).
3. Select On/Off and set the PIP to ON.
4. Select Source and press ENTER.
5. Use the ▲ or ▼ buttons to select the PIP Source from the drop-down list box, and press ENTER.
6. To exit the OSD menu, press the MENU button.

Figure 11: PIP Source over Background

To replace a PIP source, press the required PIP Source on the remote control transmitter and the PIP display will change accordingly.

6.4 Locking and Unlocking the Front Panel

To prevent changing the settings accidentally or tampering with the unit via the front panel buttons or the remote control transmitter, lock your **VP-732**. Unlocking releases the protection mechanism. When the front panel is locked, control is still available via RS-232 and/or the Ethernet.

To lock the **VP-732**:

- Press and hold the PANEL LOCK button on the front panel.
  The front panel is locked and the PANEL LOCK button is illuminated.
  Pressing any button other than the PANEL LOCK button has no effect

To unlock the **VP-732**:

- Press and hold the illuminated PANEL LOCK button on the front panel
  The front panel unlocks and the PANEL LOCK button is no longer illuminated

The Save Lock and Input Lock OSD functions are defined in the table in Section 7.6.3.

6.5 The Infrared Remote Control Transmitter

You can control the **VP-732** remotely from the infrared remote control transmitter which is powered by two AAA size 1.5V DC batteries. The IR remote control transmitter has a range of up to 15 meters and delivers instantaneous results

This IR remote control transmitter is compatible with various Kramer machines, therefore not all its buttons are applicable to the **VP-732**. The table below defines only the buttons that are relevant to the **VP-732**; the functionality of the other buttons is marked N/A.

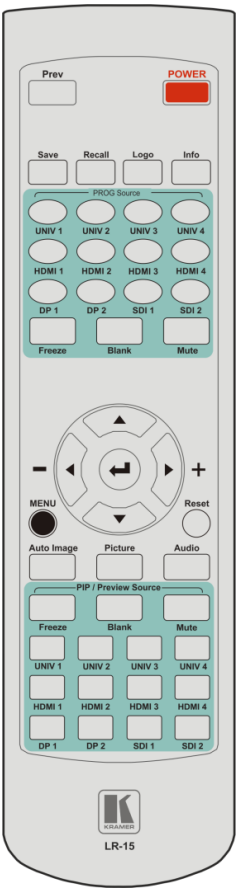


Figure 12: IR Remote Control Transmitter

Key	Function
Prev	Toggle between the Preview/PIP modes
POWER	Toggle the **VP-732** ON or OFF (standby)
Save	Press to save a profile
Recall	Press to recall a profile
Logo	Press to display the logo
Info	Press to toggle the Info OSD menu
PROG Source	10 keys for selecting one of the following PROG sources: HDMI 1, HDMI 2, HDMI 3, HDMI 4, UNIV 1, UNIV 2, UNIV 3, UNIV 4, DP 1 and DP 2; SDI 1and SDI 2 are N/A
PROG Freeze	Pauses the PROGRAM output video and can be programmed to mute the audio signal at the same time (see Section 7.6.3)
PROG Blank	Toggles between a PROGRAM blank screen (blue or black) and the display
PROG Mute	Press to mute the PROGRAM audio signal
MENU	Shows the main OSD Menu
Navigation arrows	Allows maneuvering within an OSD screen (left, right, up and down, as well as the ENTER arrow at the center)
Reset	Press and hold to reset to the default resolution (toggles between RESET TO XGA and 720p)
Auto Image	Press to assess the image and improve the quality accordingly, by automatically adjusting the phase, frequency and position
Picture	Press to display the Picture OSD menu
Audio	Press to display the Audio OSD menu
PIP/Preview Freeze	Pauses the Preview output video and can be programmed to mute the audio signal at the same time (see Section 7.6.3)
PIP/Preview Blank	Toggles between a Preview blank screen (blue or black) and the display
PIP/Preview source	10 keys for selecting one of the following PIP/Preview sources: HDMI 1, HDMI 2, HDMI 3, HDMI 4, UNIV 1, UNIV 2, UNIV 3, UNIV 4, DP 1 and DP 2; note that SDI 1and SDI 2 are N/A
PIP/Preview Mute	Press to mute the PREVIEW audio signal

7 Configuring the VP-732 via the OSD MENU Screens

The **VP-732** uses an on-screen display (OSD) menu for system configuration. The menu appears as an overlay over any images that are output from the **VP-732**.

There are seven sub-menus that are used to configure the **VP-732**. You can activate and navigate these menus from the front panel buttons, or from the IR remote control.

Figure 13: MENU Items

To access and use the OSD menus, push the button for the desired input signal, then press the MENU front panel OSD button or the MENU key on the infrared remote control transmitter to display the main MENU screen which shows the eight interactive icons.

- Press the ◀ or ▶ buttons to select the desired sub-menu, and then press ENTER
- Press the ▲ or ▼ buttons to select the menu item to be adjusted, and then press ENTER
- Press the ▲ or ▼ buttons to make the adjustment and then press ENTER, or
- Press the ◀ or ▶ buttons to increase or decrease the (numerical) value as needed

To return to the previous menu level, press the front panel MENU button or the MENU key on the remote control. All settings and adjustments are automatically saved in non-volatile memory for each of the inputs (except USB).

The values defined in the different menus may change according to the firmware version (you can download the up-to-date firmware version from our Web site at http://www.kramerav.com/downloads/VP-732).

7.1 The Input Screen

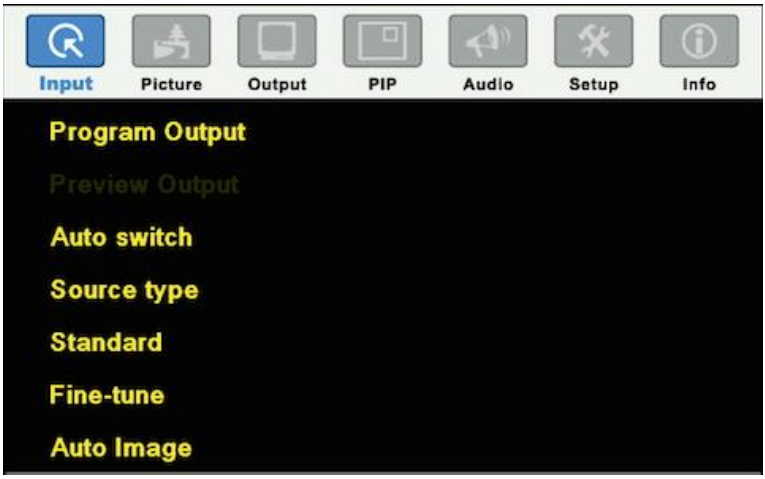


Figure 14: Input Screen

Setting	Function	Default
Program Output	Select the input to switch to the Program output: UNIV 1 to UNIV 4, HDMI 1 to HDMI 4, DP 1 or DP 2	UNIV 1
Preview Output	Select the input to switch to the Preview output: Follow Program, UNIV 1 to UNIV 4, HDMI 1 to HDMI 4, DP 1 or DP 2 Note that if the preview output resolution is set to Single Picture, this function will be grayed and set to Follow Program	Follow Program
Auto switching	Set auto switching to Off or On Set to On to have the system scan for a valid input in accordance with the Auto-switch priority setup (see Section 7.6)	Off
Source type	Set the source type for each universal input: VGA, Component, YC or Video	VGA
Standard	Select the color format to Auto/RGB/YUV (for HDMI and DP inputs) and the video standard to Auto/NTSC/PAL/PAL-M/PAL-N/NTSC 4.43/SECAM/PAL-60 (for YC and composite video inputs)	Auto
Fine-tune	Set the H-Position, V-Position, Frequency and Phase for VGA inputs only We recommend that you update the Hpos, Vpos, Frequency and Phase values (in the Fine-tune OSD menu) only after Auto Image is complete (if necessary).	
Auto Image	Assesses the image and improves the quality accordingly, by automatically adjusting the phase, frequency and position We recommend that you update the Hpos, Vpos, Frequency and Phase values (in the Fine-tune OSD menu) only after Auto Image is complete (if necessary). Enabled for VGA	

7.2 The Picture Screen

The Brightness, Contrast, Color and Hue picture settings are saved individually for each input (except USB).

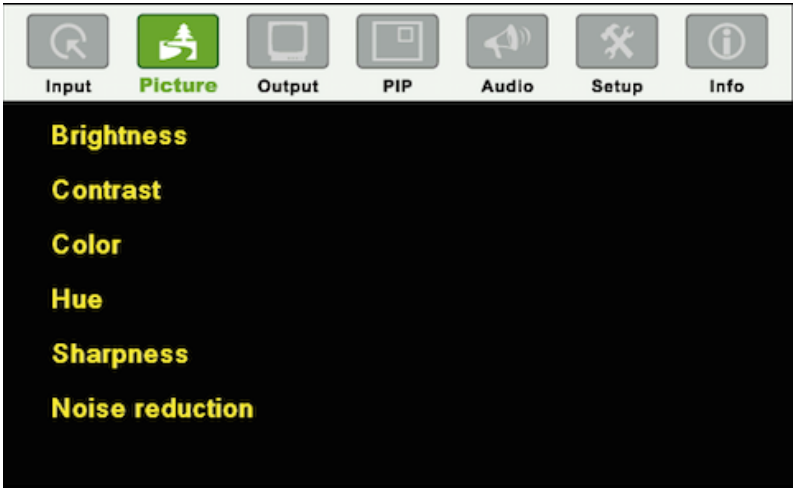


Figure 15: Picture Screen

Setting	Function	Default
Brightness	Adjust the brightness: 0 to 100	50
Contrast	Adjust the contrast: 0 to 100	47/50
Color	Adjust the color: 0 to 100	50
Hue	Adjust the hue: 0 to 360 (for CV and YC) or 0 to 240 for (HDMI, VGA, component)	180/0
Sharpness	Adjust the sharpness: 0 to 100	50
Noise reduction	Temporal NR – Set the temporal noise reduction level: Off, Low, Medium, High Enabled for analog inputs only	High
	Mosquito NR – Set the Mosquito noise reduction level: Off, Low, Medium, High Enabled for analog inputs only	Low
	Set the block noise reduction level: Off, On Enabled for analog inputs only	Off

7.3 The Output Screen

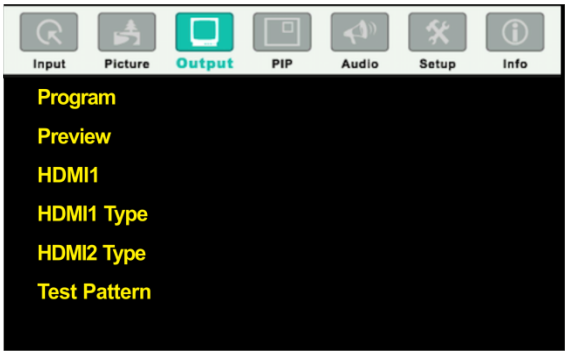


Figure 16: Output Screen

Setting	Function		Default
Program	Define the program settings:		
	Resolution	Native HDMI1, Native HDMI2, Native DP, Native VGA, 640x480x60Hz, 640x480x75Hz, 800x600x50Hz, 800x600x60Hz, 800x600x75Hz, 1024x768x50Hz, 1024x768x60Hz, 1024x768x75Hz, 1280x768x50Hz, 1280x768x60Hz, 1280x720x60Hz, 1280x800x60Hz, 1280x1024x50Hz, 1280x1024x60Hz, 1280x1024x75Hz, 1366x768x50Hz, 1366x768x60Hz, 1400x1050x50Hz, 1400x1050x60Hz, 1600x900x60Hz (R), 1600x1200x50Hz, 1600x1200x60Hz, 1680x1050x60Hz, 1920x1080x60Hz, 1920x1200x60Hz (R), 2048x1080x50Hz, 2048x1080x60Hz, 3840x2160@24Hz, 3840x2160@25Hz, 3840x2160@29.97Hz, 3840x2160@30Hz, 4096x2160@24Hz, 480px60Hz, 576px50Hz, 720px50Hz, 720px60Hz, 1080i/1080px50Hz, 1080i/1080px60Hz, 1080px50Hz, 1080px60Hz, 1080px24Hz, 480px59.94Hz, 720px59.94Hz, 1080i/1080px59.94Hz, 1080px23.98, 1080px29.97, 1080px59.94, Custom 1 to Custom 4	1024x768x 60Hz
	Aspect Ratio	Set the aspect ratio (also see Section 7.3.1): Best Fit Letterbox **Follow Output** – If input resolution ≤ output resolution it scales up picture and fills the display (with warp); if input resolution ≥ than output resolution, scales down the picture and fills the display (with warp) Virtual Wide **Follow Input** – If input resolution ≤ output resolution, displays with a blank border. If the input resolution ≥ output resolution, crops the image **Custom** – Click to enable custom aspect ratio **Custom Aspect Ratio** – Set H-Pan, V-Pan, H-Zoom and V-Zoom	Follow Output

Setting	Function		Default
	Zoom	Set zoom to 100% 150%, 200%, 225%, 250%, 275%, 300%, 325%, 350%, 375%, 400% or click custom to set the custom zoom and enable Zoom H-Pan and Zoom V-Pan	100%
	Positioning	Set H_Start, H_End, H_Position, H_Size, V_Start, V_End, V_Position, V_Size Note that positioning is disabled when custom or native resolutions are selected Available in the follow output mode and 100% zoom	
Preview	Define the preview settings:		
	Resolution	Single Picture, 640x480x60Hz, 640x480x75Hz, 800x600x50Hz, 800x600x60Hz, 800x600x75Hz, 1024x768x50Hz, 1024x768x60Hz, 1024x768x75Hz, 1280x768x50Hz, 1280x768x60Hz, 1280x720x60Hz, 1280x800x60Hz, 1280x1024x50Hz, 1280x1024x60Hz, 1280x1024x75Hz, 480px60Hz, 576px50Hz, 720px50Hz, 720px60Hz, 480px59.94Hz, 720px59.94Hz, Custom 1 to Custom 4 Setting the Preview resolution to Single Picture means that the PREVIEW mode is disabled. In the PIP mode the preview resolution will automatically be set to Single Picture and when changing it to a different resolution, a message will appear to confirm that PIP will be closed.	Single Picture
	Zoom	Set zoom to 100% 150%, 200%, 225%, 250% or select custom and use Zoom H-Pan and Zoom V-Pan to set a custom image size	100%
	Positioning	Set H_Start, H_End, H_Position, H_Size, V_Start, V_End, V_Position, V_Size Note that positioning is disabled when custom or single picture resolutions are selected Available in the follow output mode and 100% zoom	
HDMI1	Select the output for HDMI 1 to Follow Program or Follow Preview		Follow Program
HDMI1 Type	Set the HDMI1 output type to Auto, HDMI or DVI		Auto
HDMI2 Type	Set the HDMI 2 output type to Auto, HDMI or DVI		
Test Pattern	Set the test pattern to Colorbar, SMPTE, Greyscale, Picture Border, Multiburst, Ramps, H-pattern, Setup, or set to Off		Off

7.3.1 Selecting the Correct Aspect Ratio

You can configure the aspect ratio of any output image to fit your application. The **VP-732** offers six different aspect ratio settings: Best Fit, Letterbox, Follow Output, Virtual Wide, Follow Input, and Custom. Here is how each of these settings works.

BEST FIT – This setting re-sizes the video or graphics input signal to “best fit” the output resolution while maintaining the aspect ratio of the input signal. For example, a composite video signal (4:3 aspect ratio) will “best fit” to the top and bottom of a widescreen output image, resulting in black pillars on either side.

LETTERBOX – This setting compresses the top and bottom edges of the input signal, but fills the width of the screen. For example, to preserve a widescreen film image on a 4:3 display.

FOLLOW OUTPUT – The aspect ratio and resolution of the input signal is re-sized to precisely match the aspect ratio and resolution of the **VP-732** output signal. This may result in some distortion to the input signal images

VIRTUAL WIDE – The input signal is stretched horizontally to fit the width of a widescreen output image from the **VP-732**. This setting is used to expand anamorphic (horizontally compressed) video images from DVDs

FOLLOW INPUT – The aspect ratio and resolution of the input video or graphics signal are both preserved. For example, a composite video image with a 4:3 aspect ratio will appear with the same aspect ratio on a 1080p (16:9) output image, surrounded by black bars

CUSTOM – Use this menu to define a custom aspect ratio by adjusting the output image horizontal size (width) and vertical size (height)

7.4 The PIP Screen

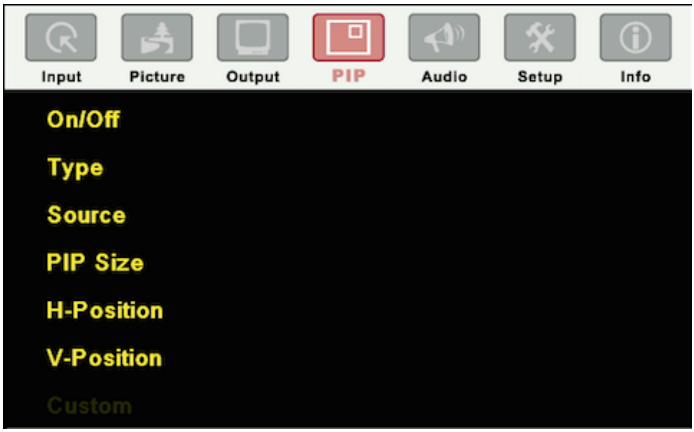


Figure 17: PIP Screen

Setting	Function	Default
On/Off	Activate/deactivate the PIP feature: On/Off	Off
Type	Select the PIP type: PIP (Picture-In-Picture), P+P (Picture + Picture) or Split (see Section 6.3)	Picture-In-Picture
Source	Select the PIP source: UNIV 1 to UNIV 4, HDMI 1 to HDMI 4, DP1 or DP 2 When changing the PIP source, the display fades through black	UNIV 1
PIP Size	Select the PIP size: 1/25, 1/16, 1/9, 1/4, or select Custom to enable the Custom item in the PIP OSD menu	1/4
H-Position	Set the horizontal position of the PIP on the display: 0 – 128	0
V-Position	Set the vertical position of the PIP on the display: 0 – 128	0
Custom	**H-Size** – Set custom size: 1 – 255 (up to 960 pixels) **V-Size** – Set custom size: 1 – 255 (up to 540 pixels)	

7.5 The Audio Screen

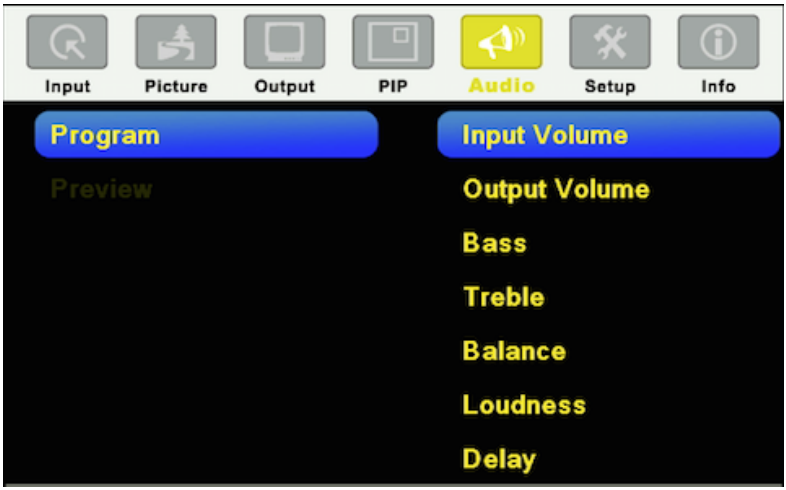


Figure 18: Audio Screen

Setting	Function	Default
Program/Preview		
Input Volume	Adjust the input volume: -22 to 22	0
Output Volume	Adjust the output volume: -100 to 24	0
Bass	Adjust the bass: -24 to 24	0
Treble	Adjust the treble: -24 to 24	0
Balance	Adjust the balance: -10 to 10	0
Loudness	Set loudness Off or On	Off
Delay	Select Dynamic (the audio delay equals the pipeline video delay), User Define or Off If User Define is selected, set the delay time: Program: 0 to 170ms Preview: 0 to 70ms	Dynamic
Input Source	Select the audio input: Analog 1 to Analog 10, S/PDIF or Embedded (for HDMI and DP inputs). For each video input you can assign an analog audio source, the digital audio source or embedded this input will be switched along with the video input. For example, if Analog 1 is assigned to UNIV 3, then whenever UNIV 3 is selected, Analog 1 will be selected too	Analog 1
Audio-Follow-Video	Set to Off or On. When on, the audio will follow the video, as set in the Input Source menu. When Off selecting a different video signal will not change the audio setting and it can be selected via the Input Source menu separately	On

7.6 The Setup Screen

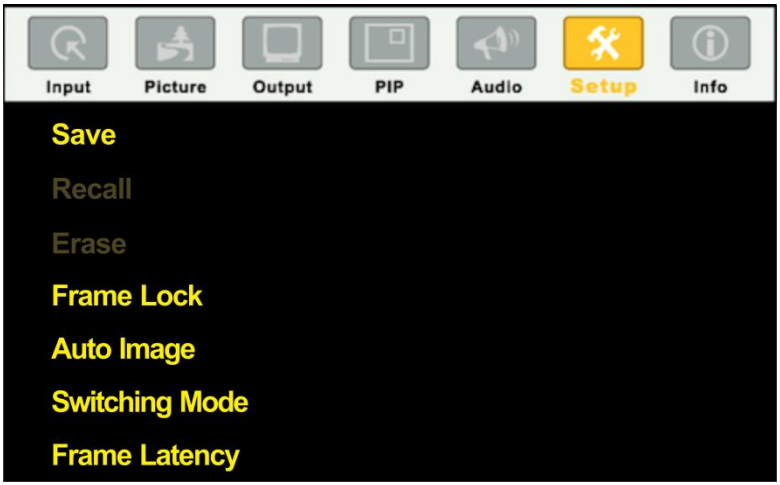


Figure 19: Setup Screen

Setting	Function	Default
Save	Save setup to Profile 1 to Profile 8 or via USB to a memory stick	
Recall	Recall setup from Profile 1 to Profile 8 or from a memory stick via USB port	
Erase	Erase a setup from Profile 1 to Profile 8	
Frame Lock	Set to On or Off. Frame Lock locks the vertical refresh rate of the output to that of the input. Frame Lock only locks 50Hz or 60Hz / 59.94Hz In cases where the output resolution can support the vertical refresh rate of the input, the output refresh rate will change according to the input refresh rate Note that: • Seamless switching is not possible when working in the Frame Lock mode unless all sources are frame synchronized • If **VP-732** can lock the input then the output will follow • If **VP-732** cannot lock the input, then the output will not change. The info menu will display one of the following: Sync Mode: Free Run (Frame Lock Off) or Sync Mode: Frame Lock (Frame Lock On) • When resetting the resolution to XGA or 720p, Frame Lock will be turned off automatically and if required you will need to turn Frame Lock on	Off

Setting	Function	Default
	When changing the output resolution (not including Native HDMI and Custom 1 to 4), if the new output resolution can be locked, **VP-732** locks it. If not, it will be unlocked When changing the output resolution to Native, HDMI or Custom1 to 4, Frame Lock turns off and is disabled (grayed out)	
Auto Image	Set to Manual or Auto Set to **Manual** to adjust and align the picture. Set to **Auto** to automatically adjust and align the picture each time one of the UXGA inputs is selected or if the UXGA input resolution has changed	Manual
Switching Mode	Selects Seamless switching (fade-through-Black) or Fast switching which is faster but may cause glitches on the output	Seamless
Frame Latency	Select: **Best Quality** – Does not consider the latency; all the options (and filters) are allowed in order to achieve the highest quality picture. **Fast** – disables most of the filters, but allows some of the more important processing, such as frame rate conversion and cropping	Best Quality
Auto-switch priority	Auto-Switch Priority lets you set the order of inputs to be scanned when searching for a new active source, 5 seconds after losing the input signal. Set the scanning order of the following inputs from Priority 1 to Priority 10: UNIV 1, UNIV 2, UNIV 3, UNIV 4, HDMI 1, HDMI 2, HDMI 3, HDMI 4, DP1 and DP2. Set the priority list from First priority to the 10th priority. For example, select First Priority and then select the input that will be first in priority from the list of inputs. Set the second input you want scanned into the Second Priority, and so on. By default, the priority order is as follows: HDMI 1 (First Priority 1) HDMI 2 (Second Priority 2), HDMI 3 (Third Priority 3), HDMI 4 (4th Priority), DP 1 (5th Priority 5) DP 2 (6th Priority), UNIV 1 (7th Priority), UNIV 2 (8th Priority), UNIV 3 (9th Priority), UNIV 4 (10th Priority).	
Hot Plug Handshaking	Set Hot Plug On or Off for the following inputs: HDMI1, HDMI 2, HDMI 3, HDMI 4, DP 1 and DP 2 **On** – Sends a hot plug handshake to the source when switching to an HDMI or DP input. **Off** – No hot plug handshake is sent when switching to an input	Off
Input HDCP	Set to On or Off for each of the HDMI inputs as well as DP1 and DP2 HDCP support can be enabled (On) or disabled (Off) for each of the HDMI/DP inputs, allowing the source to transmit a non-HDCP signal if required (for example, when working with a Mac computer)	On
Ethernet Setting	Set the following Ethernet settings: DHCP (DHCP will automatically assign an IP address) On or Off, IP Address, Subnet Mask and Gateway	
Factory Reset	Select Yes to reset your **VP-732** to its preset default settings	
Advanced Setup	Opens the advanced setup menu screen, which includes the: Mode Set (Section 7.6.1), OSD (Section 7.6.2), Misc (Section 7.6.3), Input (Section 7.6.4)and Output (Section 7.6.5), Input EDID Setup (Section 7.6.6) and the Max Volume Limit (Section 7.6.7)	

7.6.1 The Mode Set Screen

The Mode Set functions define the desired working resolution and refresh rate when the system cannot distinguish between similar resolutions (for example, resolutions that have the same number of lines can be defined to identify refresh rate values).

Setting	Function	Selection/Range	Default
Mode 1	Set mode 1	1400x1050x60Hz 1680x1050x60Hz	1680x1050x60Hz
Mode 2	Set mode 2	1280x1024x75Hz 1280x1024x76Hz	1280x1024x75Hz
Mode 3	Set mode 3	1280x768x60Hz 1366x768x60Hz	1280x768x60Hz
Mode 4	Set mode 4	1024x768x75Hz 1024x768x75Hz-Mac	1024x768x75Hz
Mode 5	Set mode 5	1280x960x60Hz 1600x900x60Hz(R)	1280x960x60Hz

For example, if two resolutions have the same number of lines (for example, 1050), we can define them so that the unit identifies the resolution as 1400x1050 or as 1680x1050.

7.6.2 The OSD Screen Functions

Setting	Function	Selection/Range	Default
OSD Position	Select the location of the OSD	Program or Preview	Preview
Menu Position	Set the location of the OSD menu	Center, Top Left, Top Right, Bottom Left, Bottom Right	Center
Time Out (sec)	Set the OSD menu timeout	5, 10, 20, 30, 60, 90 or Off	30

7.6.3 The Misc Screen Functions

Setting	Function	Default
Logo	Select On, Off or Custom Choose ON for the start-up logo to appear on the screen Choose OFF for it not to appear Custom – to select a custom logo (a BMP file with a resolution of up to 640x400) downloaded via the item below	Kramer Logo
Logo Download	Shows NA unless a memory stick is connected to the USB port. To download a logo: 1. Load the BMP image (or images) to the root folder of the USB (note that the file should not exceed a resolution of 640x400) 2. Connect the Memory stick to the USB connector on the front panel. 3. Click Logo Download item. The BMP image appears 4. Select the BMP file and press the Enter button When Custom is selected in the Logo item menu this logo will appear after powering up the device	

Setting	Function	Default
Blank Color	Select Black or Blue Set the blank color (the color that appears on the screen when the blank button is pressed)	Blue
Background	Select a Blue or Black background if no signal is detected or a file cannot be displayed	Black
Low Power Saving	Select **Off**, **Sleep** or **Powerdown**; will be activated after an input signal is not detected for 5 minutes When set to **Sleep**, press any key to reactivate the machine. When set to **Powerdown**, press any key to reboot the machine	On
Lock Save	Select On or Off Set to **On** to save the lock status when the machine is powered down	
Lock Mode	Select **MENU ONLY** (locks only the menu) so you can still use the INPUT buttons on the front panel even when the lock button is on. select **ALL** to also lock the INPUT buttons	
Blank	Select Blank & Mute, Blank or Mute to determine the behavior of the BLANK front panel button Set to **Blank & Mute** to blank the output image and mute the audio Set to **Blank** to blank the output Set to **Mute** to mute the audio	Blank & Mute
Freeze	Select Freeze & Mute, Freeze or Mute to determine the behavior of the FREEZE front panel button Set to **Freeze & Mute** to Freeze the output image and mute the audio Set to **Freeze** to freeze the output Set to **Mute** to mute the audio	Freeze & Mute
HDCP Setting	Select Follow Input or Follow Output to define whether the HDCP will follow the input or the output When **Follow Input** is selected, the scaler changes its HDCP output setting (for the HDMI output) according to the HDCP of the input. This option is recommended when the HDMI scaler output is connected to a splitter/switcher (in this mode, switching may not be glitch-free) When **Follow Output** is selected, the scaler matches its HDCP output to the HDCP setting of the HDMI acceptor to which it is connected. This ensures smooth switching, regardless of the input	Follow Output
Over Scan	Select **On** or **Off** Set to On to Allow stretching of the outputted picture This feature is enabled only for CV, Y/C and component video inputs	Off
Overlay	Select **Off**, **Text** or **Logo** When selecting Text you need to download TextOvl.ini to a USB memory stick and then connect it to the **VP-732** When selecting Logo you need to download the Txtlogo.BMP file to the USB and connect it to the **VP-732** (See Section 7.6.3.1)	Off
Firmware Download Path	For factory use	Default

7.6.3.1 Using Text Overlay

The text overlay feature is accessed via the Application Program (AP).

Running this AP with the PC connected to the **VP-732** lets you display text over the screen, with features including text color and speed, transparency, text position and repetition. Current text overlay settings can be saved and loaded to the AP.

Note that currently you can connect to the machine via RS-232 only.

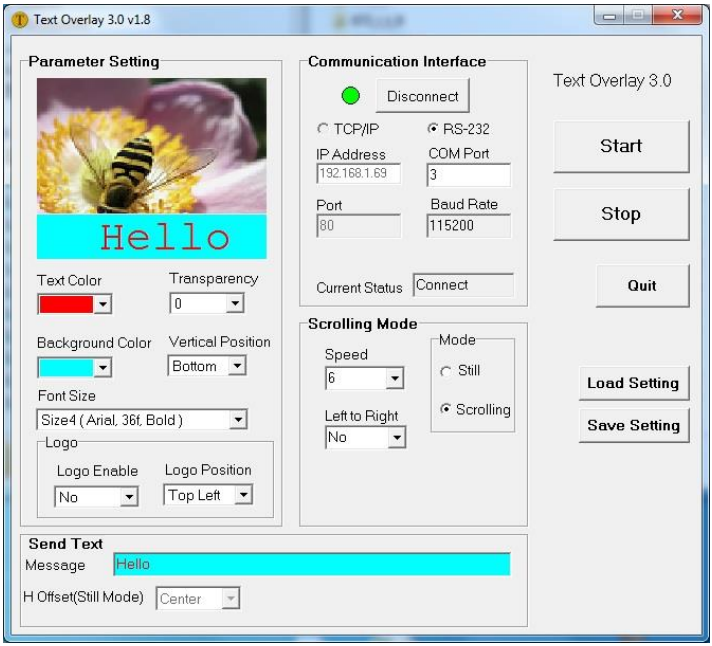


Figure 20: Text Overlay Application Screen

Feature		Function
Parameter Setting Area		
Text Color Dropdown Box		Select the Text color
Transparency Dropdown Box		Select the transparency level (0 to 7)
Background Color Dropdown Box		Set the text background color
Vertical Position		Set the vertical position of the text background on the display screen (Top, Center or Bottom)
Font Size		Select the text overlay font size
Logo	Logo Enable	Enable the logo to appear on screen
	Logo Position	Set the position of the logo

Feature	Function
Communication Interface Area	
Connect/Disconnect	Connect the machine or disconnect
TCP/IP Check box	Not available
RS-232 Check box	When selected, set the *COM port* and *Baud Rate* (9600) to connect via the RS-232 connector
IP Address	When selected Set the IP address of the device and the port
Current Status	Indicates whether there is a valid connection to the **VP-732**
Scrolling Mode Area	
Speed Dropdown Box	Set the speed at which the text moves on the display
Mode	Set to Still (fixed text) or Scrolling (text moves across the display)
Left to Right	Set direction of the scrolling text
Send Text Area	
Message	Type the desired text in the *Message* box
H-Offset (Still Mode)Dropdown Box	After selecting the Still mode, use the *H-Offset* box to select the horizontal position of the text (Left Center or Right)
Operation Buttons	
Start Button	Click to display the text on screen
Stop Button	Click to stop scrolling on screen
Quit Button	Click to quit the program
Load Setting Button	Click to load a previously saved setting
Save Setting Button	Click to save the current setting

7.6.4 The Input Functions Screen

The following table defines the input settings:

Setting	Function	Default
Custom	Custom Input from Custom 1 to custom 4	Custom 1
HT	Horizontal Total	
HW	Horizontal sync pulse width	
HS	Horizontal active start point	
HA	Horizontal active region	
HP	Horizontal polarity	
VT	Vertical Total	
VW	Vertical sync pulse width	
VS	Vertical active start point	
VA	Vertical active region	
VP	Vertical polarity	
OCLK	Output clock	
Enable	Set to On to enable parameter change	Off
Save	Apply settings	N/A

7.6.5 The Output Functions Screen

The following table defines the output settings:

Setting	Function	Default
Custom Output	Custom 1 to Custom 4	
HT	Horizontal total	1344
HW	Horizontal sync pulse width	136
HS	Horizontal active start point	296
HA	Horizontal active region	1024
HP	Horizontal polarity	
VT	Vertical total	806
VW	Vertical sync pulse width	6
VS	Vertical active start point	35
VA	Vertical active region	768
VP	Vertical polarity	
OCLK	Output clock	65
Save	Save setup	
Get Current	Import the values of the currently selected output resolution into the User Mode Setting	
Read HDMI1 EDID	Reads the EDID file from the acceptor that is connected to the HDMI 1 output. The EDID is stored as a custom output resolution. This allows, for example, automatic handling of LED screens that support very low non-standard resolutions	N/A
Read HDMI2 EDID	Reads the EDID file from the acceptor that is connected to the HDMI 2 output. The EDID is stored as a custom output resolution. This allows, for example, automatic handling of LED screens that support very low non-standard resolutions	N/A
Read DP EDID	Reads the EDID file from the acceptor that is connected to the DP output. The EDID is stored as a custom output resolution. This allows, for example, automatic handling of LED screens that support very low non-standard resolutions	N/A
Read VGA EDID	Reads the EDID file from the acceptor that is connected to the VGA output. The EDID is stored as a custom output resolution. This allows, for example, automatic handling of LED screens that support very low non-standard resolutions	N/A

Figure 21 illustrates horizontal and vertical sync pulse width, timing and active video area for a typical frame of video.

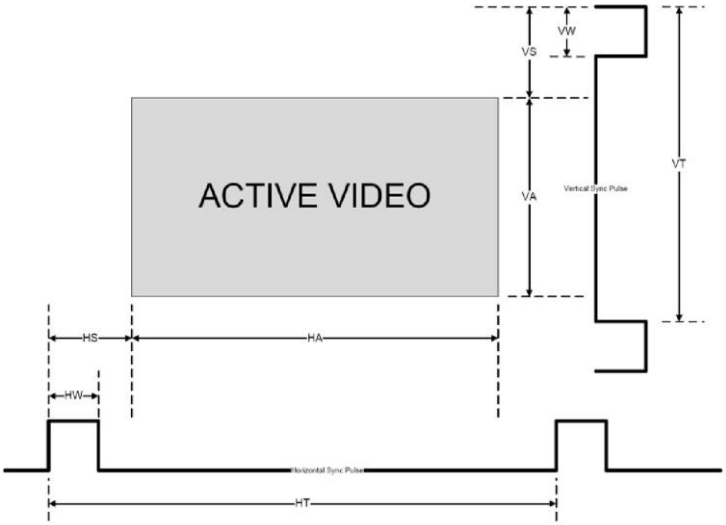


Figure 21: Active Video Functions

7.6.6 The Input EDID Setup Screen

The following table defines the input EDID settings:

Setting	Function	Default
For HDMI 1, HDMI 2, HDMI 3, HDMI 4, DP 1, DP 2		
Default	Set to the factory default configuration	Default
Copy HDMI 1 Out	Copy the EDID from the HDMI 1 output to the input	
Copy HDMI 2 Out	Copy the EDID from the HDMI 2 output to the input	
Copy DP Out	Copy the EDID from the DP output to the input	
User Define	Select a previously stored EDID (see Read HDMI EDID in Section 7.6.5 above)	
Select Modeline	This feature is available only if Default is selected. Otherwise it is disabled. Select the native resolution: Default 1024x768@60, 1280x800@60, 1280x1024@60, 1366x768@60, 1440x900@60, 1400x1050@60, 1600x900@60 (R), 1600x1200@60, 1680x1050@60, 1920x1080@60, 1920x1200@60Hz (R), 720p50, 720p60, 1080p50, 1080p60, 2048x1080@50Hz, 2048x1080@60Hz, 3840x2160x30Hz	Default
For UNIV 1, UNIV 2, UNIV 3, UNIV 4		
Default	Set the default EDIDs on the inputs	Default
Copy VGA Out	Copy the EDID from the sink on the PC output to the input	

Setting	Function	Default
User Define	Setup a user defined EDID Select a previously stored EDID (see Read VGA EDID in Section 7.6.5 above)	
Select Modeline	Select the native resolution: Default (1920x1080@60), 1024x768@60, 1280x800@60, 1280x1024@60, 1366x768@60, 1440x900@60, 1400x1050@60, 1600x900@60 (R), 1600x1200@60, 1680x1050@60, 1920x1080@60, 1920x1200@60Hz (R)	Default

7.6.7 The Maximum Volume Limit Screen

Set the maximum program output volume and the maximum preview output volume from -100 to 24 (default = 24). Doing this allows you to limit the maximum volume level that the user can set.

7.7 The Info Screen

From the Information screen (see Figure 22), you can verify the Program Source, Preview Source, PIP Source, Program Output, Preview Output, HDMI Output, Sync Mode, MCU Version, OSD Version, FPGA Version, Slave Version CPLD IO Version, CPLD KPD Version, Dynamic IP/Static IP.

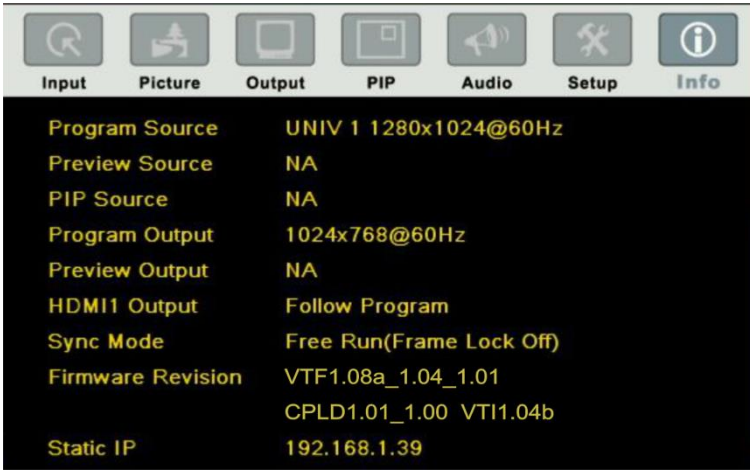


Figure 22: Information Screen

8 Firmware Upgrade

The latest firmware version as well as the VP-Download Tool, can be downloaded from the Kramer Web site at http://www.kramerelectronics.com/support/downloads.asp

You can upgrade the **VP-732** via the VP Download tool, which can be downloaded from our Web site. After downloading this upgrade tool:

1. Connect the **VP-732** to your PC via the Ethernet.

2. Open VP Download Tool. The Download screen appears:

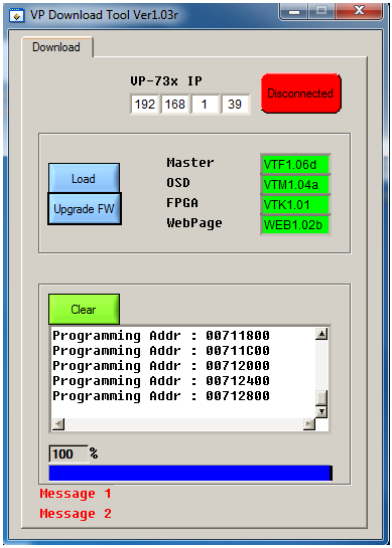


Figure 23: Firmware Upgrade – the VP Download Tool

3. Type in the IP number of the machine.

4. Click the Disconnected button.

5. Click the Load button and select the latest firmware file.

6. Click the Upgrade FW button and wait for the completion of the procedure.

7. Turn off the power on the **VP-732** and then turn it on again.

9 Using the Embedded Web Pages

The Web pages let you control the **VP-732** via the Ethernet. The Web pages include all the OSD items and more, and are accessed using a Web browser and an Ethernet connection.

Note that the Web page features are described in more detail in the OSD Menu, Section 7.

Before attempting to connect:

- Perform the procedures in Section 5.3.
- Ensure that your browser is supported

The following operating systems and Web browsers are supported:

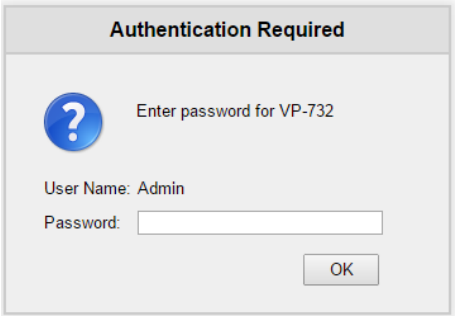
Operating Systems	Applicable Browser Versions and Higher
Windows 7	Chrome: 25 Internet Explorer: 9 Firefox 19 Opera: 11
Mac (PC)	Chrome: 25 Firefox: 19 Opera: 11
iOS	Chrome: 25 Safari (depends on the IOS version) Opera: 11
Android OS	Chrome: 25 Opera: 11

9.1 Browsing the VP-732 Web Pages

To browse the **VP-732** 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 Authentication window appears:



3. Enter the password and click OK.
   The Routing & Scaling (first) page loads.

There are 11 Web pages:

- The Routing & Scaling (Program and Preview) page (see Section 9.2)
- The Device settings page (See Section 9.3)
- The Input Settings page (see Section 9.4)
- The Output settings page (see Section 9.5)
- The Audio Settings page (see Section 9.6)
- The Miscellaneous Video Settings page (see Section 9.7)
- The EDID management page (see Section 9.8)
- The Advanced Settings page (see Section 9.9)
- The Custom Resolutions page (see Section 9.10)
- The Security page (see Section 9.11)
- The About page (see Section 9.12)

9.2 The Routing & Scaling Page

The Routing & Scaling page includes Program and Preview tabs.

The main area shows the size of the image and its location. The list of available inputs appears on the right side of the main area. The selected input appears green when its image is selected. For example, in Figure 25 the HDMI 2 1 input is selected and appears green on the list. On the far right side in the Program tab you can use the slider to set the output volume (see Section 9.2.9).

9.2.1 The Program Routing and Scaling Page

Figure 24 shows the Program Routing & Scaling page that is also the first page that appears following the loading page. The column on the left shows the Program Routing & Scaling page selected and below a list of all the other available Web pages.

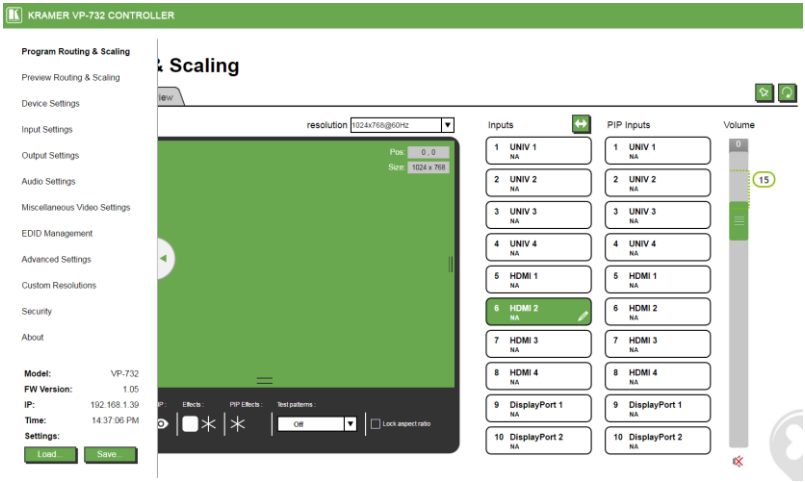


Figure 24: The Routing & Scaling Page with Web page list on the left

Note that the Web pages list on the left automatically hides itself when the page is accessed:

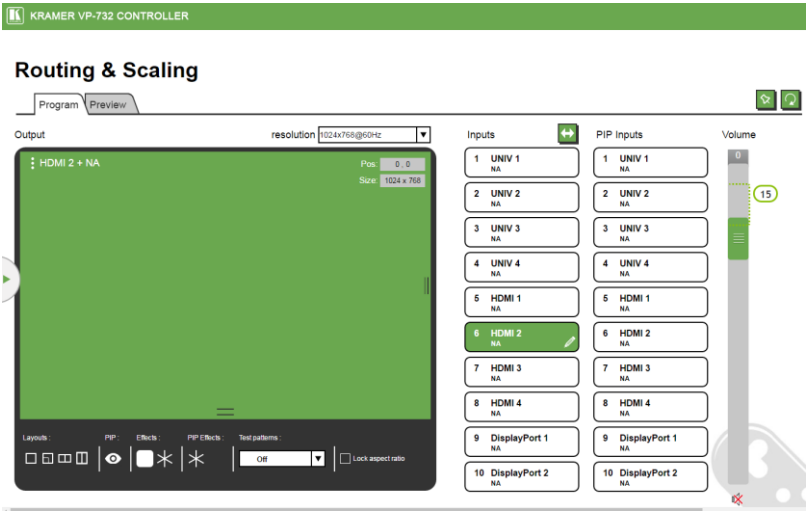


Figure 25: The Routing & Scaling Page – Program Window

The program tab shows the program display. The selected input (from the Inputs list on the right side) appears on the top left and the image size and position coordinates appear on the top right. You can change the size and position of the image on the display by pressing and holding the image adjusters on the lower and right sides of the image (If the Lock aspect ratio check box is clear).

Set the output volume using the volume slider. You can set the maximum value of the Output Volume by using the pre-limiter on the Volume slider. Slide the pre-limiter up or down to determine the maximum allowed volume. The example in Figure 25 value below shows the maximum allowed value 15 selected which lets you set the volume up to 15 only.

Click the PIP icon ( ) to exit the Preview mode and enter the PIP mode (see Section 9.2.3). Select an input from the PIP Inputs list. When in the PIP mode, the Program tab shows the various PIP options or a single window with no PIP displaying (see Figure 26).

Figure 26: The Routing & Scaling Page – Main and PIP Windows

Note that when in the PIP mode the preview output resolution will always be Single Picture.

9.2.2 The Preview Routing and Scaling Page

The Preview Router & Scaling page lets you set the PREVIEW display. It is enabled when the device is in the Preview mode (PREVIEW front panel button is illuminated). In the Preview mode you can select the preview input, set the size and position of the Preview image and so on.

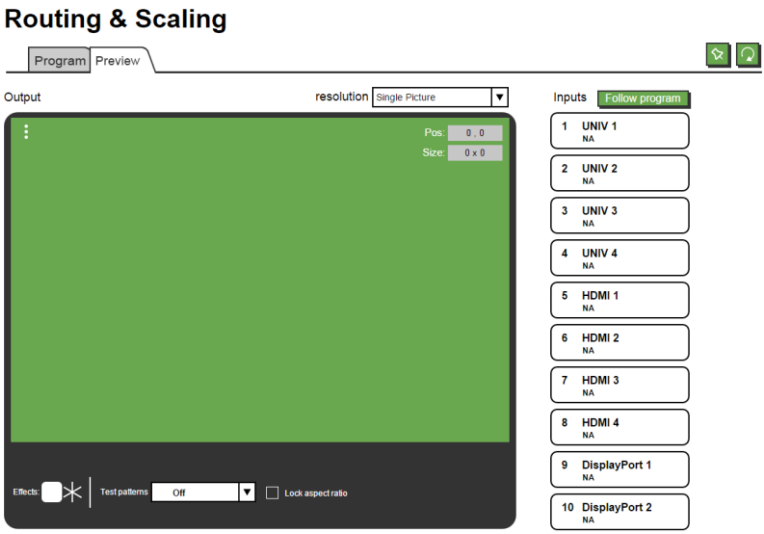


Figure 27: The Preview Routing & Scaling Page – Disabled in PIP Mode

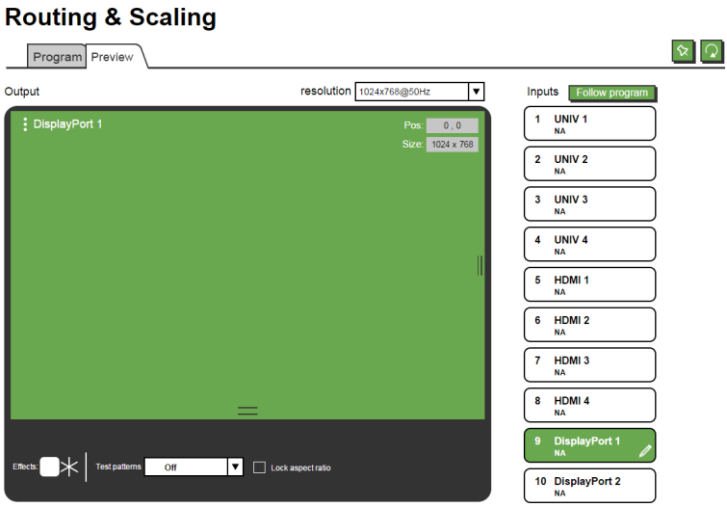


Figure 28: The Preview Routing & Scaling Page – Preview Mode

Click the Follow program button to have the preview follow the program input.

9.2.3 Switching between PIP and Preview modes

To switch from the Preview to the PIP mode via the Web pages:

1. In the Program Routing & Scaling page, click the PIP button and select the desired layout (split, picture + picture, picture in picture or single window).

2. The machine is now in the PIP mode and the PREVIEW front panel button no longer illuminates.

To switch from the PIP mode back to the Preview mode:

1. In the Preview Routing & Scaling page, set the preview resolution (in the PIP mode the Preview resolution was the same as the Main/Program resolution). After selected resolution is loaded, the PREVIEW front panel button illuminates.

   The preview and program outputs can now show separate images.

9.2.4 Setting the Image Size

You can set the size of the Program/Preview window by moving the right and bottom edges of the image while pressing the mouse button. You can also move the image by pressing the mouse button and moving the image about. The image size and position are indicated at the image top right and for each window, the top left side area shows the selected input.

When checking Lock aspect ratio, the image aspect ratio is kept when setting to different sizes.

The Routing & Scaling main area shows a depiction of the display which can show a single window (shown in Figure 25) or some variation of a MAIN window and a PIP window (one image over another), as illustrated in Figure 30.

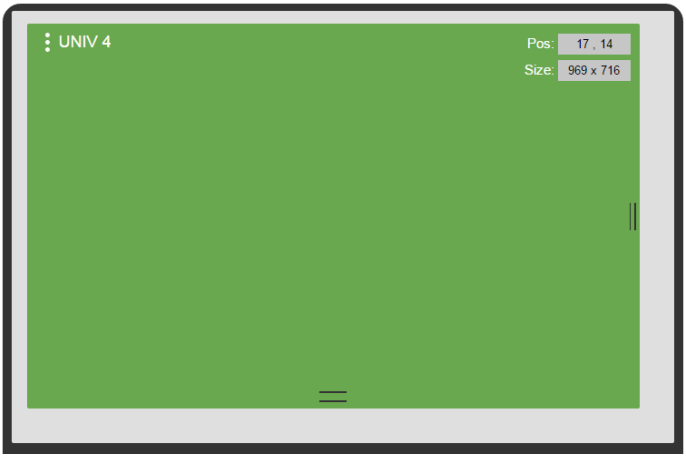


Figure 29: The Routing & Scaling Page – Single Program/Preview Window

When in the PIP mode, the PIP image can be moved in any direction by clicking and moving the mouse and sized by moving the right and bottom edges of the image.

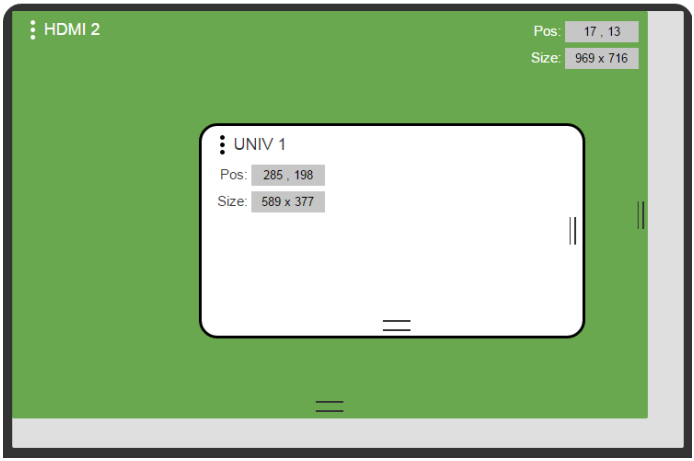


Figure 30: The Routing & Scaling Page – Moving the PIP Window

9.2.5 Setting the Output Resolution

The output resolution can be selected from the Resolution drop-down box:

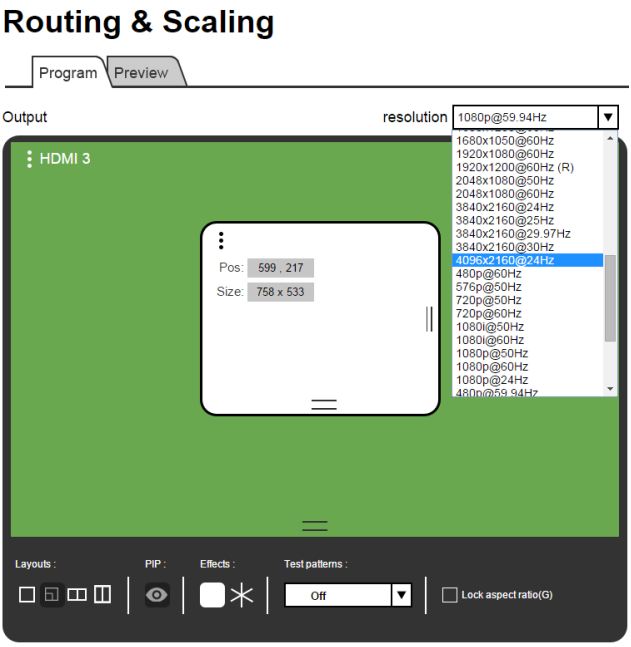


Figure 31: The Routing & Scaling Page – Selecting the output Resolution

The Preview tab shows the list of resolutions available for the Preview output (including Single Picture to set the PIP mode, see Section 7.3).

9.2.6 Swapping Inputs in the PIP Mode

Press the Swap **Inputs** button to swap between MAIN and PIP inputs (in the PIP mode). For example, if the MAIN window displays HDMI 2 and the PIP window displays UNIV 1, these inputs swap places when clicking the SWAP button, so the MAIN window will now show UNIV 1 and the PIP window will show HDMI 2 (see Figure 32.

Figure 32: The Routing & Scaling Page –Swapping Inputs

9.2.7 The Lower Buttons Bar

The lower buttons bar lets you perform quick and easy setups:

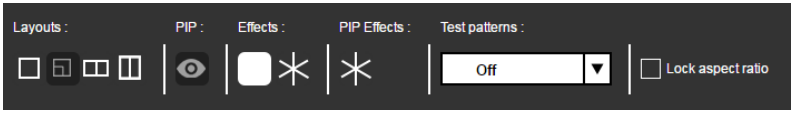


Figure 33: The Routing & Scaling Page – Program Lower Buttons Bar

The Preview buttons bar includes effects and test patterns only:

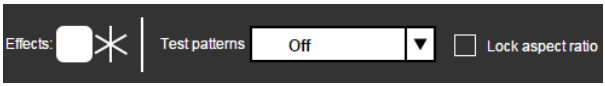
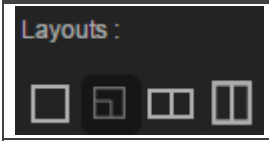
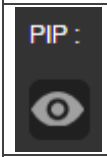
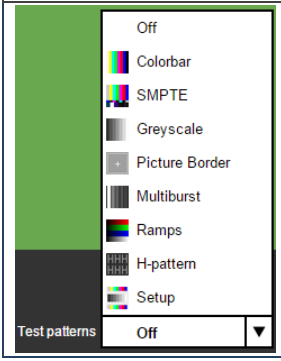


Figure 34: The Routing & Scaling Page – Preview Lower Buttons Bar

Button	Function
	Select one of the four standard setups. You can customize the size of each window by using the arrows.
	Click to toggle between PIP and single window
	Select freeze and/or blank effects
	Select a test pattern

9.2.8 Store and Recall a Setup

You can store or recall a setup via the store and recall buttons:

Store button Recall button

To save a preset:.

Click the preset button. the save preset window appears:

Click a preset button (1 to 8), for example, click 1.

Click the Recall button to recall a preset. Only the buttons with stored presets appear.
Click the button to recall the settings.

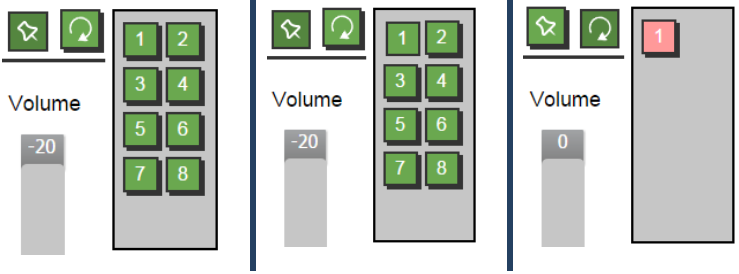


Figure 35: The Routing & Scaling Page – Storing and Recalling a Preset

9.2.9 Audio Level Slider

The volume audio slider appears on the right side of the page and can be toggled to mute and unmute, if required.

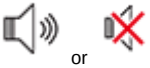


Figure 36: The Routing & Scaling Page – Muting the Audio Level

9.2.10 Editing an Input

Click the pen icon on the input label to edit the input. The Web page moves to the Input Settings page (see Section 9.4).

Figure 37: The Routing & Scaling Page – Editing an Input

9.3 The Device Settings Page

The Device Settings window (in Figure 38) lets you set the device name, change the Ethernet parameters, perform factory reset and view the information data.

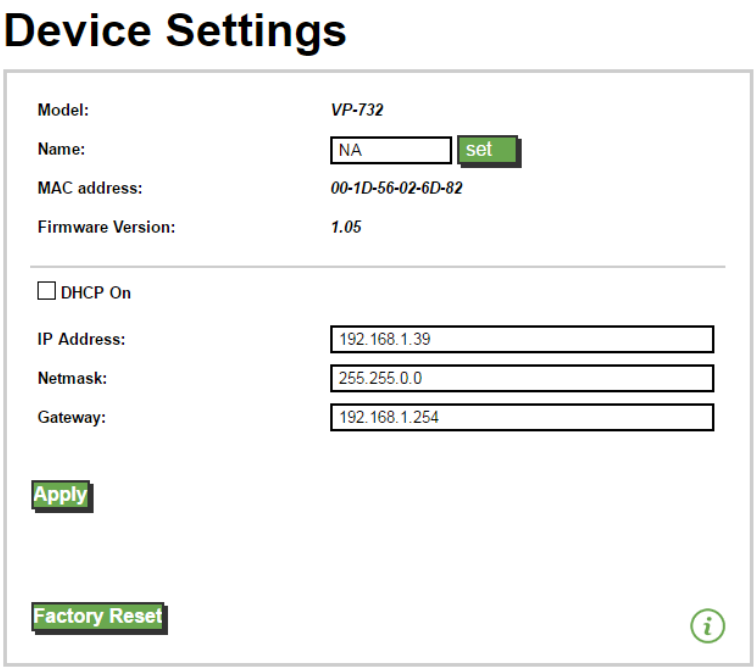


Figure 38: The Device Settings Page

9.3.1 Changing the Ethernet Settings

You can change the Ethernet parameters (DHCP box needs to be checked) by typing the change and clicking the Apply button. Note that:

- After changing the IP number, you need to reload the Web page with the new IP number

9.3.2 The Information Window

To access the information window, click the ⓘ icon on the lower right side of the page. Click it once more to close the INFO window.

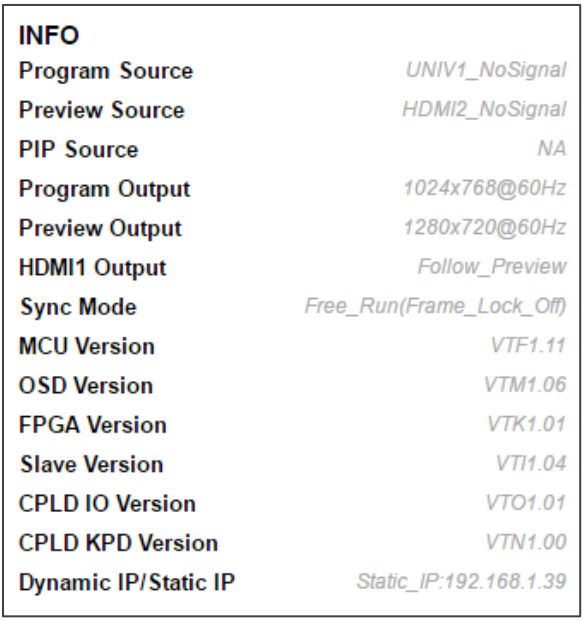


Figure 39: The Device Settings Page – the Information Window

9.3.3 Factory Reset

Click the Factory reset button to reset the device. The following window appears:

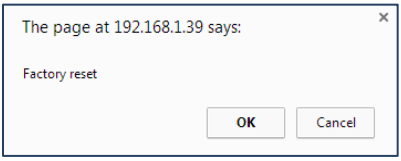


Figure 40: The Device Settings Page – Factory Reset

Click OK to start factory reset.

9.4 The Input Settings Page

The Input Settings page lets you setup the Program and PIP/Preview inputs and can also be accessed via the edit icon in the Scaling & Routing page, see Section 9.2.10.

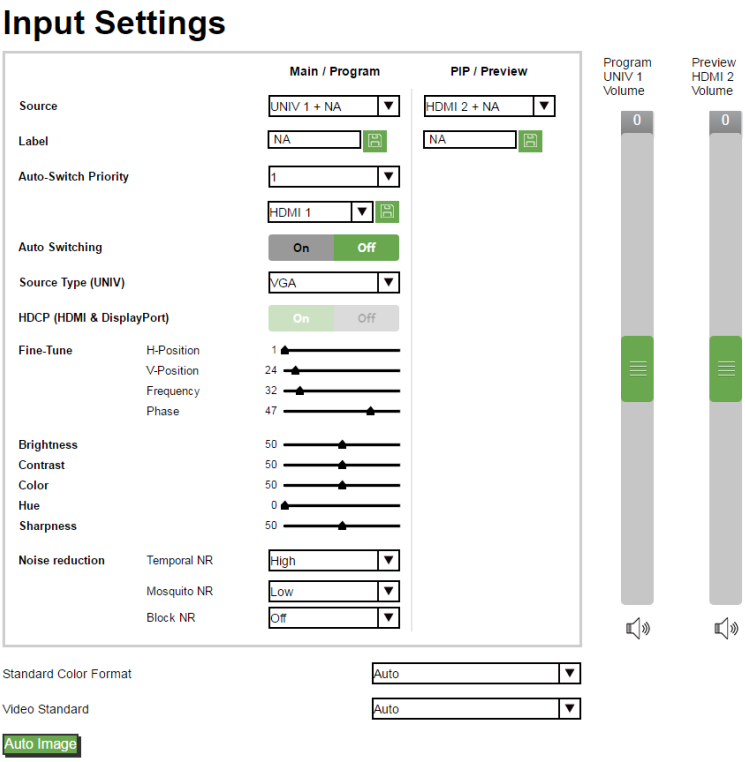


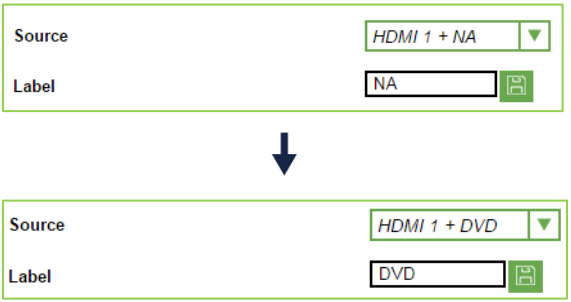
Figure 41: The Input Settings Page

The following table defines the Input Settings page items:

Button	Function
Source	Select the input source (appears with the label), see Section 7.1
Label	Label the input
Auto Switch Priority	Set the auto switching priority for each input
Auto Switching	Set auto switching to On or Off
Source type (UNIV)	Set the type of the analog source (VGA/Component/YC/Video), disabled if the selected input is not UNIV, see Section 7.1
HDCP (HDMI & DisplayPort)	Set to ON or OFF

Button	Function
Fine-Tune	Adjust the image parameters Horizontal and Vertical Position, Frequency and Phase, for VGA images, see Section 7.2
Brightness	See Section 7.2
Contrast	
Color	
Hue	
Sharpness	
Noise Reduction	
Standard Color Format	Select the color format to Auto/RGB/YUV (for HDMI and DP inputs), see Section 7.1
Video Standard	Select the video standard to Auto/NTSC/PAL/PAL-M/PAL-N/NTSC 4.43/SECAM/PAL-60 (for YC and video inputs), see Section 7.1
Auto Image	See Section 7.6
Program Volume	Set the selected input program volume
Preview Volume	Set the selected input preview volume

You can set the source label by typing the label name and saving it:



9.5 The Output Settings Page

Figure 42 shows the Program and Preview Output Settings page.

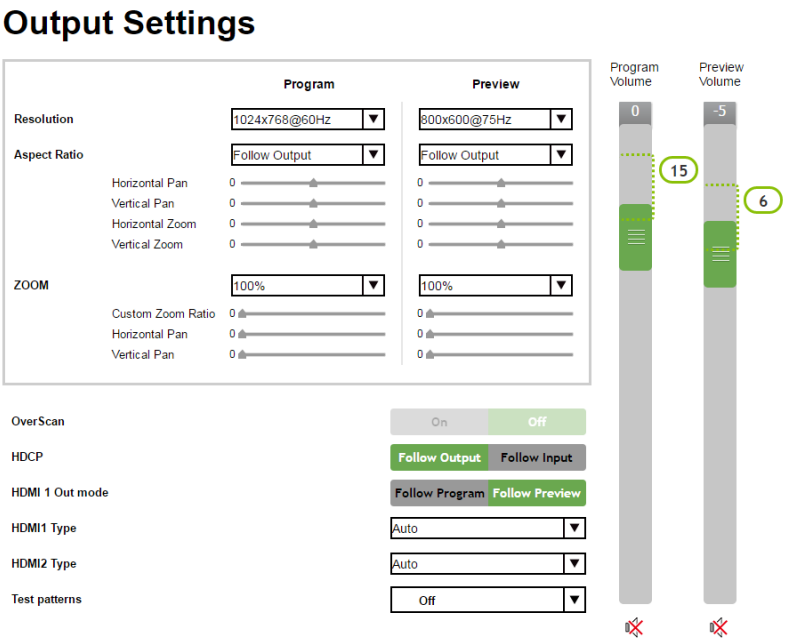


Figure 42: The Output Settings Page

Button	Function
Resolution	Define the Program and Preview resolutions (setting to single picture sets the PIP mode)
Aspect ratio	Set the Program and Preview aspect ratios (see Section 7.3.1)
Zoom	Set the Program zoom from 100% to 400% and Preview zoom from 100% to 250%, or click custom to set the custom zoom and enable Zoom Horizontal Pan and Zoom Vertical Pan
Overscan	Select On or Off; set to On to stretch the output picture
HDCP	Select Follow Input or Follow Output to define whether the HDCP will follow the input or the output
HDMI 1 Out Mode	Select the output for HDMI 1 to Follow Program or Follow Preview
HDMI 1 Type	Set the HDMI1 output type to Auto, HDMI or DVI
HDMI 2 Type	Set the HDMI 2 output type to Auto, HDMI or DVI
Test Patterns	Set the test pattern to Colorbar, SMPTE, Greyscale, Picture Border, Multiburst, Ramps, H-pattern, Setup, or set to Off
Program/Preview audio sliders	Use to set the Program/Preview output volume. note that in the PIP mode only the Program audio slider appears

9.6 The Audio Settings Page

Figure 43 shows the Program and Preview Output Settings page.

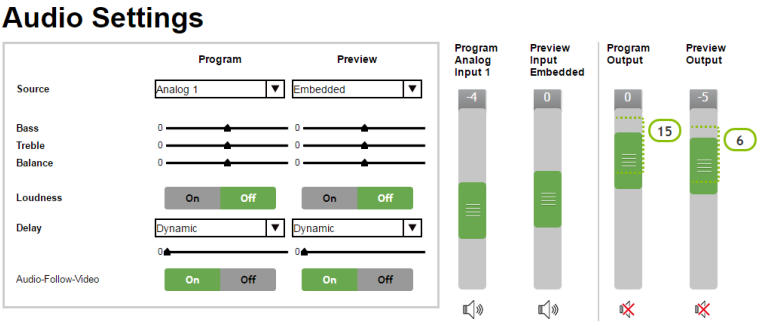


Figure 43: The Audio Settings Page

Button	Function
Source	Set the Program and Preview audio sources (Analog 1 to Analog 10, S/PDIF or Embedded – for HDMI and DP inputs)
Bass	Adjust the bass
Treble	Adjust the treble
Balance	Adjust the balance
Loudness	Set loudness OFF or ON
Delay	Select the Program and Preview delay to dynamic, User Define or Off. Set the delay time (in ms)
Audio Follow Video	Set to Off or On
Program input Volume	Set the Program/Preview input volume (analog, S/PDIF or embedded). Note that when in the PIP mode only the Program audio input slider appears (see Figure 44)
Program Output Volume	Set the program output volume Note that when in the PIP mode only the Program audio output slider appears (see Figure 44)

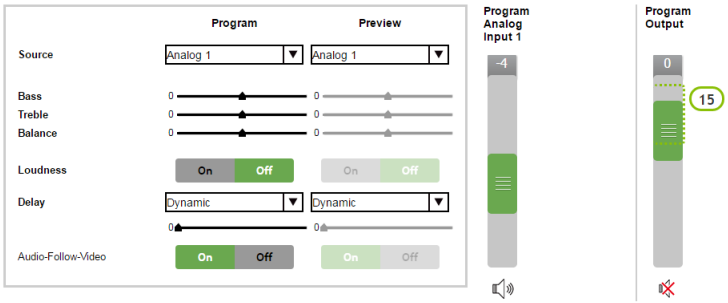


Figure 44: The Audio Settings Page (PIP Mode)

9.7 The Miscellaneous Video Settings Page

Figure 45 shows the Miscellaneous Video Settings page.

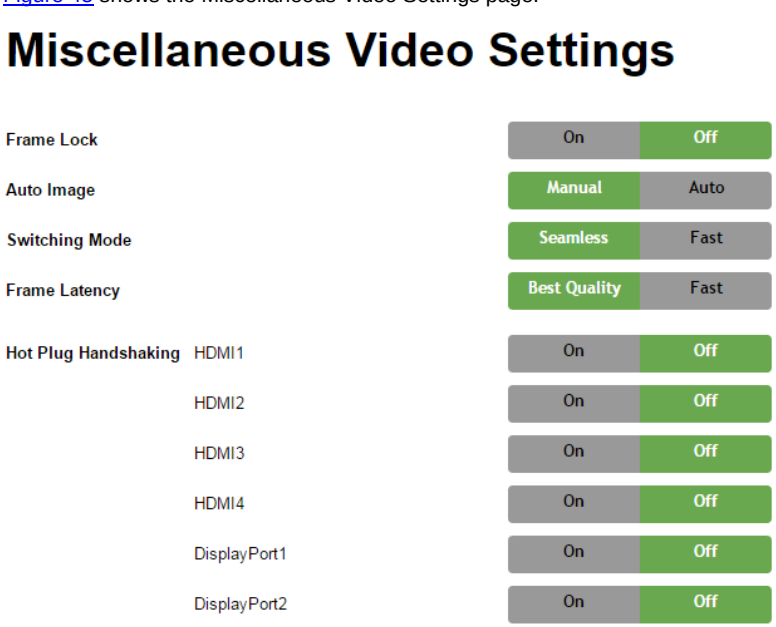


Figure 45: The Miscellaneous Video Settings Page

Button	Function
Frame Lock	Set to On or Off to lock the vertical refresh rate of the output to that of the input (locks only 50Hz or 60Hz/59.94Hz), see Section 7.6
Auto Image	Set to Manual or Auto, see Section 7.6
Switching Mode	Select Seamless switching or Fast switching, see Section 7.6
Frame Latency	Set to Best Quality or Fast, see Section 7.6
Hot Plug Handshaking	Set Hot Plug On or Off for HDMI1 to HDMI 4, DisplayPort 1 and DisplayPort 2, see Section 7.6

9.8 The EDID Management Page

The EDID page lets you read the EDID from any of the outputs (HDMI 1, HDMI 2, DP and VGA), from a list of default resolutions or from a file in your PC (Browse). The selected EDID can be copied to a selected input.

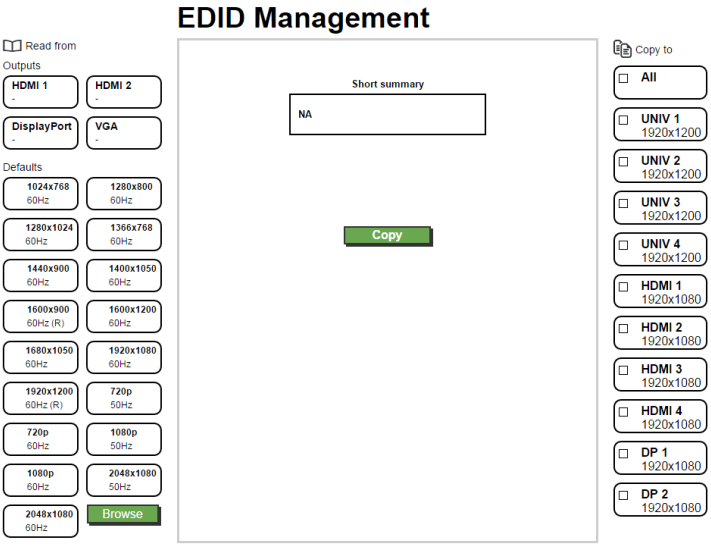


Figure 46: The EDID Page

Figure 47 shows how to select a resolution from the list and select an input:

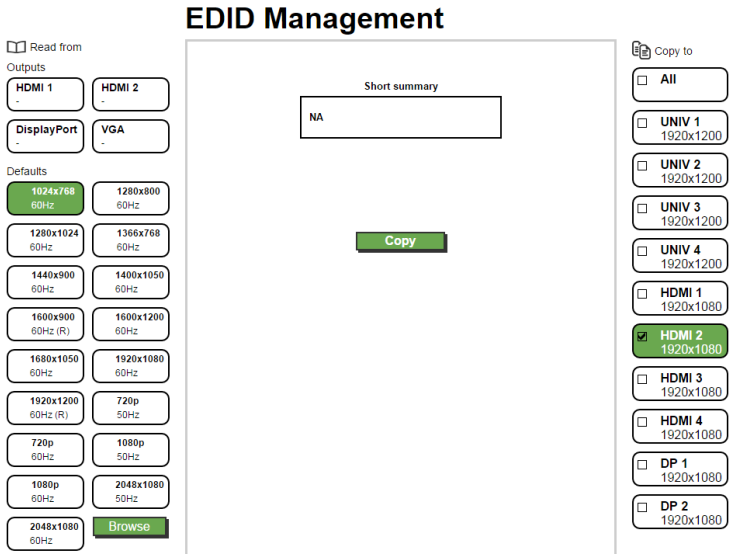


Figure 47: The EDID Page – Selecting a Resolution to copy to an Input

To copy, click the **Copy** button:

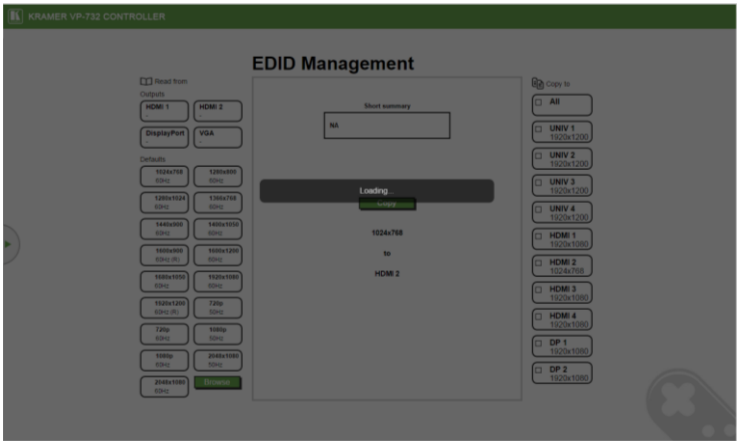


Figure 48: The EDID Page – Copying the EDID

Figure 47 shows how to select one of the outputs from the list and select an input.

To copy, click the **Copy** button:

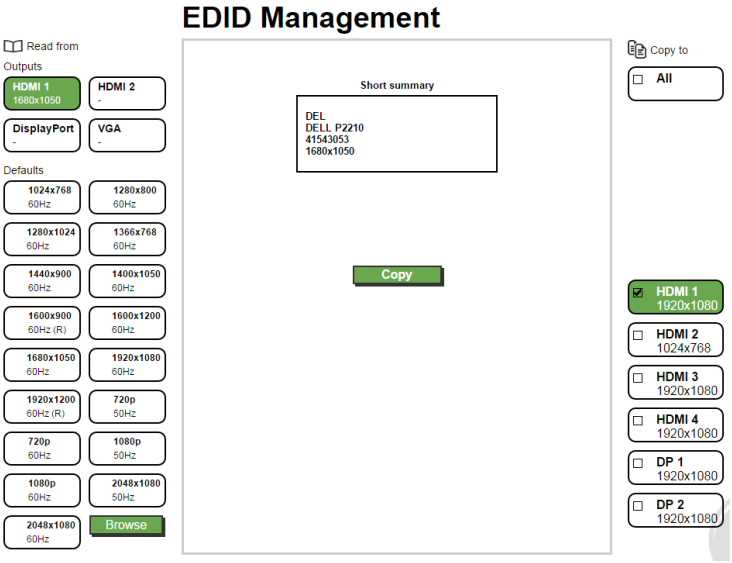


Figure 49: The EDID Page – Copying from an output

9.9 The Advanced Settings Page

The HDCP settings page summarizes additional machine settings and lets you change them.

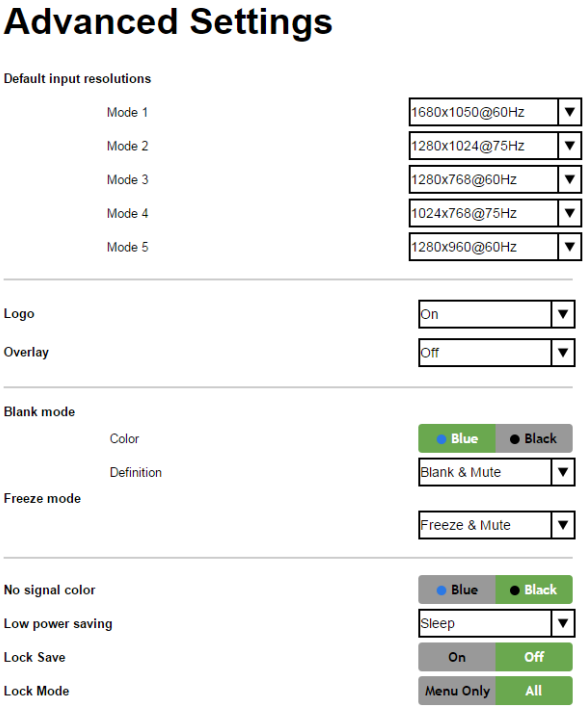


Figure 50: The Advanced Settings Page

Button	Function
Default Input Resolution	Define the desired input resolution modes and refresh rate when the system cannot distinguish between similar resolutions, see Section 7.6.1
Logo	Select On, Off or Custom, see Section 7.6.3
Overlay	Select to Off, Text or Logo, see Section 7.6.3
Blank mode	Select Blank & Mute, Blank or Mute to determine the behavior of the BLANK front panel button
Freeze mode	Select Freeze & Mute, Freeze or Mute to determine the behavior of the FREEZE front panel button
No signal color	Select a Blue or Black background
Low power saving	Select Off, Sleep or Power-down, see Section 7.6.3
Lock Save	Select On or Off Set to **On** to save the lock status when the machine is powered down
Lock Mode	Select **MENU ONLY** (locks only the menu) so you can still use the INPUT buttons on the front panel even when the lock button is on. select **ALL** to also lock the INPUT buttons

9.10 The Custom Resolutions Page

The Custom Resolutions page lets you set the parameters from different sources (see Figure 52) or type it in manually. You can save up to four custom settings each for the input and the output (see Sections 0 and 0).

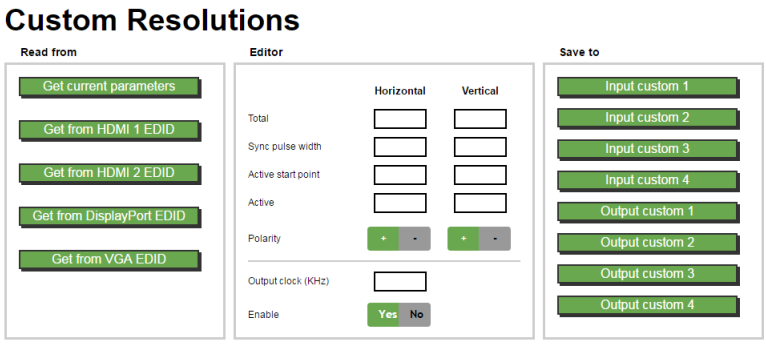


Figure 51: The Custom Resolutions Page

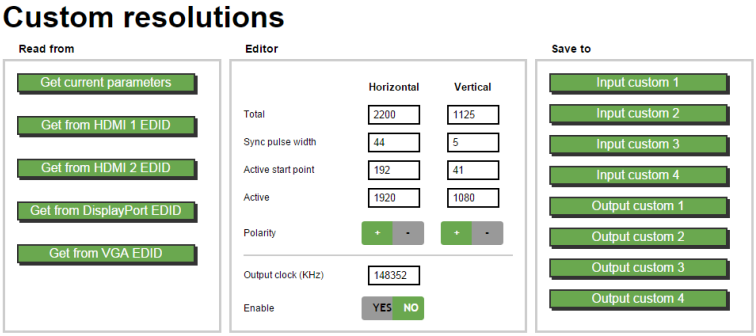


Figure 52: The Custom Resolutions Page – Current Parameters

9.11 The Security Page

Use the Security page to activate/deactivate the security measures as well as change the password.

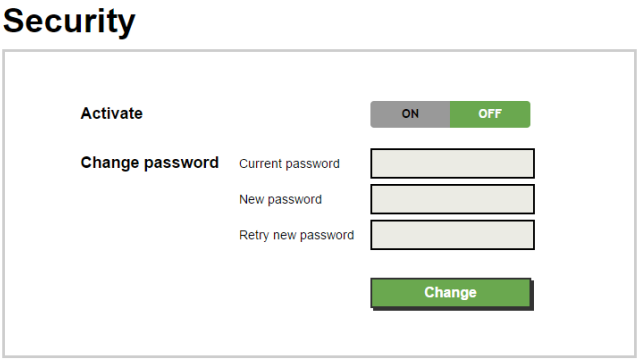


Figure 53: The Security Page

9.12 The About Page

The **VP-732** About page lets you view the Web page version and Kramer Electronics Ltd details.

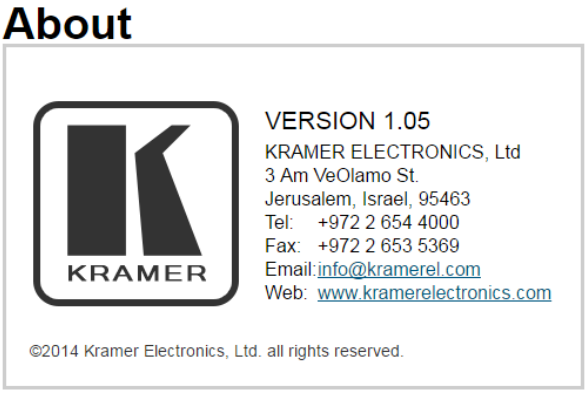


Figure 54: The About Page

10 Technical Specifications

INPUTS:	4 x HDMI connectors 4 x universal (composite, s-Video, computer graphics and component) on 15-pin HD connectors 2xDP connectors 1 S/PDIF on an RCA connector 10 unbalanced stereo audio on 3.5mm mini jacks
OUTPUTS:	2 HDMI connectors 1 DP connector 1 PC (computer graphics) on a 15-pin HD connector 1 balanced audio stereo output on a 5-pin terminal block (+4dBu nominal) 1 stereo speaker output, 10W per channel into 8Ω, on a 4-pin terminal block connector 1 digital S/PDIF output on an RCA connector
PORTS	1 x USB connector 1 x RS-232 on a 9-pin D-sub connector 1 x Ethernet on an RJ-45 connector
COMPLIANCE WITH HDMI STANDARD:	Supports HDMI and HDCP
OUTPUT RESOLUTIONS:	PROGRAM: Native HDMI1, Native HDMI2, Native DP, Native VGA, 640x480x60Hz, 640x480x75Hz, 800x600x50Hz, 800x600x60Hz, 800x600x75Hz, 1024x768x50Hz, 1024x768x60Hz, 1024x768x75Hz, 1280x768x50Hz, 1280x768x60Hz, 1280x720x60Hz, 1280x800x60Hz, 1280x1024x50Hz, 1280x1024x60Hz, 1280x1024x75Hz, 1366x768x50Hz, 1366x768x60Hz, 1400x1050x50Hz, 1400x1050x60Hz, 1600x900x60Hz (R), 1600x1200x50Hz, 1600x1200x60Hz, 1680x1050x60Hz, 1920x1080x60Hz, 1920x1200x60Hz (R), 2048x1080x50Hz, 2048x1080x60Hz, 3840x2160@24Hz, 3840x2160@25Hz, 3840x2160@29.97Hz, 3840x2160@30Hz, 4096x2160@24Hz, 480px60Hz, 576px50Hz, 720px50Hz, 720px60Hz, 1080i/1080px50Hz, 1080i/1080px60Hz, 1080px50Hz, 1080px60Hz, 1080px24Hz, 480px59.94Hz, 720px59.94Hz, 1080i/1080px59.94Hz, 1080px23.98, 1080px29.97, 1080px59.94, Custom 1 to Custom 4 PREVIEW: Single Picture, 640x480x60Hz, 640x480x75Hz, 800x600x50Hz, 800x600x60Hz, 800x600x75Hz, 1024x768x50Hz, 1024x768x60Hz, 1024x768x75Hz, 1280x768x50Hz, 1280x768x60Hz, 1280x720x60Hz, 1280x800x60Hz, 1280x1024x50Hz, 1280x1024x60Hz, 1280x1024x75Hz, 480px60Hz, 576px50Hz, 720px50Hz, 720px60Hz, 480px59.94Hz, 720px59.94Hz, Custom 1 to Custom 4
CONTROL:	Front panel buttons / OSD, IR remote control, RS-232 on a 9-pin D-sub connector, Ethernet
ADDITIONAL CONTROLS:	Picture-In-Picture, Picture-and-Picture or Split Screen (two images side-by-side); separate program/preview freeze and zoom, different selectable vertical refresh rates, Video and Audio ProcAmp control, output image scaling and aspect ratio change, EDID capture
POWER SOURCE:	100-240V AC, 50/60Hz, 49VA
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" (W), 9.3" (D) 1U (H) rack mountable
WEIGHT:	2.45kg (5.4lbs) approx.
INCLUDED ACCESSORIES:	rack “ears”, IR remote control, 2 sets of C-SF/2RVM-0.5 cables, power cord

Specifications are subject to change without notice
For the most updated resolution list, go to our Web site at http://www.kramerelectronics.com

10.1 Default Communication Parameters

RS-232	
Protocol 3000 / Legacy Protocol	
Baud Rate:	115,200
Data Bits:	8
Stop Bits:	1
Parity:	None
Command Format:	ASCII
Protocol 3000 example (set the remote input switching of video to HDMI 1 from HDMI In 2): #ROUTE 1,1,2<CR>	
Legacy Protocol example (switch PIP input to UNIV3): Y 0 92 2<CR>	
Ethernet	
To reset the IP settings to the factory reset values go to : Menu->Setup -> Factory Reset ->Change the option to Confirm and press Enter	
IP Address:	192.168.1.39
Subnet mask:	255.255.255.0
Default gateway:	192.168.1.254
Default TCP Port #:	80
Maximum TCP Ports:	1
Full Factory Reset	
OSD	Go to : Menu-> Setup -> Factory Reset -> press Enter to Confirm
Front panel buttons	Press the Reset to XGA/720p Button while plugging the power to reset the machine

10.2 Tables of Supported Input Resolutions

Technical Specifications of the RGBHV/RGBS(PC)/RGsB(PC) Input Signal					
Resolution	Vertical Frequency (Hz)	Notes	Resolution	Vertical Frequency (Hz)	Notes
640x480	60	VESA	1280x720	60	VESA
640x480	67	Mac13	1280x800	60	VESA Reduced blanking
640x480	72	VESA	1280x800	60	VESA
640x480	75	VESA	1280x960	60	VESA
640x480	85	VESA	1280x960	85	VESA
720x400	70		1280x768	60	VESA Reduced blanking
720x400	85	VESA	1280x768	60	VESA
800x600	56	VESA	1280x1024	60	VESA
800x600	60	VESA	1280x1024	75	VESA
800x600	72	VESA	1280x1024	76	Sun
800x600	75	VESA	1280x1024	85	VESA
800x600	85	VESA	1366x768	60	VESA Reduced blanking

Technical Specifications of the RGBHV/RGBS(PC)/RGsB(PC) Input Signal					
Resolution	Vertical Frequency (Hz)	Notes	Resolution	Vertical Frequency (Hz)	Notes
832x624	75	Mac16	1366x768	60	VESA
1024x768	60	VESA	1440x900	60	VESA Reduced blanking
1024x768	70	VESA	1440x900	60	VESA
1024x768	75	VESA	1400x1050	60	VESA
1024x768	75	Mac19	1400x1050	75	VESA
1024x768	85	VESA	1600x900	60	VESA
1024x800	84	Sun	1600x1200	60	VESA
1152x864	75	VESA	1680x1050	60	VESA Reduced blanking
1152x870	75	Mac21	1680x1050	60	VESA
1152x900	66	Sun	1920x1080	60	VESA
1152x900	76	Sun	1920x1200	60	VESA Reduced blanking

Technical Specifications of the Y/C, Video Signal (for Program and Preview/PIP)	
Standard	NTSC, NTSC4.43, PAL, PAL-M, PAL-N, SECAM, PAL-60

Technical Specifications of the HDMI Input Signal (for RGB or YUV Colorspace) (for Program and Preview/PIP)		
Resolution	Vertical Frequency (Hz)	Remark
1080i	60	YPbPr
1080i	50	YPbPr
1080p	60	YPbPr
1080p	50	YPbPr
1080p	24	YPbPr
720p	60	YPbPr
720p	50	YPbPr
480i	60	YPbPr
480p	60	YPbPr
576i	50	YPbPr
576p	50	YPbPr

Technical Specifications of the Component Input Signal (for Program and Preview/PIP)		
Resolution	Vertical Frequency (Hz)	Remark
1080i	60	YPbPr
1080i	50	YPbPr
1080p	60	YPbPr
1080p	50	YPbPr
720p	60	YPbPr
720p	50	YPbPr
480i	60	YPbPr
480p	60	YPbPr

576i	50	YPbPr
576p	50	YPbPr

Technical Specifications of the DVI Input Signal (for RGB Colorspace) (for Program and Preview/PIP)					
Resolution	Vertical Frequency (Hz)	Notes	Resolution	Vertical Frequency (Hz)	Notes
640x480	60	VESA	1280x800	60	VESA
640x480	67	Mac13	1280x800	60	VESA
640x480	72	VESA	1280x960	60	VESA
640x480	75	VESA	1280x960	85	VESA
640x480	85	VESA	1280x768	60	VESA
720x400	70		1280x768	60	VESA
720x400	85	VESA	1280x1024	60	VESA
800x600	56	VESA	1280x1024	75	VESA
800x600	60	VESA	1280x1024	76	Sun
800x600	72	VESA	1280x1024	85	VESA
800x600	75	VESA	1366x768	60	VESA
800x600	85	VESA	1366x768	60	VESA
832x624	75	Mac16	1440x900	60	VESA
1024x768	60	VESA	1440x900	60	VESA
1024x768	70	VESA	1400x1050	60	VESA
1024x768	75	VESA	1400x1050	75	VESA
1024x768	75	Mac19	1600x900	60	VESA
1024x768	85	VESA	1600x1200	60	VESA
1024x800	84	Sun	1680x1050	60	VESA
1152x864	75	VESA	1680x1050	60	VESA
1152x870	75	Mac21	1920x1080	60	VESA
1152x900	66	Sun	1920x1200	60	VESA
1152x900	76	Sun	2048x1080	50	
1280x720	60	VESA	2048x1080	60	

10.3 Tables of Supported Output Resolutions

Technical Specifications of the RGBHV/RGBS(PC)/RGsB(PC) Output Signal					
Resolution	Vertical Frequency (Hz)	Notes	Resolution	Vertical Frequency (Hz)	Notes
640x480	60	VESA	1600x1200	50	
640x480	75	VESA	1600x1200	60	VESA
800x600	50		1920x1080	60	VESA
800x600	60	VESA	1920x1200	60	VESA Reduced blanking
800x600	75	VESA	1680x1050	60	VESA
1024x768	50		1080i	60	Comp/YPbPr

Technical Specifications of the RGBHV/RGBS(PC)/RGsB(PC) Output Signal					
Resolution	Vertical Frequency (Hz)	Notes	Resolution	Vertical Frequency (Hz)	Notes
1024x768	60	VESA	1080i	50	
1024x768	75	VESA	720p	60	
1280x720	60	VESA	720p	50	
1280x768	50		480p	60	
1280x768	60	VESA	576p	50	
1280x800	60	VESA	1080p	50	
1280x1024	50		1080p	60	
1280x1024	60	VESA	480p	59.94	Comp/YPbPr
1280x1024	75	VESA	720p	59.94	
1366x768	50		1080i	59.94	
1366x768	60	VESA	1080p	23.98	
1400x1050	50		1080p	24	
1400x1050	60	VESA	1080p	29.97	
1600x900	60	VESA	1080p	59.94	

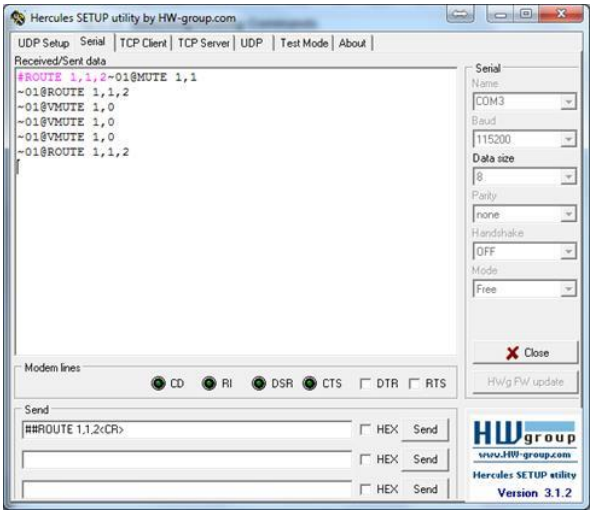
Technical Specifications of the HDMI/DVI/RGB Output Signal					
Resolution	Vertical Frequency (Hz)	Notes	Resolution	Vertical Frequency (Hz)	Notes
640x480	60	VESA	1680x1050	60	VESA
640x480	75	VESA	2048x1080	50	
800x600	50		2048x1080	60	
800x600	60	VESA	3840x2160	24	
800x600	75	VESA	3840x2160	25	
1024x768	50		3840x2160	29.97	
1024x768	60	VESA	3840x2160	30	
1024x768	75	VESA	4096x2160	24	
1280x720	60	VESA	1080i	60	HDMI
1280x768	50		1080i	50	
1280x768	60	VESA	720p	60	
1280x800	60	VESA	720p	50	
1280x1024	50		480p	60	
1280x1024	60	VESA	576p	50	
1280x1024	75	VESA	1080p	50	
1366x768	50		1080p	60	
1366x768	60	VESA	480p	59.94	
1400x1050	50		720p	59.94	
1400x1050	60	VESA	1080i	59.94	
1600x900	60	VESA	1080p	23.98	
1600x1200	50		1080p	24	
1600x1200	60	VESA	1080p	29.97	
1920x1080	60	VESA	1080p	59.94	
1920x1200	60	VESA Reduced blanking			

11 Protocol 3000

The **VP-732** Presentation Switcher/Dual Scaler can be operated using the Kramer Protocol 3000 serial commands.

The command framing varies according to how you interface with a device. For example, a basic video input switching command that routes a layer 1 video signal to HDMI out 1 from HDMI input 2 (`ROUTE 1,1,2`), is entered as follows:

- Terminal communication software, such as Hercules:



The above image is for illustration purposes only.

The framing of the command varies according to the terminal communication softwa

You can enter commands directly using terminal communication software (e.g., Hercules) by connecting a PC to the serial or Ethernet port on **VP-732**. To enter CR press the Enter key (LF is also sent but is ignored by the command parser).

Commands sent from various non-Kramer controllers (e.g., Crestron) may require special coding for some characters (such as, `/X##`). For more information, refer to your controller's documentation.

For more information about:

- Using Protocol 3000 commands, see Understanding Protocol 3000 on page 75
- General syntax used for Protocol 3000 commands, see Kramer Protocol 3000 Syntax on page 76
- Protocol 3000 commands available for **VP-732**, see Protocol 3000 Commands on page 77

11.1 Understanding Protocol 3000

Protocol 3000 commands are structured according to the following:

- **Command –** A sequence of ASCII letters (A–Z, a–z and –). A command and its parameters must be separated by at least one space.
- **Parameters –** A sequence of alphanumeric ASCII characters (0–9, A–Z, a–z and some special characters for specific commands). Parameters are separated by commas.
- **Message string –** Every command entered as part of a message string begins with a message starting character and ends with a message closing character.

A string can contain more than one command. Commands are separated by a pipe (maximum string length is 64 characters.

- **Message starting character:**
  - # – For host command/query
  - ~ – For device response
- **Query sign** –? follows some commands to define a query request
- **Message closing character:**
  - CR – Carriage return for host messages (ASCII 13)
  - CR LF – Carriage return for device messages (ASCII 13) and line-feed (ASCII 10)
- **Command chain separator character –** 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 at the beginning and end of the string.

Spaces between parameters or command terms are ignored. Commands in the string do not execute until the closing character is entered. A separate response is sent for every command in the chain.

11.2 Kramer Protocol 3000 Syntax

The Kramer Protocol 3000 syntax uses the following delimiters:

- CR = Carriage return (ASCII 13 = 0x0D)
- LF = Line feed (ASCII 10 = 0x0A)
- SP = Space (ASCII 32 = 0x20)

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

The Protocol 3000 syntax is in the following format:

- Host Message Format:

Start	Address (optional)	Body	Delimiter
#	*Device_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 command concatenation and addressing:

Start	Address	Body	Delimiter
#	*Device_id@*	**Command_1** *Parameter1_1,Parameter1_2,…*| **Command_2** *Parameter2_1,Parameter2_2,…*| **Command_3** *Parameter3_1,Parameter3_2,…*|…	CR

- Device Message Format:

Start	Address (optional)	Body	Delimiter
~	*Device_id@*	**Message**	CR LF

- Device Long Response – Echoing command:

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

11.3 Protocol 3000 Commands

This section includes the following commands:

11.3.1 System Commands

Command	Description
#	Protocol handshaking
FACTORY	Reset to factory default configuration
HELP	Get command list
MODEL	Get device model
PROT-VER	Get device protocol version
VERSION	Get device firmware version

11.3.1.1 FACTORY

Functions		Permission	Transparency
Set:	**FACTORY**	End User	Public
Get:	-	-	-
Description		**Syntax**	
Set:	Reset device to factory default configuration	#**FACTORY**CR	
Get:	-	-	
Response			
~nn@**FACTORY**SP OK CR LF			
Parameters			
Response Triggers			
Notes			
This command deletes all user data from the device. The deletion can take some time. Your device may require powering off and powering on for the changes to take effect.			
Example			
#FACTORY<CR>			

11.3.1.2 HELP

Functions		Permission	Transparency
Set:	-	-	-
Get:	**HELP**	End User	Public
Description		**Syntax**	
Set:	-	-	
Get:	Get command list or help for specific command	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
2. Multi-line: ~nn@HELPSP*command*:CR LF*description*CR LFUSAGE:*usage*CR LF

Parameters

COMMAND_NAME – name of a specific command

Response Triggers

Notes

Example

1. Get a list of all VP-732 commands:
#HELP<CR>
2. Get help for the ETH-PORT command:
#HELP ETH-PORT<CR>

11.3.1.3 MODEL

Functions		Permission	Transparency
Set:	-	-	-
Get:	**MODEL?**	End User	Public
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

Response Triggers

Notes

Example

#MODEL?<CR>

11.3.1.4 PROT-VER

Functions		Permission	Transparency
Set:	**-**	-	-
Get:	**PROT-VER?**	End User	Public
Description		**Syntax**	
Set:	-	-	
Get:	Get device protocol version	#**PROT-VER?**CR	
Response			
~nn @**PROT-VER**SP3000:*version*CR LF			
Parameters			
version – *XX.XX* where *X* is a decimal digit			
Response Triggers			
Notes			
Example			
#PROT-VER?<CR>			

11.3.1.5 VERSION

Functions		Permission	Transparency
Set:	**-**	-	-
Get:	**VERSION?**	End User	Public
Description		**Syntax**	
Set:	-	-	
Get:	Get firmware version number	#**VERSION?**CR	
Response			
~nn@**VERSION**SP*firmware_version*CR LF			
Parameters			
firmware_version – *XX.XX.XXXX* where the digit groups are: major.minor.build version			
Response Triggers			
Notes			
Example			
#VERSION?<CR>			

11.3.2 Communication Commands

Command	Description
ETH-PORT	Get Ethernet port protocol
NET-DHCP	Set/get DHCP mode
NET-GATE	Set/get gateway IP
NET-IP	Set/get IP address
NET-MAC	Get MAC address
NET-MASK	Set/get subnet mask

11.3.2.1 ETH-PORT

Functions		Permission	Transparency
Set:	**ETH-PORT**	Administrator	Public
Get:	**ETH-PORT?**	End User	Public
Description		**Syntax**	
Get:	Get Ethernet port protocol	#**ETH-PORT?**[CR]	

Response

~[nn]@**ETH-PORT**[SP]*ETHPort*[CR LF]

Parameters

ETHPort – TCP port

Response Triggers

Notes

Example

Get the Ethernet port protocol:
#**ETH-PORT?**<CR>

11.3.2.2 NET-DHCP

Functions		Permission	Transparency
Set:	**NET-DHCP**	Administrator	Public
Get:	**NET-DHCP?**	End User	Public
Description		**Syntax**	
Set:	Set DHCP mode	#**NET-DHCP**SP*mode*CR	
Get:	Get DHCP mode	#**NET-DHCP?**CR	

Response

~nn@**NET-DHCP**SP*mode*CR LF

Parameters

mode – 0 (do not use DHCP. Use the IP address set by the factory or the NET-IP command), 1 (try to use DHCP. If unavailable, use the IP address set by the factory or the NET-IP command)

Response Triggers

Notes

Connecting Ethernet to devices with DHCP may take more time in some networks.

Example

Enable DHCP mode, if available:

```
#NET-DHCP 1<CR>
```

11.3.2.3 NET-GATE

Functions		Permission	Transparency
Set:	**NET-GATE**	Administrator	Public
Get:	**NET-GATE?**	End User	Public
Description		**Syntax**	
Set:	Set gateway IP	#**NET-GATE**SP*ip_address*CR	
Get:	Get gateway IP	#**NET-GATE?**CR	

Response

Set: ~nn@**NET-GATE**SP*ip_address*SP**OK**CR LF

Get: ~nn@**NET-GATE**SP*ip_address*CR LF

Parameters

ip_address – gateway IP address, in the following format: xxx.xxx.xxx.xxx

Response Triggers

Notes

A network gateway connects the device via another network, possibly over the Internet. Be aware of security issues. Consult your network administrator for correct settings.

Example

Set the gateway IP address to 192.168.0.1:

```
#NET-GATE 192.168.000.001<CR>
```

11.3.2.4 NET-IP

Functions		Permission	Transparency
Set:	**NET-IP**	Administrator	Public
Get:	**NET-IP?**	End User	Public
Description		**Syntax**	
Set:	Set IP address	#**NET-IP**SP*ip_address*CR	
Get:	Get IP address	#**NET-IP?**CR	
Response			
~nn@**NET-IP**SP*ip_address*CR LF			
Parameters			
ip_address – IP address, in the following format: *xxx.xxx.xxx.xxx*			
Response Triggers			
Notes			
Consult your network administrator for correct settings.			
Example			
Set the IP address to 192.168.1.39: #NET-IP 192.168.001.039<CR>			

11.3.2.5 NET-MAC

Functions		Permission	Transparency
Set:	-	-	-
Get:	**NET-MAC?**	End User	Public
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			
Response Triggers			
Notes			
Example			
#NET-MAC?<CR>			

11.3.2.6 NET-MASK

Functions		Permission	Transparency
Set:	**NET-MASK**	Administrator	Public
Get:	**NET-MASK?**	End User	Public

Description		Syntax
Set:	Set subnet mask	#**NET-MASK**[SP]*net_mask*[CR]
Get:	Get subnet mask	#**NET-MASK?**[CR]

Response

~nn@**NET-MASK**[SP]*net_mask*[CR LF]

Parameters

net_mask – format: *xxx.xxx.xxx.xxx*

Response Triggers

The subnet mask limits the Ethernet connection within the local network.
Consult your network administrator for correct settings.

Notes

Example

Set the subnet mask to 255.255.0.0:
`#NET-MASK 255.255.000.000<CR>`

11.3.1 Switching/Routing Commands

Command	Description
ROUTE	Set/get layer routing

11.3.1.1 ROUTE

Functions		Permission	Transparency
Set:	**ROUTE**	End User	Public
Get:	**ROUTE?**	End User	Public
Description		**Syntax**	
Set:	Set layer routing	#**ROUTE** SP *layer,dest,src* CR	
Get:	Get layer routing	#**ROUTE?** SP *layer,dest* CR	

Response

~nn@**ROUTE** SP *layer,dest,src* CR LF

Parameters

layer – 1 (video), 2 (audio)

dest – output number: 1 (PROGRAM), 2 (PREVIEW)

src – Input number (dependent on the output selection):
When routing to Video PREVIEW: 0 (UNIV In 1), 1 (UNIV In 2), 2 (UNIV In 3), 3 (UNIV In 4), 4 (HDMI In 1), 5 (HDMI In 2), 6 (HDMI In 3), 7 (HDMI In 4), 8 (DP In 1), 9 (DP In 2).
When routing to Video PROGRAM: 0 (Follow the Program), 1 (UNIV In 1), 2 (UNIV In 2), 3 (UNIV In 3), 4 (UNIV In 4), 5 (HDMI In 1), 6 (HDMI In 2), 7 (HDMI In 3), 8 (HDMI In 4), 9 (DP In 1), 10 (DP In 2).
When routing to Audio PROGRAM or Audio PREVIEW: 0 (AUDIO INPUT 1), 1 (AUDIO INPUT 2), 2 (AUDIO INPUT 3), 3 (AUDIO INPUT 4), 4 (AUDIO INPUT 5), 5 (AUDIO INPUT 6), 6 (AUDIO INPUT 7), 7 (AUDIO INPUT 8), 8 (AUDIO INPUT 9), 9 (AUDIO INPUT 10), 10 (S/PDIF), 11 (embedded)

Response Triggers

Notes

This command overrides all other routing commands.

Example

Set the remote input switching of video to PREVIEW from HDMI In 2:
#ROUTE 1,1,5<CR>

11.3.1 Audio Commands

Command	Description
AUD-LVL	Set/get volume for specific amplifier output
MUTE	Set/get audio mute

11.3.1.1 AUD-LVL

Functions		Permission	Transparency
Set:	**AUD-LVL**	End User	Public
Get:	**AUD-LVL?**	End User	Public
Description		**Syntax**	
Set:	Set volume level for specific amplifier output	#**AUD-LVL**SP*stage,channel,volume*CR	
Get:	Get volume level for specific amplifier output	#**AUD-LVL?**SP*stage,channel*CR	

Response

~nn@**AUD-LVL**SP*stage,channel,volume*CR LF

Parameters

stage – 0 (input), 1 (output)
channel – output channel number of selected stage: 1 (PROGRAM), 2 (PREVIEW)
volume – See notes.
−22 to 22 (input volume range),
−100 to 24 (output volume range),
++ (increase current value by one step),
−− (decrease current value by one step)

Response Triggers

Notes

All values are in Kramer units.
A minus sign precedes negative values

Example

Set the PREVIEW output volume level to -5:
#AUD-LVL 1,2,-5<CR>

11.3.1.2 MUTE

Functions		Permission	Transparency
Set:	**MUTE**	End User	Public
Get:	**MUTE?**	End User	Public
Description		**Syntax**	
Set:	Set audio mute	#**MUTE**SP*channel*,*mute_mode*CR	
Get:	Get audio mute	#**MUTE?**SP*channel*CR	

Response

~nn@**MUTE**SP*channel*,*mute_mode*CR LF

Parameters

channel – audio output number: 1 (PROGRAM), 2 (PREVIEW)
mute_mode – 0 (OFF), 1 (ON)

Response Triggers

Notes

Example

Mute the Audio on the PREVIEW output:
#MUTE 2,1<CR>

11.3.2 Video Commands

Command	Description
VFRZ	Set/get output freeze
SIGNAL	Get input signal lock status
VMUTE	Set/get video on output mute

11.3.2.1 VFRZ

Command Name		Permission	Transparency
Set:	**VFRZ**	End User	Public
Get	**VFRZ?**	End User	Public
Description		Syntax	
Set:	Set freeze on selected output	**#VFRZ**SP*out_id*,*freeze_flag*CR	
Get:	Get output freeze status	**#VFRZ?**SP*out_id*CR	

Response

~nn@**VFRZ**SP*win_num*,*freeze_flag*CR LF

Parameters

out_id -output number: 1 (PROGRAM), 2 (PREVIEW)
freeze_flag – 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).

Notes

Example

Freeze the video on the PREVIEW output:
#VFRZ 2,1<CR>

11.3.2.2 SIGNAL

Command Name		Permission	Transparency
Set:	-	-	-
Get	**SIGNAL?**	End User	Public
Description		**Syntax**	
Set:	-	-	
Get:	Get input signal lock status	**#SIGNAL?**SP*inp_id*CR	
Response			
~nn**@SIGNAL**SP*inp_id,status*CR LF			
Parameters			
inp_id – input destination number: 1 (PROGRAM), 2 (PREVIEW) *status* – signal status: 0 (Signal Not Valid), 1 (Signal Valid)			
Response Triggers			
Notes			
Example			
Get the input signal lock status for the PREVIEW output: #SIGNAL? 2<CR>			

11.3.2.3 VMUTE

Functions		Permission	Transparency
Set:	**VMUTE**	End User	Public
Get:	**VMUTE?**	End User	Public
Description		**Syntax**	
Set:	Set enable/disable video on output	#**VMUTE**SP*output_id,flag*CR	
Get:	Get video on output status	#**VMUTE?**SP*output_id*SP CR	
Response			
~nn @**VMUTE**SP*output_id,flag*CR LF			
Parameters			
output_id – output number: 1 (PROGRAM), 2 (PREVIEW) *flag* – 0 (disable video on output, see note), 1 (enable video on output), 2 (blank video)			
Response Triggers			
Notes			
The 0 (disable video on output) status is not available for the Set command, only for the Get.			
Example			
Display blank video on the PREVIEW output: #VMUTE 2,2<CR>			

11.3.3 Multiviewer/Scaler Commands

Command	Description
VIEW-MOD	Set/get view mode

11.3.3.1 VIEW-MOD

Command Name		Permission	Transparency
Set:	**VIEW-MOD**	End User	Public
Get:	**VIEW-MOD?**	End User	Public
Description		**Syntax**	
Set:	Set view mode	**#VIEW-MOD** SP *out_id,mode* CR	
Get :	Get view mode	**#VIEW-MOD?** SP *out_id* CR	

Response

~nn@**VIEW-MOD** SP *out_id,mode* CR LF

Parameters

out_id – 1 (always)
mode – 0 (PIP Off – Main Mode), 1 (PIP On), 2 (Preview)

Response Triggers

Notes

Example

Set view mode to PIP On:
#VIEW-MOD 1,1<CR>

12 Legacy Communication Protocol

Serial Configuration:

Baud rate: 115200 (Bits per second)

Data bits: 8bits

Parity: None

Stop bits: 1bit

Communication confirmation:

Send: CR

Reply: CRLF>

Set Command:

Send: Y■Control_Type■Function■Param■ChkSumCR

Reply: Z■Control_Type■Function■Param■ChkSumCRLF>

Get Command:

Send: Y■Control_Type■Function■ChkSumCR

Reply: Z■Control_Type■Function■Param■ChkSumCRLF>

Example: set Input 1 Source Type to Component

Send: Y■0■1■0■2CR

Reply: Z■0■1■0■CRLF>

Example: get current Input 1 Source Type

Send: Y■1■1■3CR

Reply: Z■1■1■0■3CRLF >

Definition:

■: ASCII Code 0x20

CR: Ascii Code 0x0D

CRLF : Ascii Code 0x0D+0x0A

Go to http://www.kramerav.com/downloads/VP-732 to check for the latest **VP-732** communication protocol.

12.1 Command list

Control Type		Function	Parameter1	Description
Set	Get			
0	-	0	N/A	Menu
0	-	1	N/A	Top
0	-	2	N/A	Down
0	-	3	N/A	Left
0	-	4	N/A	Right
0	-	5	N/A	Enter
0	-	6	0:Reset 720P 1:Reset XGA 2:Factory Reset	Reset program output resolution to XGA / 720P /Factory reset
0	1	7	0: Off 1: On	Panel lock key function
0	1	8	0: UNIV 1 1: UNIV 2 2: UNIV 3 3: UNIV 4 4: HDMI 1 5: HDMI 2 6: HDMI 3 7: HDMI 4 8: DP 1 9: DP 2	Program source
0	1	9	N/A	Program Blank key function 1. PIP mode: only blank the Program source (PIP still turned on) 2. Dual resolution mode :blank the Program source
0	1	10	N/A	Program Freeze key function 1. PIP mode: only freeze the Program source (PIP still turned on) 2. Dual resolution mode:freeze the Program source
0	1	11	0: UNIV 1 1: UNIV 2 2: UNIV 3 3: UNIV 4 4: HDMI 1 5: HDMI 2 6: HDMI 3 7: HDMI 4 8: DP 1 9: DP 2	Preview/PIP Key function (Keypad) PIP Off 1. Turn on PIP and change PIP source PIP On 2. Change PIP source Preview On 3. Change Preview source
0	1	12	N/A	Preview Blank key function 1. PIP mode: turn off PIP 2. Dual resolution mode :blank the Preview source
0	1	13	N/A	Preview Freeze key function 1. PIP mode: only freeze the PIP source 2. Dual resolution mode: freeze the Preview source
0	1	14	N/A	Preview Mute key function
0	1	15	0: Off 1: On	Preview key function If PIP is On, Preview will turn off PIP
0	-	16	0: Off 1: On	Power
0	1	17	N/A	Program Mute key function
0	-	18	N/A	Save key --- Open / Close Setup page
0	-	19	N/A	Recall key --- Open / Close Setup page

Control Type		Function	Parameter1	Description	
Set	Get				
0	1	20	N/A	Logo key	
0	-	21	N/A	Info key --- Open / Close Info page	
0	-	22	N/A	Picture key --- Open / Close Picture page	
0	-	23	N/A	Audio key --- Open / Close Audio page	
0	-	24	N/A	Auto image key	
0	1	32	0: Off 1: On	Input Auto Switch	
0	1	33	0: VGA 1: Component 2: YC 3: Video	UNIV 1 Source Type	
0	1	34	0: VGA 1: Component 2: YC 3: Video	UNIV 2 Source Type	
0	1	35	0: VGA 1: Component 2: YC 3: Video	UNIV 3 Source Type	
0	1	36	0: VGA 1: Component 2: YC 3: Video	UNIV 4 Source Type	
0	1	37	0: Auto 1: RGB 2: YUV	Input Color Format	
0	1	38	0: Auto 1: NTSC 2: PAL 3: PAL-M 4: PAL-N 5: NTSC 4.43 6: SECAM 7: PAL-60	Input Video Standard	
0	1	40	1 ~ N	Input H-Position (Enabled for VGA Input) N: Unfixed, changed with Input Mode	
0	1	41	2 ~ N	Input V-Position (Enabled for VGA Input) N: Unfixed, changed with Input Mode	
0	1	42	0 ~ N	Input Frequency (Enabled for VGA Input) N: Unfixed, changed with Input Mode	
0	1	43	0 ~ 63	Input Phase (Enabled for VGA Input)	
0	-	44	N/A	Input Auto Image (Enabled for VGA Input)	
0	1	50	0~100	Picture Brightness	
0	1	51	0~100	Picture Contrast	
0	1	52	0~100	Picture Color	
0	1	53	0~360	CVBS/YC	Picture Hue
			0~240	HDMI/VGA/Component	
0	1	54	0~100	Picture Sharpness	
0	1	55	0: Off 1: Low 2: Medium 3: High	Picture Temporal NR HDMI input is disabled. Analog input, if pixel output > 74.25MHz will be disabled	

Control Type		Function	Parameter1	Description
Set	Get			
0	1	56	0: Off 1: Low 2: Medium 3: High	Picture Mosquito NR
0	1	57	0: Off 1: On	Picture Block NR
0	1	65	0: Native HDMI1 1: Native HDMI2 2: Native DP 3: Native VGA 4: 640x480@60Hz 5: 640x480@75Hz 6: 800x600@50Hz 7: 800x600@60Hz 8: 800x600@75Hz 9: 1024x768@50Hz 10: 1024x768@60Hz 11: 1024x768@75Hz 12: 1280x768@50Hz 13: 1280x768@60Hz 14: 1280x720@60Hz 15: 1280x800@60Hz 16: 1280x1024@50Hz 17: 1280x1024@60Hz 18: 1280x1024@75Hz 19: 1366x768@50Hz 20: 1366x768@60Hz 21: 1400x1050@50Hz 22: 1400x1050@60Hz 23: 1600x900@60Hz(R) 24: 1600x1200@50Hz 25: 1600x1200@60Hz 26: 1680x1050@60Hz 27: 1920x1080@60Hz 28: 1920x1200@60Hz(R) 29: 2048x1080@50Hz 30: 2048x1080@60Hz 31: 3840x2160@24Hz 32: 3840x2160@25Hz 33: 3840x2160@29_97Hz 34: 3840x2160@30Hz 35: 4096x2160@24Hz 36: 480p@60Hz 37: 576p@50Hz 38: 720p@50Hz 39: 720p@60Hz 40: 1080i@50Hz 41: 1080i@60Hz 42: 1080p@50Hz 43: 1080p@60Hz 44: 1080p@24Hz 45: 480P@59.94Hz 46: 720P@59.94Hz 47: 1080i@59.94Hz 48: 1080P@23.98Hz 49: 1080P@29.97Hz	Program Output Resolution

Control Type		Function	Parameter1	Description
Set	Get			
			50: 1080P@59.94Hz	
0	1	66	0 : Single Picture 1 : 640x480@60Hz 2 : 640x480@75Hz 3 : 800x600@50Hz 4 : 800x600@60Hz 5 : 800x600@75Hz 6 : 1024x768@50Hz 7 : 1024x768@60Hz 8 : 1024x768@75Hz 9 : 1280x768@50Hz 10: 1280x768@60Hz 11: 1280x720@60Hz 12: 1280x800@60Hz 13: 1280x1024@50Hz 14: 1280x1024@60Hz 15: 1280x1024@75Hz 16: 480p@60Hz 17: 576p@50Hz 18: 720p@50Hz 19: 720p@60Hz 20: 480P@59.94Hz 21: 720P@59.94Hz 22: Custom1 23: Custom2 24: Custom3 25: Custom4	Preview(VGA) Output Resolution
0	1	67	0: Follow Program 1: Follow Preview	HDMI1 output
0	1	68	0: Auto 1: HDMI 2: DVI	Output HDMI Type
0	1	69	0: Best Fit 1: Letterbox 2: Follow Output 3: Virtual Wide 4: Follow Input 5: Custom	Aspect Ratio Zoom != 100% is disabled P+P or Split ON is disabled
0	1	70	-16 ~ 16	Aspect Ratio Custom H-Pan Zoom != 100% is disabled Aspect Ratio should be Custom Aspect Ratio Custom H-Zoom can't be 0
0	1	71	-16 ~ 16	Aspect Ratio Custom V-Pan Zoom != 100% is disabled Aspect Ratio should be Custom Aspect Ratio Custom H-Zoom can't be 0
0	1	72	-8 ~ 8	Aspect Ratio Custom H-Zoom Zoom != 100% is disabled Aspect Ratio should be Custom
0	1	73	-8 ~ 8	Aspect Ratio Custom V-Zoom Zoom != 100% is disabled Aspect Ratio should be Custom
0	1	74	0: 100% 1: 150% 2: 200%	Zoom (Aspect ratio = Custom is disabled)

Control Type		Function	Parameter1	Description
Set	Get			
			3: 225% 4: 250% 5: 275% 6: 300% 7: 325% 8: 350% 9: 375% 10: 400% 11: Custom	
0	1	75	0 ~ 32	Custom Zoom Aspect ratio = Custom is disabled Zoom = Custom is disabled
0	1	76	0 ~ 32	Zoom H-Pan (Aspect ratio = Custom is disabled)
0	1	77	0 ~ 32	Zoom V-Pan (Aspect ratio = Custom is disabled)
0	1	78	0: Off 1: Color bar 2: SMPTE 3: Grey scale 4: Picture Border 5: Multiburst 6: Ramps 7: H-pattern 8: Setup	Test Pattern
0	1	79	0: Auto 1: HDMI 2: DVI	Output HDMI2 Type
0	1	80	0 ~ A	Program Output Positioning – H Start
0	1	81	A ~ B	Program Output Positioning – H End
0	1	82	0 ~ A	Program Output Positioning – H Position
0	1	83	A ~ B	Program Output Positioning – H Size
0	1	84	0 ~ A	Program Output Positioning – V Start
0	1	85	A ~ B	Program Output Positioning – V End
0	1	86	0 ~ A	Program Output Positioning – V Position
0	1	87	A ~ B	Program Output Positioning – V Size
0	1	90	0: Off 1: On	PIP On/Off
0	1	91	0: PIP 1: P+P 2: Split	PIP Type (Enabled as PIP On)
0	1	92	0: UNIV 1 1: UNIV 2 3: UNIV 3 4: UNIV 4 5: HDMI 1 6: HDMI 2 7: HDMI 3 8: HDMI 4 9: DP 1 10: DP 2	PIP Source (Enabled as PIP On)
0	1	93	0: 1/25 1: 1/16 2: 1/9 3: 1/4 4: Custom	PIP Size PIP On is enabled Pip Type = PIP is enabled
0	1	94	0 ~ 128	PIP H-Position (available when PiP is On and PIP Type=PIP)

Control Type		Function	Parameter1	Description
Set	Get			
0	1	95	0 ~ 128	PIP V-Position (available when PiP is On and PIP Type=PIP)
0	1	96	1 ~ 255	PIP H-Size is available when : PIP Type = PIP, and PIP Size = Custom PIP Type = P+P or PIP Type = Split
0	1	97	1 ~ 255	PIP V-Size Enabled when: PIP is On PIP Type = PIP Pip Size = Custom
0	1	100	-22~0~+22	Audio Program Input Volume
0	1	101	-100~24	Audio Program Output Volume
0	1	102	-24~0~+24	Audio Program Bass
0	1	103	-24~0~+24	Audio Program Treble
0	1	104	-10~10	Audio Program Balance
0	1	105	0: Off 1: On	Audio Program Loudness
0	1	106	0: Dynamic 1: User Define	Audio Program Delay
	1	107	0~170 (step 2)	Program User Delay (when User Define is selected in Audio Program Delay)
0	1	108	0: Analog1 1: Analog2 2: Analog3 3: Analog4 4: Analog5 5: Analog6 6: Analog7 7: Analog8 8: Analog9 9: Analog10 10: S/PDIF 11: Embedded	Audio Program Input Source (Universal 1~4 video inputs cannot select an Embedded audio source)
0	1	109	0: Off 1: On	Program Audio Follow-Video
0	1	111	-22~0~+22	Audio Preview Input Volume is available when the: Preview (VGA) output resolution is NOT set to Single Picture. HDMI1 output is set to Follow Preview
0	1	112	-100~24	Audio Preview Input Volume is available when the: Preview (VGA) output resolution is NOT set to Single Picture. HDMI1 output is set to Follow Preview
0	1	113	-24~0~+24	Audio Preview Input Volume is available when the: Preview (VGA) output resolution is NOT set to Single Picture. HDMI1 output is set to Follow Preview
0	1	114	-24~0~+24	Audio Preview Input Volume is available when the: Preview (VGA) output resolution is NOT set to Single Picture. HDMI1 output is set to Follow Preview
0	1	115	-10~10	Audio Preview Input Volume is available when the: Preview (VGA) output resolution is NOT set to Single Picture. HDMI1 output is set to Follow Preview

Control Type		Function	Parameter1	Description
Set	Get			
0	1	116	0: Off 1: On	Audio Preview Input Volume is available when the: Preview (VGA) output resolution is NOT set to Single Picture. HDMI1 output is set to Follow Preview
0	1	117	0: Dynamic 1: User Define	Audio Preview Delay is available when the: Preview (VGA) output resolution is NOT set to Single Picture. HDMI1 output is set to Follow Preview
	1	118	0~70(step 2)	Preview User Delay is available when the: Preview (VGA) output resolution is NOT set to Single Picture. HDMI1 output is set to Follow Preview. Audio Preview Delay is set to User Define.
0	1	119	0: Analog1 1: Analog2 2: Analog3 3: Analog4 4: Analog5 5: Analog6 6: Analog7 7: Analog8 8: Analog9 9: Analog10 10: S/PDIF 11:Embedded	Audio Preview Delay is available when the: Preview (VGA) output resolution is NOT set to Single Picture. HDMI1 output is set to Follow Preview Note that Universal1~4 video inputs cannot select embedded audio source
0	1	120	0: Off 1: On	Audio Preview Delay is available when the: Preview (VGA) output resolution is NOT set to Single Picture. HDMI1 output is set to Follow Preview
0	-	122	0: Profile 1 1: Profile 2 2: Profile 3 3: Profile 4 4: Profile 5 5: Profile 6 6: Profile 7 7: Profile 8 8: USB	Setup - Save Setting
0	-	123	0: Profile 1 1: Profile 2 2: Profile 3 3: Profile 4 4: Profile 5 5: Profile 6 6: Profile 7 7: Profile 8 8: USB	Setup - Recall Setting
0	1	124	0: Off 1: On	Setup - Frame Lock
0	1	125	0: Manual 1: Auto	Setup - Auto Image
0	1	126	0: Seamless 1: Fast	Setup - Switching Mode
0	1	127	0: Best Quality 1: Fast	Setup - Frame Latency

Control Type		Function	Parameter1	Parameter2	Description
Set	Get				
0	1	128	0:First Priority 1:Second Priority 2:Third Priority 3:4th Priority 4:5th Priority 5:6th Priority 6:7th Priority 7:8th Priority 8:9th Priority 9:10th Priority	0: UNIV 1 1: UNIV 2 2: UNIV 3 3: UNIV 4 4: HDMI 1 5: HDMI 2 6: HDMI 3 7: HDMI 4 8: DP 1 9: DP 2 10: Off	Auto switch Priority (Parameter *5)
0	1	129	0: Off 1: On	N/A	Setup - Hot Plug HDMI1
0	1	130	0: Off 1: On	N/A	Setup - Hot Plug HDMI2
0	1	131	0: Off 1: On	N/A	Setup - Hot Plug HDMI3
0	1	132	0: Off 1: On	N/A	Setup - Hot Plug HDMI4
0	1	133	0: Off 1: On	N/A	Setup - Hot Plug DP1
0	1	134	0: Off 1: On	N/A	Setup - Hot Plug DP2
0	1	135	0: Off 1: On	N/A	Setup - HDMI1 Input HDCP
0	1	136	0: Off 1: On	N/A	Setup - HDMI2 Input HDCP
0	1	137	0: Off 1: On	N/A	Setup - HDMI3 Input HDCP
0	1	138	0: Off 1: On	N/A	Setup - HDMI4 Input HDCP
0	1	139	0: Off 1: On	N/A	Setup - DP1 Input HDCP
0	1	140	0: Off 1: On	N/A	Setup - DP2 Input HDCP
0	-	141	0: Profile 1 1: Profile 2 2: Profile 3 3: Profile 4 4: Profile 5 5: Profile 6 6: Profile 7 7: Profile 8	N/A	Setup - Erase
0	1	150	0: Off 1: On	N/A	Setup - DHCP

Set	Get	Function	IP1	IP2	IP3	IP4	Parameter *7, Reboot after setting IP Address / Subnet /Gateway
0	1	151	0~255	0~255	0~255	0~255	Setup - IP Address(DHCP = Off)
0	1	152	0~255	0~255	0~255	0~255	Setup - Subnet Mask(DHCP = Off)
0	1	153	0~255	0~255	0~255	0~255	Setup - Gateway(DHCP = Off)

Set	Get	Function	Parameter1	Description Control Type
0	-	154	N/A	Setup - Factory Reset
0	-	155	N/A	Factory Reset (Ethernet related settings are not included)
0	1	200	0: 1400x1050x60 1: 1680x1050x60	Advanced Mode Set – Mode 1
0	1	201	0: 1280x1024x75 1: 1280x1024x76	Advanced Mode Set – Mode 2
0	1	202	0: 1280x768x60 1: 1366x768x60 2: 1366x768x60(R)	Advanced Mode Set – Mode 3
0	1	203	0: 1024x768x75 1: 1024x768x75-Mac	Advanced Mode Set – Mode 4
0	1	204	0: 1280x960x60 1: 1600x900x60(R)	Advanced Mode Set – Mode 5
0	1	266	0: Program 1: Preview	Advanced OSD – OSD Position
0	1	267	0: Center 1: Top Left 2: Top Right 3: Bottom Left 4: Bottom Right	Advanced OSD – Menu Position
0	1	268	0: 5 sec 1: 10 sec 2: 20 sec 3: 30 sec 4: 60 sec 5: 90 sec 6: Off	Advanced OSD – Time Out(sec.)
0	1	270	0: Off 1: On 2: Custom	Advanced Misc – Logo
0	1	271	0: Blue 1: Black	Advanced Misc –Blank Color
0	1	272	0: Blue 1: Black	Advanced Misc – Background
0	1	273	0: Off 1: Sleep 2: Power down	Advanced Misc –Low Power Saving
0	1	274	0: Off 1: On	Advanced Misc – Save Lock
0	1	275	0: Off 1: On	Advanced Misc – Input Lock
0	1	276	0: Blank & Mute 1: Blank 2: Mute	Advanced Misc –Blank
0	1	277	0: Freeze & Mute 1: Freeze 2: Mute	Advanced Misc – Freeze
0	1	281	0: Follow Output 1: Follow Input	Advanced Misc – HDCP
0	1	282	0: Off 1: On	Advanced Misc – Overscan

Set	Get	Function	Parameter1	Description Control Type
0	1	283	0: Off 1: Text 2: Logo	Advanced Misc – Overlay text and logo should follow these below: Text: you need to have a “TextOvl.ini” file in the USB flash drive and ensure it is connected. Logo: you need to have a “Txtlogo.bmp” file in the USB flash drive and ensure it is connected.
0	1	300	0:Custom1 1:Custom2 2:Custom3 3:Custom4	Advance Input Mode: Custom Input
0	1	301	512~3071	Advance Input Mode: HT(temp value, unless to run the Input mode save)
0	1	302	32~(HS-48)	Advance Input Mode: HW(temp value, unless to run the Input mode save)
0	1	303	80~(HT-HA-12)	Advance Input Mode: HS(temp value, unless to run the Input mode save)
0	1	304	640~1920 <= (HT-92)	Advance Input Mode: HA(temp value, unless to run the Input mode save)
0	1	305	0: Negative polarity 1: Positive polarity	Advance Input Mode: HP(temp value, unless to run the Input mode save)
0	1	306	384~2047	Advance Input Mode: VT(temp value, unless to run the Input mode save)
0	1	307	2~(HS-13)	Advance Input Mode: VW(temp value, unless to run the Input mode save)
0	1	308	15~(VT-VA-1)	Advance Input Mode: VS(temp value, unless to run the Input mode save)
0	1	309	480~1200 <= (VT-16)	Advance Input Mode: VA(temp value, unless to run the Input mode save)
0	1	310	0: Negative polarity 1: Positive polarity	Advance Input Mode: VP(temp value, unless to run the Input mode save)
0	1	311	25000 < OCLK <= 297000	Advance Input Mode: OCLK Temp value, unless to run the Input mode save The three bytes of high byte is integer; the three bytes of low byte is the decimal place. The unit is KHz
0	1	312	0: Off 1: On	Advance Input Mode: Enable
0	-	313	N/A	Advance Input Mode: Save
0	1	320	0:Custom1 1:Custom2 2:Custom3 3:Custom4	Advance Output Mode: Custom Output
0	1	321	512~3071	Advance Output Mode: HT(temp value, unless to run the Output mode save)
0	1	322	32~(HS-48)	Advance Output Mode: HW(temp value, unless to run the Output mode save)
0	1	323	80~(HT-HA-12)	Advance Output Mode: HS(temp value, unless to run the Output mode save)
0	1	324	640~1920 <= (HT-92)	Advance Output Mode: HA(temp value, unless to run the Output mode save)
0	1	325	0: Negative polarity 1: Positive polarity	Advance Output Mode: HP(temp value, unless to run the Output mode save)
0	1	326	384~2047	Advance Output Mode: VT(temp value, unless to run the Output mode save)

Set	Get	Function	Parameter1	Description Control Type
0	1	327	2~(HS-13)	Advance Output Mode: VW(temp value, unless to run the Output mode save)
0	1	328	15~(VT-VA-1)	Advance Output Mode: VS(temp value, unless to run the Output mode save)
0	1	329	480~1200 <= (VT-16)	Advance Output Mode: VA(temp value, unless to run the Output mode save)
0	1	330	0: Negative polarity 1: Positive polarity	Advance Output Mode: VP(temp value, unless to run the Output mode save)
0	1	331	25000 < OCLK <= 297000	Advance Output Mode: OCLK Temp value, unless to run the Output mode save The three bytes of high byte is integer; the three bytes of low byte is the decimal place. The unit is KHz
0	-	332	N/A	Advance Output Mode: Save
0	-	333	N/A	Advance Output Mode: Set Current (temp value, unless to run the Output mode save)
0	-	334	N/A	Advance Output Mode: Read HDMI1 EDID
0	-	335	N/A	Advance Output Mode: Read HDMI2 EDID
0	-	336	N/A	Advance Output Mode: Read DP EDID
0	-	337	N/A	Advance Output Mode: Read VGA EDID
0	-	400	0: Advance Input EDID: HDMI1 Default 1: Advance Input EDID: HDMI1 Copy HDMI1 Out 2: Advance Input EDID: HDMI1 Copy HDMI2 Out 3: Advance Input EDID: HDMI1 Copy DP Out	Advance Input EDID: HDMI1
0	-	401	0: Default 1: 1024x768 60 2: 1280x800 60 3: 1280x102 60 4: 1366x4768 60 5: 1440x900 60 6: 1400x1050 60 7: 1600x900 60 8: 1600x1200 60 9: 1680x1050 60 10: 1920x1080 60 11: 1920x1200 60(RB) 12: 720P 50 13:720P 60 14:1080P 50 15:1080p 60 16:2K 50 17:2K 60	Advance Input EDID: HDMI1 Select Modeline
0	-	405	0: Advance Input EDID: HDMI2 Default 1: Advance Input EDID: HDMI2 Copy HDMI1 Out 2: Advance Input EDID: HDMI2 Copy HDMI2 Out 3: Advance Input EDID: HDMI2 Copy DP Out	Advance Input EDID: HDMI2
0	-	406	0: Default	Advance Input EDID: HDMI2 Select Modeline

Set	Get	Function	Parameter1	Description Control Type
			1: 1024x768 60 2: 1280x800 60 3: 1280x1024 60 4: 1366x4768 60 5: 1440x900 60 6: 1400x1050 60 7: 1600x900 60 8: 1600x1200 60 9: 1680x1050 60 10: 1920x1080 60 11: 1920x1200 60(RB) 12: 720P 50 13:720P 60 14:1080P 50 15:1080p 60 16:2K 50 17:2K 60	
0	-	410	0: Advance Input EDID: HDMI3 Default 1: Advance Input EDID: HDMI3 Copy HDMI1 Out 2: Advance Input EDID: HDMI3 Copy HDMI2 Out 3: Advance Input EDID: HDMI3 Copy DP Out	Advance Input EDID: HDMI3
0	-	411	0: Default 1: 1024x768 60 2: 1280x800 60 3: 1280x1024 60 4: 1366x4768 60 5: 1440x900 60 6: 1400x1050 60 7: 1600x900 60 8: 1600x1200 60 9: 1680x1050 60 10: 1920x1080 60 11: 1920x1200 60(RB) 12: 720P 50 13:720P 60 14:1080P 50 15:1080p 60 16:2K 50 17:2K 60	Advance Input EDID: HDMI3 Select Modeline
0	-	415	0: Advance Input EDID: HDMI4 Default 1: Advance Input EDID: HDMI4 Copy HDMI1 Out 2: Advance Input EDID: HDMI4 Copy HDMI2 Out 3: Advance Input EDID: HDMI4 Copy DP Out	Advance Input EDID: HDMI4
0	-	416	0: Default 1: 1024x768 60 2: 1280x800 60 3: 1280x1024 60 4: 1366x4768 60 5: 1440x900 60 6: 1400x1050 60	Advance Input EDID: HDMI4 Select Modeline

Set	Get	Function	Parameter1	Description Control Type
			7: 1600x900 60 8: 1600x1200 60 9: 1680x1050 60 10: 1920x1080 60 11: 1920x1200 60(RB) 12: 720P 50 13:720P 60 14:1080P 50 15:1080p 60 16:2K 50 17:2K 60	
0	-	420	0: Advance Input EDID: DP1 Default 1: Advance Input EDID: DP1 Copy HDMI1 Out 2: Advance Input EDID: DP1 Copy HDMI2 Out 3: Advance Input EDID: DP1 Copy DP Out	Advance Input EDID: DP1
0	-	421	0: Default 1: 1024x768 60 2: 1280x800 60 3: 1280x1024 60 4: 1366x4768 60 5: 1440x900 60 6: 1400x1050 60 7: 1600x900 60 8: 1600x1200 60 9: 1680x1050 60 10: 1920x1080 60 11: 1920x1200 60(RB) 12: 720P 50 13:720P 60 14:1080P 50 15:1080p 60 16:2K 50 17:2K 60	Advance Input EDID: DP1 Select Modeline
0	-	425	0: Advance Input EDID: DP2 Default 1: Advance Input EDID: DP2 Copy HDMI1 Out 2: Advance Input EDID: DP2 Copy HDMI2 Out 3: Advance Input EDID: DP2 Copy DP Out	Advance Input EDID: DP2
0	-	426	0: Default 1: 1024x768 60 2: 1280x800 60 3: 1280x1024 60 4: 1366x4768 60 5: 1440x900 60 6: 1400x1050 60 7: 1600x900 60 8: 1600x1200 60 9: 1680x1050 60 10: 1920x1080 60 11: 1920x1200 60(RB) 12: 720P 50	Advance Input EDID: DP2 Select Modeline

Set	Get	Function	Parameter1	Description Control Type
			13:720P 60 14:1080P 50 15:1080p 60 16:2K 50 17:2K 60	
0	-	430	0: Advance Input EDID: UNIV1 Default 1: Advance Input EDID: UNIV1 Copy PC output	Advance Input EDID: UNIV1
0	-	431	0: Default 1: 1024x768 60 2: 1280x800 60 3: 1280x1024 60 4: 1366x4768 60 5: 1440x900 60 6: 1400x1050 60 7: 1600x900 60 8: 1600x1200 60 9: 1680x1050 60 10: 1920x1080 60 11: 1920x1200 60(RB)	Advance Input EDID: UNIV1 Select Modeline
0	-	435	0: Advance Input EDID: UNIV2 Default 1: Advance Input EDID: UNIV2 Copy PC output	Advance Input EDID: UNIV2
0	-	436	0: Default 1: 1024x768 60 2: 1280x800 60 3: 1280x1024 60 4: 1366x4768 60 5: 1440x900 60 6: 1400x1050 60 7: 1600x900 60 8: 1600x1200 60 9: 1680x1050 60 10: 1920x1080 60 11: 1920x1200 60(RB)	Advance Input EDID: UNIV2 Select Modeline
0	-	440	0: Advance Input EDID: UNIV3 Default 1: Advance Input EDID: UNIV3 Copy PC output	Advance Input EDID: UNIV3
0	-	441	0: Default 1: 1024x768 60 2: 1280x800 60 3: 1280x1024 60 4: 1366x4768 60 5: 1440x900 60 6: 1400x1050 60 7: 1600x900 60 8: 1600x1200 60 9: 1680x1050 60 10: 1920x1080 60 11: 1920x1200 60(RB)	Advance Input EDID: UNIV3 Select Modeline
0	-	445	0: Advance Input EDID: UNIV4 Default	Advance Input EDID: UNIV4

Set	Get	Function	Parameter1	Description Control Type
			1: Advance Input EDID: UNIV4 Copy PC output	
0	-	446	0: Default 1: 1024x768 60 2: 1280x800 60 3: 1280x1024 60 4: 1366x4768 60 5: 1440x900 60 6: 1400x1050 60 7: 1600x900 60 8: 1600x1200 60 9: 1680x1050 60 10: 1920x1080 60 11: 1920x1200 60(RB)	Advance Input EDID: UNIV4 Select Modeline
0	1	450	-100 ~ 24	Program Max Volume Limit
0	1	451	-100 ~ 24	Preview Max Volume Limit
-	1	460	0: 640x480 60 1: 640x480 67(Mac13) 2: 640x480 72 3: 640x480 75 4: 640x480 85 5: 720x400 70 6: 720x400 85 7: 800x600 56 8: 800x600 60 9: 800x600 72 10: 800x600 75 11: 800x600 85 12: 832x624 75 Mac16 13: 1024x768 60 14: 1024x768 70 15: 1024x768 75 16: 1024x768 75 Mac19 17: 1024x768 85 18: 1024x800 84 Sun 19: 1152x864 75 20: 1152x870 75 Mac21 21: 1152x900 66 Sun 22: 1152x900 76 Sun 23: 1280x720 60 24: 1280x800 60 R 25: 1280x800 60 26: 1280x960 60 27: 1280x960 85 28: 1280x768 60 R 29: 1280x768 60 30: 1280x1024 60 31: 1280x1024 75 32: 1280x1024 76 Sun 33: 1280x1024 85 34: 1366x768 60 R 35: 1366x768 60 36: 1440x900 60 R 37: 1440x900 60 38: 1400x1050 60 39: 1400x1050 75 40: 1600x900 60 R	Program Input status

Set	Get	Function	Parameter1	Description Control Type
			41: 1600x1200 60 42: 1680x1050 60 R 43: 1680x1050 60 44: 1920x1080 60 45: 1920x1200 60 R 46: 2048x1080 50 47: 2048x1080 60 48: 3840x2160@24Hz 49: 3840x2160@25Hz 50: 3840x2160@29_97Hz 51: 3840x2160@30Hz 52: 4096x2160@24Hz 100: Custom1 101: Custom2 102: Custom3 103: Custom4 150: 480i 60 151: 480p 60 152: 576i 50 153: 576p 50 154: 720p 50 155: 720p 60 156: 1080i 50 157: 1080i 60 158: 1080p 24 159: 1080p 50 160: 1080p 60 200: NTSC 201: PAL 202: PAL-M 203: PAL-N 204: NTSC 4.43 205: SECAM 206: PAL-60 250: No Input detected 251: Not supported	
-	1	461	0: 640x480 60 1: 640x480 67(Mac13) 2: 640x480 72 3: 640x480 75 4: 640x480 85 5: 720x400 70 6: 720x400 85 7: 800x600 56 8: 800x600 60 9: 800x600 72 10: 800x600 75 11: 800x600 85 12: 832x624 75 Mac16 13: 1024x768 60 14: 1024x768 70 15: 1024x768 75 16: 1024x768 75 Mac19 17: 1024x768 85 18: 1024x800 84 Sun 19: 1152x864 75 20: 1152x870 75 Mac21	Preview Input status

Set	Get	Function	Parameter1	Description Control Type
			21: 1152x900 66 Sun 22: 1152x900 76 Sun 23: 1280x720 60 24: 1280x800 60 R 25: 1280x800 60 26: 1280x960 60 27: 1280x960 85 28: 1280x768 60 R 29: 1280x768 60 30: 1280x1024 60 31: 1280x1024 75 32: 1280x1024 76 Sun 33: 1280x1024 85 34: 1366x768 60 R 35: 1366x768 60 36: 1440x900 60 R 37: 1440x900 60 38: 1400x1050 60 39: 1400x1050 75 40: 1600x900 60 R 41: 1600x1200 60 42: 1680x1050 60 R 43: 1680x1050 60 44: 1920x1080 60 45: 1920x1200 60 R 46: 2048x1080@50Hz 47: 2048x1080@60Hz 100: Custom1 101: Custom2 102: Custom3 103: Custom4 150: 480i 60 151: 480p 60 152: 576i 50 153: 576p 50 154: 720p 50 155: 720p 60 156: 1080i 50 157: 1080i 60 158: 1080p 24 159: 1080p 50 160: 1080p 60 200: NTSC 201: PAL 202: PAL-M 203: PAL-N 204: NTSC 4.43 205: SECAM 206: PAL-60 250: No Input detected 251: Not supported	
-	1	462	0: 640x480 60 1: 640x480 67(Mac13) 2: 640x480 72 3: 640x480 75 4: 640x480 85 5: 720x400 70	PIP Input status

Set	Get	Function	Parameter1	Description Control Type
			6: 720x400 85 7: 800x600 56 8: 800x600 60 9: 800x600 72 10: 800x600 75 11: 800x600 85 12: 832x624 75 Mac16 13: 1024x768 60 14: 1024x768 70 15: 1024x768 75 16: 1024x768 75 Mac19 17: 1024x768 85 18: 1024x800 84 Sun 19: 1152x864 75 20: 1152x870 75 Mac21 21: 1152x900 66 Sun 22: 1152x900 76 Sun 23: 1280x720 60 24: 1280x800 60 R 25: 1280x800 60 26: 1280x960 60 27: 1280x960 85 28: 1280x768 60 R 29: 1280x768 60 30: 1280x1024 60 31: 1280x1024 75 32: 1280x1024 76 Sun 33: 1280x1024 85 34: 1366x768 60 R 35: 1366x768 60 36: 1440x900 60 R 37: 1440x900 60 38: 1400x1050 60 39: 1400x1050 75 40: 1600x900 60 R 41: 1600x1200 60 42: 1680x1050 60 R 43: 1680x1050 60 44: 1920x1080 60 45: 1920x1200 60 R 46: 2048x1080@50Hz 47: 2048x1080@60Hz 100: Custom1 101: Custom2 102: Custom3 103: Custom4 150: 480i 60 151: 480p 60 152: 576i 50 153: 576p 50 154: 720p 50 155: 720p 60 156: 1080i 50 157: 1080i 60 158: 1080p 24 159: 1080p 50 160: 1080p 60	

Set	Get	Function	Parameter1	Description Control Type
			200: NTSC 201: PAL 202: PAL-M 203: PAL-N 204: NTSC 4.43 205: SECAM 206: PAL-60 250: No Input detected 251: Not supported	
-	1	463	0: Native HDMI1 1: Native HDMI2 2: Native DP 3: Native VGA 4: 640x480 60 5: 640x480 75 6: 800x600 50 7: 800x600 60 8: 800x600 75 9: 1024x768 50 10: 1024x768 60 11: 1024x768 75 12: 1280x768 50 13: 1280x768 60 14: 1280x720 60 15: 1280x800 60 16: 1280x1024 50 17: 1280x1024 60 18: 1280x1024 75 19: 1366x768 50 20: 1366x768 60 21: 1400x1050 50 22: 1400x1050 60 23: 1600x900 60 R 24: 1600x1200 50 25: 1600x1200 60 26: 1680x1050 60 27: 1920x1080 60 28: 1920x1200 60 R 29: 2048x1080 50 30: 2048x1080 60 31: 3840x2160@24Hz 32: 3840x2160@25Hz 33: 3840x2160@29_97Hz 34: 3840x2160@30Hz 35: 4096x2160@24Hz 100: 480P 60 101: 576P 50, 102: 720P 50, 103: 720P 60, 104: 1080i 50, 105: 1080i 60, 106: 1080P 50, 107: 1080P 60, 108: 1080P 24, 109: 480P 59.94 110: 720P 59.94 111: 1080i 59.94	Program output status

Set	Get	Function	Parameter1	Description Control Type
			112: 1080P 23.98 113: 1080P 29.97 114: 1080P 59.94 150: Custom1 151: Custom2 152: Custom3 153: Custom4	
-	1	464	0: Single Picture 1: 640x480 60 2: 640x480 75 3: 800x600 50 4: 800x600 60 5: 800x600 75 6: 1024x768 50 7: 1024x768 60 8: 1024x768 75 9: 1280x768 50 10: 1280x768 60 11: 1280x720 60 12: 1280x800 60 13: 1280x1024 50 14: 1280x1024 60 15: 1280x1024 75 60: 480P 60 61: 576P 50 62: 720P 50 63: 720P 60 64: 480P 59.94 65: 720P 59.94 90: Custom1 91: Custom2 92: Custom3 93: Custom4	Preview output status
-	1	465	0: Follow Program 1: Follow Preview	HDMI1 output status
-	1	466	0: Free Run 1: Frame Lock	Sync Mode status
-	1	467	N/A	Firmware Revision
-	1	500	N/A	Program blank / freeze / blank status 0 : Program off 1 : Program Blank & Mute 2 : Program Blank 3 : Program Mute 4 : Program Freeze & Mute 5 : Program Freeze 6 : Program Blank & Freeze & Mute 7 : Program Blank & Freeze
-	1	501	N/A	Preview blank / freeze/ blank status 0 : Preview off 1 : Preview Blank & Mute 2 : Preview Blank 3 : Preview Mute 4 : Preview Freeze & Mute 5 : Preview Freeze 6 : Preview Blank & Freeze & Mute 7 : Preview Blank & Freeze

Set	Get	Function	Parameter1	Description Control Type
0	1	520	0: Best Fit 1: Letterbox 2: Follow Output 3: Virtual Wide 4: Follow Input 5: Custom	Preview Aspect Ratio
0	1	521	-16 ~ 16	Preview Aspect Ratio Custom H-Pan
0	1	522	-16 ~ 16	Preview Aspect Ratio Custom V-Pan
0	1	523	-8 ~ 8	Preview Aspect Ratio Custom H-Zoom
0	1	524	-8 ~ 8	Preview Aspect Ratio Custom V-Zoom
0	1	525	0: 100% 1: 150% 2: 200% 3: 225% 4: 250% 11: Custom	Preview Zoom
0	1	526	0 ~ 24	Preview Custom Zoom
0	1	527	0 ~ 32	Zoom H-Pan(Disabled when aspect ratio = Custom)
0	1	528	0 ~ 32	Zoom V-Pan(Disabled when aspect ratio = Custom)
0	1	529	0 ~ A	Preview Output Positioning – H Start
0	1	530	A ~ B	Preview Output Positioning – H End
0	1	531	0 ~ A	Preview Output Positioning – H Position
0	1	532	A ~ B	Preview Output Positioning – H Size
0	1	533	0 ~ A	Preview Output Positioning – V Start
0	1	534	A ~ B	Preview Output Positioning – V End
0	1	535	0 ~ A	Preview Output Positioning – V Position
0	1	536	A ~ B	Preview Output Positioning – V Size
0	-	541	0: Default 1: 1024x768 60 2: 1280x800 60 3: 1280x1024 60 4: 1366x768 60 5: 1440x900 60 6: 1400x1050 60 7: 1600x900 60(RB) 8: 1600x1200 60 9: 1680x1050 60 10: 1920x1080 60 11: 1920x1200 60(RB) 12: 720P 50 13:720P 60 14:1080P 50 15:1080p 60 16:2K 50 17:2K 60	
0	-	546	0: Default 1: 1024x768 60 2: 1280x800 60 3: 1280x1024 60	

Set	Get	Function	Parameter1	Description Control Type
			4: 1366x768 60 5: 1440x900 60 6: 1400x1050 60 7: 1600x900 60(RB) 8: 1600x1200 60 9: 1680x1050 60 10: 1920x1080 60 11: 1920x1200 60(RB) 12: 720P 50 13: 720P 60 14: 1080P 50 15: 1080p 60 16: 2K 50 17: 2K 60	

LIMITED WARRANTY

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

What is Covered

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

What is Not Covered

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

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How Long Does this Coverage Last

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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:

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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.

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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.

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KRAMER

P/N: 2900-300327 Rev: 2

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.

We welcome your questions, comments, and feedback.

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