



KRAMER ELECTRONICS LTD.

# USER MANUAL

MODEL:

**VP-553xl**

Presentation Switcher/Scaler

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P/N: 2900-300421 Rev 3



# VP-553xl Quick Start Guide

This guide helps you install and use your product for the first time. For more detailed information, go to <http://www.kramerav.com/manual/VP-553xl> to download the latest manual (or scan the QR code) and check if firmware upgrades are available.

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

- The VP-553xl Presentation Switcher/Scaler
- 1 Set of rack ears
- 1 Quick start guide
- 1 Power cord
- 4 Rubber feet

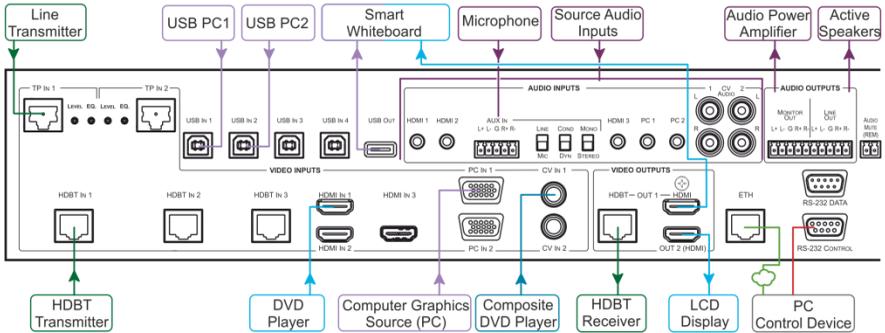
## Step 2: Install the VP-553xl

To rack mount the machine attach both ear brackets to the machine (by removing the three screws from each side of the machine and replacing those screws through the ear brackets) or place the machine on a table.



## Step 3: Connect inputs and outputs

Always switch OFF the power on each device before connecting it to your VP-553xl. For best results, we recommend that you always use Kramer high-performance cables to connect AV equipment to the VP-553xl.



### RJ-45 Pinout

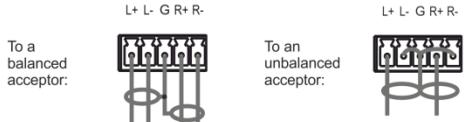
For the Ethernet and HDBaseT connectors, see the proper wiring diagram below



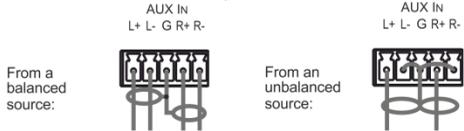
| EIA / TIA 568B |                |
|----------------|----------------|
| PIN            | Wire Color     |
| 1              | Orange / White |
| 2              | Orange         |
| 3              | Green / White  |
| 4              | Blue           |
| 5              | Blue / White   |
| 6         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

For optimum range and performance use Kramer's BC-UNIKat cable. This specially built cable significantly outperforms regular CAT 6 cables.

### Connect the audio output:



### Connect the audio AUX IN input:



## Step 4: Connect the power

Connect AC power to the rear of the VP-553xl, switch on its power and then switch on the power on each device.

## Step 5: Set operation parameters via OSD menu

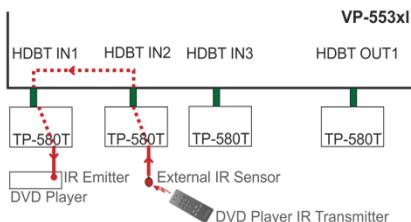
Enter the OSD menu via the MENU button on the front panel. Select a menu item and set parameters as required.

| Menu Item                    | Function   |
|------------------------------|--|
| <b>OUTPUT 1 and OUTPUT 2</b> |  |
| SOURCE                       | Select the input source  |
| PICTURE                      | Set the contrast, brightness, color, hue, saturation, sharpness and noise reduction  |
| SIZE                         | Select the size of the image   |
| RESOLUTION                   | Select the resolution  |
| HDCP                         | Set the INPUT HDCP (ON or OFF) and OUTPUT HDCP (FOLLOW INPUT or FOLLOW OUTPUT)   |
| AUTO SYNC OFF                | Turn the auto sync ON/OFF. When ON, this de-activates the output after a few minutes if no input is present  |
| AUDIO                        | Adjust Output 1 audio parameters: Source, Embedded audio, output volume, mute, delay, microphone mix settings and level.                                       |
| AUDIO EQ.                    | Set the audio EQ levels  |
| PC (OUTPUT 1 only)           | PC settings: auto adjust the image, set the horizontal and vertical position of the image, the phase and clock, WXGA or XGA                                    |
| <b>GENERAL</b>               |  |
| AUDIO OUT                    | Set the parameters of the MONITOR OUT and SPEAKER OUT parameters: source, embedded audio setup and bypass, output volume, mute, delay, MIC settings, and so on |
| AUDIO SET                    | Set the input volume and microphone settings   |
| USB                          | Set the USB switcher parameters  |
| OSD                          | Set the OSD parameters   |
| FACTORY                      | Reset the scaler parameters  |
| ETHER(NET)                   | Set the Ethernet parameters  |
| MISC                         | Set IR routing and HDCP input  |
| INFO                         | Displays the VP-553xl source and input resolutions, HDCP status, MIC settings and so on  |

If you cannot see any images, verify that the display, TV, or projector is in good working order, is connected to the VP-553xl, and that the VP-553xl is selected as its source. If you still don't see an image, press and hold the RESET TO XGA/720p button for 3 seconds to reset the output to XGA or 720p resolution.

## Step 6: Control peripheral devices via IR remote control

You can use a remote control transmitter (that is used for controlling a peripheral device, for example, a DVD player) to send commands (to the A/V equipment) from/to any of the transmitters /receiver connected to the HDBT connectors.



## Step 7: Operate via the front panel buttons and via the:

### Embedded Web Page

|                 |
|-----------------|
| Switching       |
| Scaler          |
| Device settings |
| USB routing     |
| Audio settings  |
| EDID            |
| Data routing    |
| Authentication  |
| About           |

### RS-232 and Ethernet

|   |  |                     |       |
|---|--|---------------------|-------|
| <b>RS-232</b>   |  |                     |       |
| Baud Rate:  | 115,200  | Parity:             | None  |
| Data Bits:  | 8  | Command Format:     | ASCII |
| Stop Bits:  | 1  |                     |       |
| Example (Route the video from the HDMI3 input to the HDMI1 output port):  |  | #ROUTE 1,1,2,<cr>   |       |
| <b>Ethernet</b>   |  |                     |       |
| To reset the IP settings to the factory reset values go to : Menu-> Factory-> RESET->Change the option to YES and press Enter |  |                     |       |
| IP Address:   | 192.168.1.39   | Default UDP Port #: | 50000 |
| Subnet mask:  | 255.255.255.0  | Maximum UDP Ports:  | 4     |
| Default gateway:  | 192.168.1.254  |                     |       |
| <b>Full Factory Reset</b>   |  |                     |       |
| OSD   | Go to : Menu-> Factory-> RESET->Change the option to YES and press Enter |                     |       |



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# 1 Introduction

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

Congratulations on purchasing your Kramer **VP-553xI** Presentation Switcher/Scaler. This product, which incorporates HDMI™ technology, is ideal for:

- Projection systems in conference rooms, boardrooms, hotels and churches
- Video conferencing setups

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## 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 [www.kramerav.com/downloads/VP-553xl](http://www.kramerav.com/downloads/VP-553xl) to check for up-to-date user manuals, application programs, and to check if firmware upgrades are available (where appropriate).

### 2.1 Achieving the Best Performance

To achieve the best performance:

- Use only good quality connection cables (we recommend Kramer high-performance, high-resolution cables) to avoid interference, deterioration in signal quality due to poor matching, and elevated noise levels (often associated with low quality cables)
- Do not secure the cables in tight bundles or roll the slack into tight coils
- Avoid interference from neighboring electrical appliances that may adversely influence signal quality
- Position your Kramer **VP-553xl** 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 [www.kramerav.com/support/recycling/](http://www.kramerav.com/support/recycling/).

## 3 Overview

The **VP-553xl** is a high-performance 6x2 presentation switcher/scaler for HDMI™, HDBaseT and analog signals, and a 4x1 USB switcher. The unit has dual, independent, scaled outputs, the first on both HDMI and HDBaseT connectors, and the second on an HDMI connector. Both can take from the six digital inputs: three HDBaseT and three HDMI signals; while the first also includes analog inputs – for two computer graphics signals, two composite video and two analog TP inputs. Analog, digital and embedded audio are supported, and the unit also includes a microphone input and rich DSP features.

The **VP-553xl** features:

- Pix-Perfect™ scaling technology - Kramer's precision pixel mapping and high quality scaling technology. High-quality 3:2 and 2:2 pull down de-interlacing and full up- and down-scaling of video input signals
- System Range for the HDBT inputs and outputs - Up to 70m (230ft)



For optimum range and performance using HDBaseT™, use Kramer's **BC-UNIKat** cable. Note that the transmission range depends on the signal resolution, source and display used. The distance using non-Kramer CAT 6 cable may not reach these ranges.

- System Range for the TP inputs and outputs - over 250m (more than 820ft)



For optimum range and performance using TP, use Kramer's **BC-STP** cable where skewing is not an issue or the Kramer **BC-XTP** Unshielded Twisted Pair (UTP) skew-free cable. Note that the transmission range depends on the signal resolution, source and display used. The distance using non-Kramer CAT 6 cable may not reach these ranges.

- HDTV compatibility
- HDCP compliance - the HDCP (High Definition Content Protection) license agreement allows copy-protected data on the HDMI input to pass only to the HDMI outputs
- Video inputs - three HDMI connectors, two VGA on 15-pin HD connectors each with unbalanced stereo audio on 3.5mm connectors, two composite video on RCA connectors with unbalanced stereo audio on RCA connectors, three HDBaseT on RJ-45 connectors and two analog TP on RJ-45 connectors

- Two scaled HDMI outputs (OUT 1 also outputs HDBaseT)
- Output resolutions - HDTV and computer graphics and 1080p/UXGA with selectable refresh rates
- A 4x1 USB switcher that can be set to follow the switching of the video layer or can be used as an independent switcher
- OSD (On Screen Display) - for easy setup and adjustment, accessible via the IR remote control and via the front panel buttons
- Powerful audio features via DSP technology
- Input and output audio level adjustment
- Selectable microphone talkover or mix modes
- Automatic audio detection and selection of the HDMI input source (the default selection is HDMI). If not present, the unit uses the audio from the analog input. Manual audio selection is also available
- Audio inputs - three analog HDMI audio and two analog PC audio on 3.5mm mini jacks; two stereo CV audio on RCA connectors each with individual level controls
- A microphone input - dynamic or condenser (with 48V phantom voltage)
- Audio outputs - two balanced stereo audio on terminal blocks (mirrored with independent volume settings)
- Multiple aspect ratio selections - full, over scan, under scan, letter box, pan scan and best fit
- Built-in ProcAmp - color, hue, sharpness, noise, contrast and brightness
- Front panel control - audio mute, video blanking and freeze frame
- Built-in Web pages for easy setup and remote control
- Firmware upgrade via the Ethernet
- Non-Volatile memory that saves the final settings

Control your **VP-553xl**:

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

The **VP-553xl** is housed in a 19" 2U rack mountable enclosure, with rack "ears" included, and is fed from a 100-240 VAC universal switching power supply.

### 3.1 Using the USB Switcher

The **VP-553xl** incorporates a simple, yet effective, 4:1 USB 1.1 switcher. The switcher can be used, for example, to connect one out of several PCs to a smart board or other USB client.

The USB switcher can be routed as a separate layer, or can be tied to the video switching layer of the unit. This creates a powerful "USB follows video" system – the PC routed to the display also connects to the smart board. In many meeting room setups these USB switching schemes are highly effective.

### 3.2 Using Twisted Pair Cable for HDBT

Kramer engineers have developed special twisted pair cables to best match our digital twisted pair products; **BC-UNIKat** (CAT 6 23 AWG cable) significantly outperforms regular CAT 5 / CAT 6 cables.



We strongly recommend that you use shielded twisted pair cable.

### 3.3 Shielded Twisted Pair (STP) / Unshielded Twisted Pair (UTP)

We recommend that you use Shielded Twisted Pair (STP) cable, and stress that the compliance to electromagnetic interference was tested using STP cable. There are different levels of STP cable available, and we advise you to use the best quality STP cable that you can afford. Our non-skew-free cable, Kramer **BC-STP** is intended for analog signals where skewing is not an issue.

In cases where there is skewing in analog TP systems, our Unshielded Twisted Pair (UTP) skew-free cable, Kramer **BC-XTP**, may be advantageous, and UTP cable might also be preferable for long range applications. In any event when using UTP cable, it is advisable to ensure that the cable is installed far away from electric cables, motors and so on, which are prone to create electrical interference.

### 3.4 Defining the VP-553xl Presentation Switcher/Scaler

This section defines the **VP-553xl**.

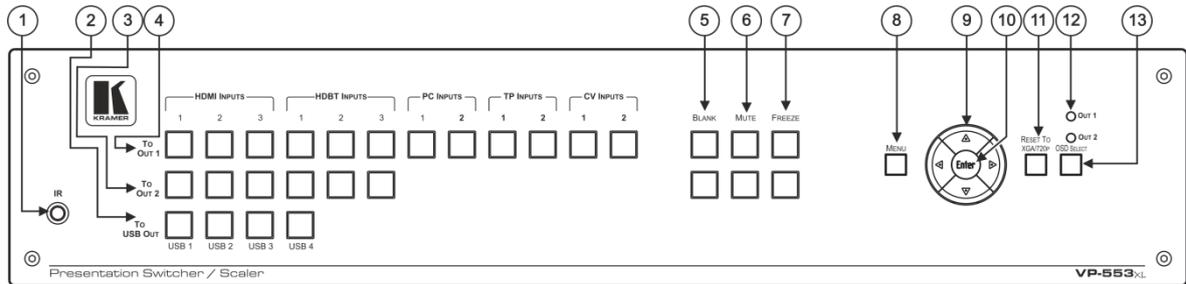


Figure 1: VP-553xl Presentation Switcher/Scaler Front Panel

| #  | Feature                  | Function  |
|----|--------------------------|---|
| 1  | IR Receiver              | Receives signals from the remote control transmitter  |
| 2  | Input Selector Buttons   | TO USB OUT Press a button to switch a USB input to the output (from USB 1 to USB 4)   |
| 3  |                          | TO OUT 2 Press a button to switch an input to the OUT 2 output (HDMI inputs from 1 to 3 and HDBT inputs from 1 to 3)  |
| 4  |                          | TO OUT 1 Press a button to switch an input to the OUT 1 output (HDMI inputs from 1 to 3, HDBT inputs from 1 to 3, PC inputs from 1 to 2, TP inputs from 1 to 2 and CV inputs from 1 to 2)               |
| 5  | BLANK Buttons            | Press to toggle between a blank screen and the display on OUT 1 and OUT 2 separately; can be programmed to follow MUTE (see <a href="#">Section 6.2.5</a> )   |
| 6  | MUTE Buttons             | Press to toggle between muting (blocking out the sound) and enabling the embedded audio output for OUT 1 and OUT 2 separately<br>Note that the mute button will not affect the LINE and MONITOR outputs |
| 7  | FREEZE Buttons           | Press to freeze/unfreeze the output video image on OUT 1 and OUT 2 separately; can be programmed to follow MUTE (see <a href="#">Section 6.2.5</a> )  |
| 8  | MENU Button              | Displays the OSD menu (see <a href="#">Section 6.2</a> )  |
| 9  | Navigation Buttons       | ◀ Button Press to decrease numerical values or select from several definitions  |
|    |                          | ▲ Button Press to move up the menu list values (see <a href="#">Section 6.2</a> )   |
|    |                          | ▼ Button Press to move down the menu list (see <a href="#">Section 6.2</a> )  |
|    |                          | ▶ Button Press to increase numerical values or select from several definitions  |
| 10 | ENTER Button             | Press to accept changes and change the SETUP parameters (see <a href="#">Section 6.2</a> )  |
| 11 | RESET TO XGA/720p Button | Press to reset the video resolution of both scalers to XGA or 720p<br>Press and hold for about 2 seconds to reset to XGA; or press and hold for about 5 seconds to reset to 720p                        |
| 12 | OSD OUT LEDs             | Red LEDs indicate whether the OSD is displayed on OUT 1 and/or OUT 2  |
| 13 | OSD SELECT Button        | Click to select the output on which the OSD will be displayed (on both outputs, on output 1, output 2 or none)  |

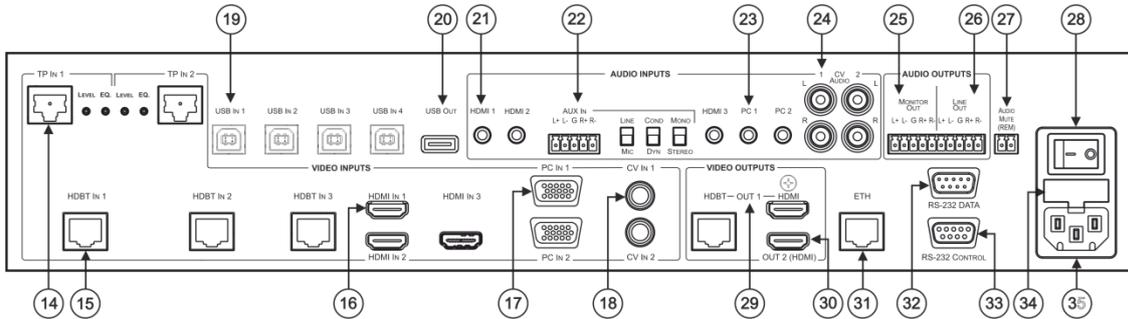


Figure 2: VP-553xl Presentation Switcher/Scaler Rear Panel

| #  | Feature                    | Function  |  |  |
|----|----------------------------|---|--|--|
| 14 | VIDEO INPUT Connectors     | TP IN   | Connect to a TP transmitter, for example the <b>TP-121xl</b> (from 1 to 2) |  |
|    |                            | LEVEL Trimmer   | Use to adjust the input signal level                                       |  |
|    |                            | EQ. Trimmer   | Use to adjust the cable compensation equalization level                    |  |
| 15 | HDBT IN                    | Connect to an HDBT Transmitter (for example, the Kramer <b>TP-580Txr</b> ) to pass audio and video signals as well as serial commands (from 1 to 3) |  |  |
| 16 | HDMI IN                    | Connect to the HDMI source (from 1 to 3)  |  |  |
| 17 | PC IN 15-pin HD            | Connect to the computer graphics source (from 1 to 2)   |  |  |
| 18 | CV RCA                     | Connect to the composite video source (from 1 to 2)   |  |  |
| 19 | USB (B type) IN Connectors | Connect to a USB host (from 1 to 4)   |  |  |
| 20 | USB (A type) OUT Connector | Connect to a USB client   |  |  |
| 21 | AUDIO INPUT Connectors     | HDMI 3.5mm Mini Jack  | Connect to the analog audio HDMI source (from 1 to 3)                      |  |
| 22 | AUDIO INPUT Connectors     | AUX IN  | Terminal Block Connector   | Connect to an auxiliary stereo balanced audio source or microphone |
|    |                            | LINE/MIC Selector   |  | Select either a line or a microphone input                         |
|    |                            | COND/DYN Selector   |  | Select between a condenser and a dynamic type microphone           |
|    |                            | MONO/STEREO   |  | Select between a stereo or mono input                              |
| 23 | PC 3.5mm Mini Jack         | Connect to the analog audio computer graphics source (from 1 to 2)  |  |  |
| 24 | CV                         | Connect to the L and R analog audio composite video source (from 1 to 2)  |  |  |

| #  | Feature                         |             | Function   |   |
|----|---------------------------------|-------------|--|---|
| 25 | AUDIO OUTPUT                    | MONITOR OUT | Connect to a stereo analog audio acceptor (for example, active speakers or an audio power amplifier)   |   |
| 26 | Terminal Block Connectors       | LINE OUT    | Connect to a stereo analog audio acceptor (for example, active speakers or an audio power amplifier)   |   |
| 27 | REM Terminal Block Connector    |             | Remote switch to mute the analog and embedded audio signal. Allows easy integration of the audio system with a public announcement audio system, usually used in cases of alarms or other audio messages |   |
| 28 | POWER Switch                    |             | Switch for turning the unit ON or OFF  |   |
| 29 | VIDEO OUTPUT Connectors         | OUT 1       | HDMI   | Connect to an HDMI acceptor   |
|    |                                 |             | HDBT RJ-45   | Connect to an HDBT Receiver (for example, the Kramer <b>TP-580Rxr</b> ) |
| 30 |                                 | OUT 2       | Connect to an HDMI acceptor  |   |
| 31 | ETHERNET Connector              |             | Connects to the PC or other Serial Controller through computer networking  |   |
| 32 | RS-232 DATA 9-pin D-sub Port    |             | Connect to the PC or the remote controller and pass data between this RS-232 port and the HDBT OUT port or one of the HDBT IN ports  |   |
| 33 | RS-232 CONTROL 9-pin D-sub Port |             | Connect to the PC or the remote controller   |   |
| 34 | Mains Power Fuse                |             | Fuse for protecting the device   |   |
| 35 | Mains Power Connector           |             | Connect to the mains power   |   |

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



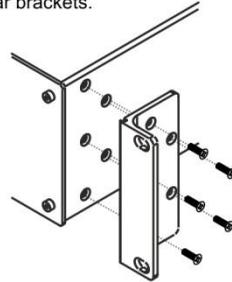
### CAUTION!

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

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

### To rack-mount a machine:

1. Attach both ear brackets to the machine. To do so, remove the screws from each side of the machine (5 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

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## 5 Connecting the VP-553xl



Always switch off the power to each device before connecting it to your **VP-553xl**. After connecting your **VP-553xl**, connect its power and then switch on the power to each device.



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

To connect the **VP-553xl**, as illustrated in the example in [Figure 3](#), do the following:

1. Connect an HDMI source (for example, a Blu-ray player) to the HDMI VIDEO INPUT connector (from 1 to 3).  
Alternatively, you can connect the DVI connector on the DVD player to the HDMI connector on the VP-553xl via a DVI-HDMI adapter. When using this adapter, you can connect the audio signal via the terminal block connector
2. Connect a computer graphics source to the PC 1 15-pin HD VIDEO INPUT connector (from 1 to 2).
3. Connect a composite video source (for example, a composite video player) to the CV VIDEO INPUT RCA connector (from 1 to 2).
4. Connect a TP transmitter (for example, **TP-121xl**) to the RJ-45 TP IN connectors (from 1 to 2).
5. Connect an HDBT transmitter (for example, **TP-580T**) to the RJ-45 TP IN connectors (from 1 to 3).
6. Connect the USB IN ports (from 1 to 4) (for example, a PC) and USB OUT port (for example, a smart whiteboard).
7. Connect the audio inputs (not shown in [Figure 3](#)) to the:
  - HDMI audio input 3.5mm mini jacks (from 1 to 3)
  - PC audio input 3.5mm mini jacks (from 1 to 2)
  - CV audio inputs to the L and R RCA connectors (from 1 to 2)

8. Connect an external audio source to the AUX IN 5-pin terminal block connector (not shown in [Figure 3](#)).
9. Connect the video outputs. The:
  - OUT 1 HDMI and/or HDBT output to an HDMI acceptor (for example an LCD display) and/or an HDBT receiver (for example, the output of **TP-580R** connected to HDBT)
  - HDMI OUT 2 (for example, a projector)
10. Connect the LINE OUT and/or MONITOR OUT AUDIO OUTPUT terminal blocks to:
  - An audio power amplifier
  - Active speakers
11. Connect the:
  - RS-232 DATA 9-pin D-sub Port to a PC for sending RS-232 commands via HDBT
  - RS-232 CONTROL 9-pin D-sub Port to a PC to control the unit
12. Connect the REM 2-pin terminal block contact-closure remote-control pins to a switch to mute/unmute the audio output by momentarily pressing the switch.
13. Connect the ETHERNET port, see [Section 6.4](#)

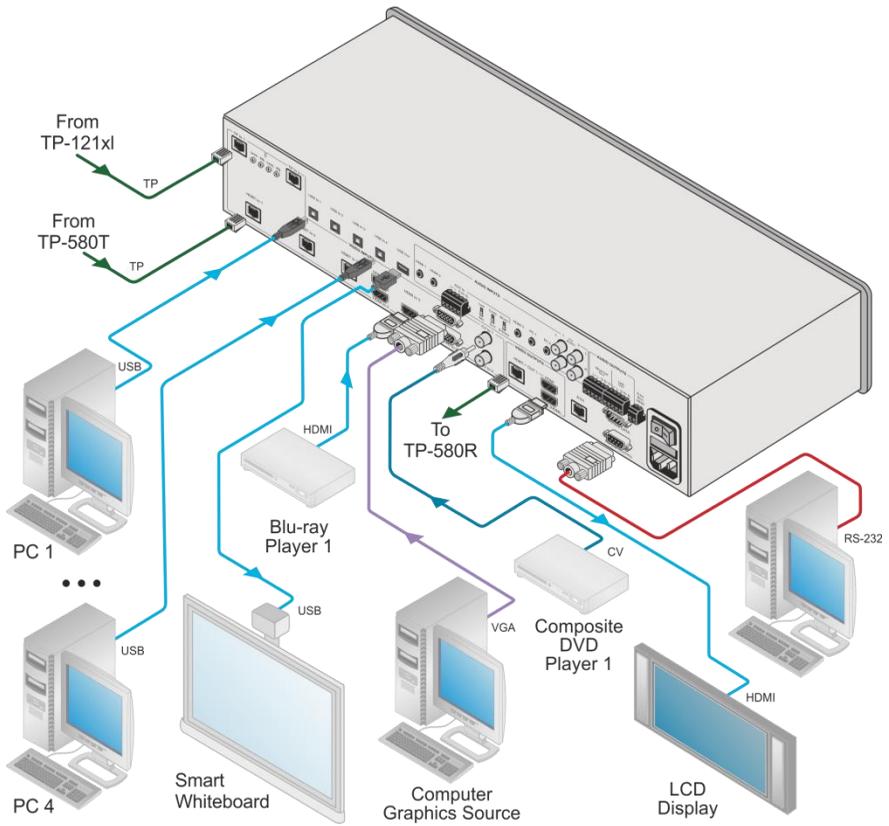


Figure 3: Connecting the VP-553xl Presentation Switcher / Scaler

## 5.1 Connecting the Balanced Stereo Audio Input and Outputs

L+ L- G R+ R-

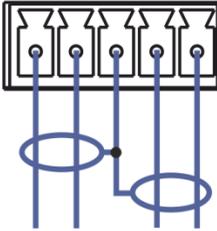


Figure 4: Balanced Stereo Audio Connection

L+ L- G R+ R-

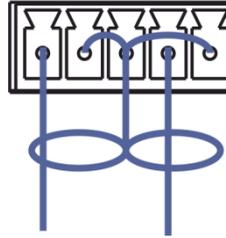


Figure 5: Unbalanced Stereo Audio Output Connection

AUX IN  
L+ L- G R+ R-

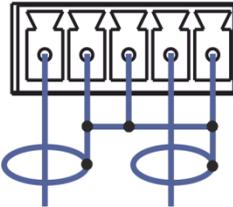


Figure 6: Unbalanced Stereo Audio Input Connection

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## 6 Controlling the VP-553xl

The **VP-553xl** can be controlled via:

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

### 6.1 Controlling via the Front Panel Buttons

The **VP-553xl** includes the following front panel buttons:

- Input selector buttons for selecting the required input: CV (1 and 2), TP (1 and 2), PC (1 and 2), HDBT (1 to 3), or HDMI (1 to 3) to OUT 1
- Input selector buttons for selecting the required input: HDBT (1 to 3), or HDMI (1 to 3) to OUT 2
- Input selector buttons for selecting the required USB port (1 to 4)
- BLANK, MUTE and FREEZE buttons (for OUT 1 and OUT 2)
- MENU, ENTER, and up, down, left and right arrow buttons
- RESET TO XGA/720p and OSD SELECT buttons

#### 6.1.1 The Auto Adjust Feature

The auto adjust feature (applies only to the PC input) automatically centers the image on the screen when pressing the ENTER front panel button on the remote control transmitter (when not within the OSD menu).

You can also implement this feature every time the input is switched to VGA or when the input resolution changes, via the AUTO SETUP menu (see [Section 6.2.2](#)).

## 6.2 Using the OSD Menu

The control buttons let you control the **VP-553xl** via the OSD menu. Press the:

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

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

### 6.2.1 The MAIN Menu

| Mode       | Function   |
|------------|--|
| OUTPUT 1   | Set the output 1 parameters, see <a href="#">Section 6.2.2</a>   |
| OUTPUT 2   | Set the output 2 parameters, see <a href="#">Section 6.2.3</a>   |
| AUDIO OUT  | Set the audio output parameters, see <a href="#">Section 6.2.4</a>   |
| AUDIO SET  | Set the audio input parameters, see <a href="#">Section 0</a>  |
| USB        | Set the USB ports behavior, see <a href="#">Section 6.2.6</a>  |
| OSD        | Set the OSD parameters: H POSITION, V POSITION, TIMER, BACKGROUND and DISPLAY, see <a href="#">Section 6.2.7</a>   |
| FACTORY    | Select YES to reset to the default parameters.<br>If you cannot see the display after factory reset, use the front panel RESET TO XGA/720p button to set the correct resolution: press to toggle between reset to XGA and reset to 720p  |
| ETHER(NET) | <b>IP MODE:</b> Set to DHCP or STATIC. When selecting STATIC IP, the IP number appears next to IP ADDRESS<br><b>SET STATIC IP:</b> set the IP ADDRESS, DEF. GATEWAY (default gateway), and SUBNET MASK.<br><b>CONTROL PORT:</b> set the CONTROL PORT number  |
| MISC.      | You can use a remote control transmitter (that is used for controlling a peripheral device, for example, a DVD player) to send commands (to the A/V equipment) from/to any of the transmitters /receiver connected to the HDBT connectors.<br><br>Select the IR transmission route for each of the units that are connected to the HDBT connectors (IN+OUT):<br><b>HDBT1 (IR OUT):</b> set to HDBT2, HDBT3 or HDBT OUT (to set the IR route from/to HDBT2, HDBT3 or HDBT OUT to HDBT1)<br><b>HDBT2 (IR OUT):</b> set to HDBT1, HDBT3 or HDBT OUT (to set the IR route from/to HDBT1, HDBT3 or HDBT OUT to HDBT2)<br><b>HDBT3 (IR OUT):</b> set to HDBT1, HDBT2 or HDBT OUT (to set the IR route from/to HDBT1, HDBT2 or HDBT OUT to HDBT3)<br><b>HDBT OUT (IR OUT):</b> set to HDBT1, HDBT2 or HDBT3 (to set the IR route from/to HDBT1, HDBT2 or HDBT3 to HDBT OUT)<br><br>For example, set HDBT1 (IR OUT) to HDBT2 to control (via IR) the peripheral device that is connected to the device connected to HDBT 1 via the device connected to HDBT2, see <a href="#">Figure 7</a> |

| Mode  | Function  |
|-------|---|
|       | <p><b>HDCP INPUT:</b> select the HDCP option for each HDMI and HDBT input to either ON (the default) or OFF.<br/>Setting HDCP support to disabled (OFF) on the HDMI input allows the source to transmit a non-HDCP signal if required (for example, when working with a Mac computer)</p>               |
| INFO. | <p>Displays the:<br/> <b>OUTPUT 1</b> information – resolution, HDCP status and input source<br/> <b>OUTPUT 2</b> information – resolution and input source<br/> <b>DIP SWITCH:</b> set MICRPHONE, PHANTOM POWER, STEREO and MUTE CONTROL ON or OFF<br/> <b>VERSION:</b> shows the firmware version</p> |

[Figure 7](#) shows the IR signal route when setting HDBT 1 (IR OUT) to HDBT 2. In this example, an External IR Sensor is connected to the IR connector of the **TP-580T** (connected to HDBT 2) and an IR Emitter is connected between the **TP-580T** (connected to HDBT 1) and a DVD player. The DVD remote control sends a command while pointing towards the External IR Sensor. The IR signal passes through the TP cables, the **VP-553xl** and the IR Emitter to the DVD player, which responds to the command sent.

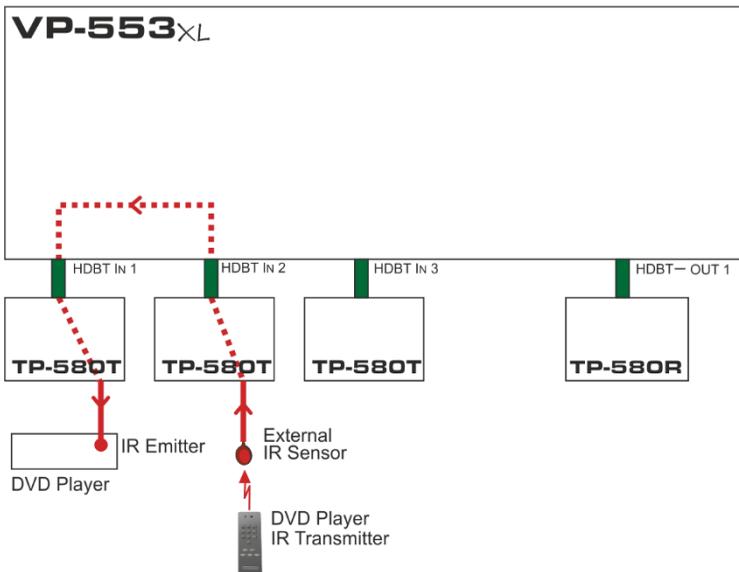


Figure 7: HDBT IR transmission Example

## 6.2.2 The OUTPUT 1 Menu

| Mode       | Function  |  |                    |               |
|------------|---|--|--------------------|---------------|
| SOURCE     | Select the source:  |  |                    |               |
|            | Source input  | Appears as:  | Source input       | Appears as:   |
|            | HDMI 1  | HDMI1  | VGA 1              | PC1           |
|            | HDMI 2  | HDMI2  | VGA 2              | PC2           |
|            | HDMI 3  | HDMI3  | Twisted pair 1     | TP1           |
|            | HDBT 1  | HDBT1  | Twisted pair 2     | TP2           |
|            | HDBT 2  | HDBT2  | CV 1               | CV1           |
|            | HDBT 3  | HDBT3  | CV 2               | CV2           |
| PICTURE    | <p><b>CONTRAST:</b> Set the contrast (the range and default values vary according to the input signal)</p> <p><b>BRIGHTNESS:</b> Set the brightness (the range and default values vary according to the input signal)</p> <p><b>COLOR:</b> set the red (R), green (G) and blue (B) shades and offsets</p> <p><b>HUE:</b> Set the color hue</p> <p><b>SATURATION:</b> Set the color saturation</p> <p><b>SHARPNESS:</b> Set the sharpness of the picture</p> <p><b>NR:</b> Select the noise reduction: OFF, LOW, MIDDLE and HIGH</p> |  |                    |               |
| SIZE       | <p>Select the size of the display: FULL, OVER SCAN, UNDER1, UNDER2, LETTER BOX, PAN SCAN, BEST FIT (default, FULL)</p> <p><b>UNDER1</b> refers to an underscan of 6%; <b>UNDER2</b> refers to an underscan of 9%</p>  |  |                    |               |
| RESOLUTION | Select the output resolution from the menu (default NATIVE):  |  |                    |               |
|            | Output resolution:  | Appears as:  | Output resolution: | Appears as:   |
|            | NATIVE  |  | 1600x1200          | 1600x1200 60  |
|            | 640x480   | 640x480 60   | 1920x1080          | 1920x1080 60  |
|            | 800x600   | 800x600 60   | 1920x1200          | 1920x1200 60  |
|            | 1024x768  | 1024x768 60  | 480p @60Hz         | 720x480P 60   |
|            | 1280x768  | 1280x768 60  | 720p @60Hz         | 1280x720P 60  |
|            | 1360x768  | 1360x768 60  | 1080i @60Hz        | 1920x1080I 60 |
|            | 1280x720  | 1280x720 60  | 1080p @60Hz        | 1920x1080P 60 |
|            | 1280x800  | 1280x800 60  | 576p @50Hz         | 720x576P 60   |
|            | 1280x1024   | 1280x1024 60   | 720p @50Hz         | 1280x720P 50  |
|            | 1440x900  | 1440x900 60  | 1080i @50Hz        | 1920x1080I 50 |
|            | 1400x1050   | 1400x1050 60   | 1080p @50Hz        | 1920x1080P 50 |
|            | 1680x1050   | 1680x1050 60   |                    |               |
|            | <b>NATIVE</b> - Select NATIVE to select the output resolution from the EDID of the connected HDMI monitor   |  |                    |               |
|            | HDCP  | <p><b>INPUT HDCP:</b> select the HDCP option for the HDMI input: either ON (the default) or OFF.</p> <p>Setting HDCP support to disabled (OFF) on the HDMI input allows the source to transmit a non-HDCP signal if required (for example, when working with a Mac computer)</p> <p><b>OUTPUT HDCP:</b> Select FOLLOW INPUT or FOLLOW OUTPUT to define whether the HDCP will follow the input or the output</p> <p>When FOLLOW INPUT is selected, it changes its HDCP output setting (for the HDMI output) according to the HDCP of the input. This option is recommended when the HDMI output is connected to a splitter/switcher</p> <p>When FOLLOW OUTPUT is selected, the scaler matches its HDCP output to the HDCP setting of the HDMI acceptor to which it is connected</p> |                    |               |
| AUTOSYNC   | Turn the auto sync ON/OFF. When ON, this de-activates the output after a few  |  |                    |               |

| Mode     | Function   |  |
|----------|--|--|
| OFF      | minutes if no input is present.<br>This is useful, for example, when the output is connected to a projector, and the projector will automatically shut down when it has no input |  |
| AUDIO    | Adjust audio parameters (see <a href="#">Section 6.2.2.1</a> )   |  |
| AUDIO EQ | Set the audio EQ values in 0.5dB steps for: BELOW 120Hz, CENTER 200Hz, CENTER 500Hz, CENTER 1200Hz, CENTER 3000Hz, CENTER 7500Hz and ABOVE 12000Hz                               |  |
| PC       | AUTO SETUP   | When set to ON, auto adjusts the image (centers it correctly on the screen) every time the input is switched to VGA or when the input resolution changes<br><br>Alternatively, you can auto adjust the image by pressing the ENTER button when not within the OSD menu |
|          | H-POSITION   | Set the horizontal position of the picture   |
|          | V-POSITION   | Set the vertical position of the picture   |
|          | PHASE  | Set the clock phase  |
|          | CLOCK  | Set the clock frequency  |
|          | WXGA/XGA   | Set to WXGA or XGA   |
|          | RESET  | Reset settings to their default values   |

### 6.2.2.1 The AUDIO Parameters

| Parameter      | Function  |   |
|----------------|---|---|
| SOURCE         | Select the audio source: FOLLOW VIDEO, HDMI1, HDMI2, HDMI3, HDBT1, HDBT2, HDBT3, PC1, PC2, TP1, TP2, CV1, CV2, or MIC |   |
| EMBEDDED AUDIO | HDMI AUDIO IN (1, 2 and 3)  | Select the HDMI 1, HDMI 2 and HDMI 3 audio sources behavior:<br><b>AUTOMATIC:</b> the embedded audio on the HDMI input is selected for an HDMI signal, or the analog audio input is selected if the input is not HDMI (for example, for a DVI input signal)<br><b>EMBEDDED:</b> the embedded audio in the HDMI signal is selected<br><b>ANALOG:</b> the analog audio input is selected<br>HDMI AUDIO IN is enabled only when one of the HDMI inputs is selected |
| OUTPUT VOLUME  | Set the output volume   |   |
| MUTE           | Set MUTE to ON or OFF   |   |
| DELAY          | Select the audio delay time: OFF, 10ms to 80ms in 10ms steps or AUTO  |   |
| MICROPHONE MIX | Set mix ON to mix the microphone input with the selected audio input or set to OFF                                    |   |
| MIX LEVEL      | Adjust the mix level (enabled when MICROPHONE MIX is set to ON)   |   |

### 6.2.3 The OUTPUT 2 Menu

| Mode         | Function  |  |                    |               |
|--------------|---|--|--------------------|---------------|
| SOURCE       | Select the source:  |  |                    |               |
|              | Source input  | Appears as:  | Source input       | Appears as:   |
|              | HDMI 1  | HDMI1  | HDBT 1             | HDBT1         |
|              | HDMI 2  | HDMI2  | HDBT 2             | HDBT2         |
|              | HDMI 3  | HDMI3  | HDBT 3             | HDBT3         |
| PICTURE      | <p><b>CONTRAST:</b> Set the contrast (the range and default values vary according to the input signal)</p> <p><b>BRIGHTNESS:</b> Set the brightness (the range and default values vary according to the input signal)</p> <p><b>COLOR:</b> set the red (R), green (G) and blue (B) shades and offsets</p> <p><b>HUE:</b> Set the color hue</p> <p><b>SATURATION:</b> Set the color saturation</p> <p><b>SHARPNESS:</b> Set the sharpness of the picture</p> <p><b>NR:</b> Select the noise reduction: OFF, LOW, MIDDLE and HIGH</p> |  |                    |               |
| SIZE         | <p>Select the size of the display: FULL, OVERS CAN, UNDER1, UNDER2, LETTER BOX, PANS CAN, BEST FIT (default, FULL)</p> <p><b>UNDER1</b> refers to an underscan of 6%; <b>UNDER2</b> refers to an underscan of 9%</p>  |  |                    |               |
| RESOLUTION   | Select the output resolution from the menu (default NATIVE):  |  |                    |               |
|              | Output resolution:  | Appears as:  | Output resolution: | Appears as:   |
|              | NATIVE  |  | 1600x1200          | 1600x1200 60  |
|              | 640x480   | 640x480 60   | 1920x1080          | 1920x1080 60  |
|              | 800x600   | 800x600 60   | 1920x1200          | 1920x1200 60  |
|              | 1024x768  | 1024x768 60  | 480p @60Hz         | 720x480P 60   |
|              | 1280x768  | 1280x768 60  | 720p @60Hz         | 1280x720P 60  |
|              | 1360x768  | 1360x768 60  | 1080i @60Hz        | 1920x1080I 60 |
|              | 1280x720  | 1280x720 60  | 1080p @60Hz        | 1920x1080P 60 |
|              | 1280x800  | 1280x800 60  | 576p @50Hz         | 720x576P 60   |
|              | 1280x1024   | 1280x1024 60   | 720p @50Hz         | 1280x720P 50  |
|              | 1440x900  | 1440x900 60  | 1080i @50Hz        | 1920x1080I 50 |
|              | 1400x1050   | 1400x1050 60   | 1080p @50Hz        | 1920x1080P 50 |
|              | 1680x1050   | 1680x1050 60   |                    |               |
|              | <b>NATIVE</b> - Select NATIVE to select the output resolution from the EDID of the connected HDMI monitor   |  |                    |               |
|              | HDCP  | <p><b>INPUT HDCP:</b> select the HDCP option for the HDMI input: either ON (the default) or OFF.</p> <p>Setting HDCP support to disabled (OFF) on the HDMI input allows the source to transmit a non-HDCP signal if required (for example, when working with a Mac computer)</p> <p><b>OUTPUT HDCP:</b> Select FOLLOW INPUT or FOLLOW OUTPUT to define whether the HDCP will follow the input or the output</p> <p>When FOLLOW INPUT is selected, it changes its HDCP output setting (for the HDMI output) according to the HDCP of the input. This option is recommended when the HDMI output is connected to a splitter/switcher</p> <p>When FOLLOW OUTPUT is selected, the scaler matches its HDCP output to the HDCP setting of the HDMI acceptor to which it is connected</p> |                    |               |
| AUTOSYNC OFF | <p>Turn the auto sync ON/OFF. When ON, this de-activates the output after a few minutes if no input is present.</p> <p>This is useful, for example, when the output is connected to a projector, and the projector will automatically shut down when it has no input</p>  |  |                    |               |
| AUDIO        | Adjust audio parameters (see <a href="#">Section 6.2.3.1</a> )  |  |                    |               |

| Mode     | Function   |
|----------|--|
| AUDIO EQ | Set the audio EQ values in 0.5dB steps for: BELOW 120Hz, CENTER 200Hz, CENTER 500Hz, CENTER 1200Hz, CENTER 3000Hz, CENTER 7500Hz and ABOVE 12000Hz |

### 6.2.3.1 The AUDIO Parameters

| Parameter      | Function  |
|----------------|---|
| SOURCE         | Select the audio source: FOLLOW VIDEO, HDMI1, HDMI2, HDMI3, HDBT1, HDBT2, HDBT3, PC1, PC2, TP1, TP2, CV1, CV2, or MIC   |
| EMBEDDED AUDIO | HDMI AUDIO IN (1, 2 and 3)<br>Select the HDMI 1, HDMI 2 and HDMI 3 audio sources behavior:<br><b>AUTOMATIC:</b> the embedded audio on the HDMI input is selected for an HDMI signal, or the analog audio input is selected if the input is not HDMI (for example, for a DVI input signal)<br><b>EMBEDDED:</b> the embedded audio in the HDMI signal is selected<br><b>ANALOG:</b> the analog audio input is selected<br>HDMI AUDIO IN is enabled only when one of the HDMI inputs is selected |
| OUTPUT VOLUME  | Set the output volume   |
| MUTE           | Set MUTE to ON or OFF   |
| DELAY          | Select the audio delay time: OFF, 10ms to 80ms in 10ms steps or AUTO  |
| MICROPHONE MIX | Set mix ON to mix the microphone input with the selected audio input or set to OFF  |
| MIX LEVEL      | Adjust the mix level (enabled when MICROPHONE MIX is set to ON)   |

### 6.2.4 The AUD OUT Menu

| Parameter                                     | Function  |
|---|---|
| SOURCE  | Select the audio source: HDMI1, HDMI2, HDMI3, HDBT1, HDBT2, HDBT3, PC1, PC2, TP1, TP2, CV1, CV2 or MIC  |
| EMBEDDED AUDIO                                | HDMI AUDIO IN (1, 2 and 3)<br>Select the HDMI 1, HDMI 2 and HDMI 3 audio sources behavior:<br><b>AUTOMATIC:</b> the embedded audio on the HDMI input is selected for an HDMI signal, or the analog audio input is selected if the input is not HDMI (for example, for a DVI input signal)<br><b>EMBEDDED:</b> the embedded audio in the HDMI signal is selected<br><b>ANALOG:</b> the analog audio input is selected<br>HDMI AUDIO IN is enabled only when one of the HDMI inputs is selected |
| OUTPUT VOLUME (see <a href="#">Figure 8</a> ) | LINE<br>Set the LINE OUT volume<br>MONITOR<br>Set the MONITOR OUT volume  |
| LINE OUT MUTE                                 | Set to ON or OFF  |
| MONITOR OUT MUTE                              | Set to ON or OFF  |
| DELAY   | Select the audio delay time: OFF, 10 to 80ms in 10ms steps or AUTO  |
| MICROPHONE MIX                                | Set to ON or OFF<br>Set to ON to mix the microphone input with the selected audio input or set to OFF   |

| Parameter  | Function   |
|------------|--|
| MIX LEVEL  | Adjust the mix level (enabled when MICROPHONE MIX is set to ON)  |
| EQ SAME AS | Set to NONE, OUTPUT 1 or OUTPUT 2  |
| AUDIO EQ   | Set the audio EQ values in 0.5dB steps for: BELOW 120Hz, CENTER 200Hz, CENTER 500Hz, CENTER 1200Hz, CENTER 3000Hz, CENTER 7500Hz and ABOVE 12000Hz |

Figure 8 shows the output volume level (dB) vs. the OSD volume setting:

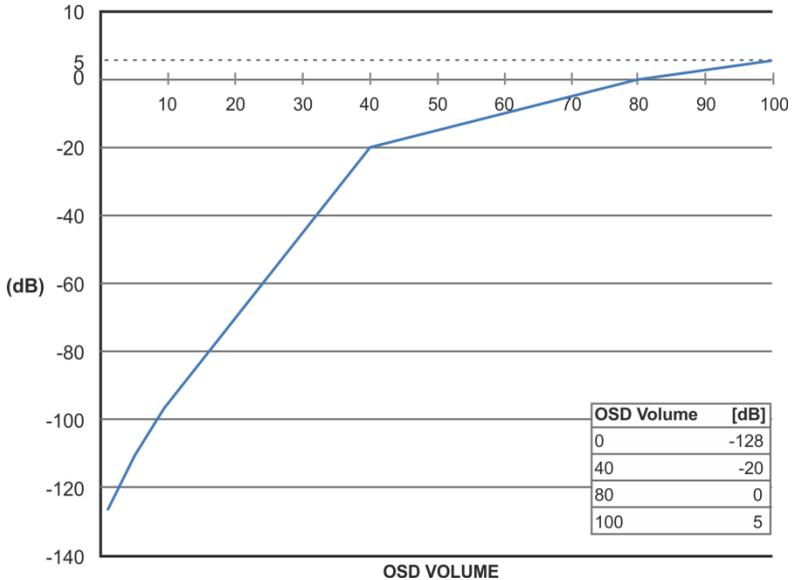


Figure 8: VP-553xl Audio Volume Level (dB) vs. OSD Volume Values

## 6.2.5 The AUD SET Menu

| Parameter       | Function  |
|-----------------|---|
| MICROPHONE GAIN | Set the microphone gain   |
| INPUT VOLUME    | Set the volume for each input:<br>HDMI1 (embedded), HDMI2 (embedded), HDMI3 (embedded)<br>HDBaseT1 (embedded), HDBaseT2 (embedded), HDBaseT3 (embedded), HDMI1 (analog), HDMI2 (analog), HDMI3 (analog), PC1, PC2, TP1, TP2, CV1, CV2   |
| MUTE FOLLOWS    | Select the action that will be followed by mute:<br><b>NONE:</b> the audio muting is independent of the FREEZE and BLANK functions<br><b>FREEZE</b><br><b>BLANK</b><br><b>FREEZE+BLANK:</b> when freezing or blanking the video, the audio will be muted (the MUTE function follows the FREEZE and the BLANK functions) |

### 6.2.6 The USB Menu

| Parameter          | Function  |
|--------------------|---|
| SOURCE             | Select the USB input: USB 1, USB 2, USB 3, USB 4 or TIE TO INPUT.   |
| SETUP FOLLOW INPUT | If TIE TO INPUT was selected above, setup the input to which the selected USB port will be tied.<br>For each of the inputs you can select a USB port that will follow. For example, if you want to set USB 3 to follow HDMI 3, select HDMI 3 and set to USB 3 |

### 6.2.7 The OSD Menu

| Parameter      | Function  |
|----------------|---|
| SHOW ON OUTPUT | Select the output/s that will display the OSD: BOTH ON, BOTH OFF, OUTPUT 1 or OUTPUT 2  |
| H POSITION     | Set the horizontal position of the OSD  |
| V POSITION     | Set the vertical position of the OSD  |
| TIMER          | Set the timeout period in 5sec steps (from 5 to 60)   |
| TRANSPARENCY   | Set the OSD background between 0 (transparent) and 50 (opaque)  |
| DISPLAY        | Select the information shown on the screen during operation:<br><b>OFF</b> : the information is not shown<br><b>ON</b> : the information is shown permanently<br><b>INFO</b> : the information is shown for a few seconds |

## 6.3 Connecting to the VP-553xl via RS-232

The **VP-553xl** features two RS-232 ports:

- RS-232 DATA to pass data to and from the machines that are connected to the HDBT connectors
- RS-232 CONTROL to control the **VP-553xl**

You can connect to the **VP-553xl** 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-553xl** via RS-232 Connect the RS-232 9-pin D-sub rear panel port on the product unit via a 9-wire straight cable (only pin 2 to pin 2, pin 3 to pin 3, and pin 5 to pin 5 need to be connected) to the RS-232 9-pin D-sub port on your PC.

## 6.4 Operating via Ethernet

You can connect to the **VP-553xl** via Ethernet using either of the following methods:

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

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

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

You can connect the Ethernet port of the **VP-553xl** 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-553xl** with the factory configured default IP address.

After connecting the **VP-553xl** 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 9](#).

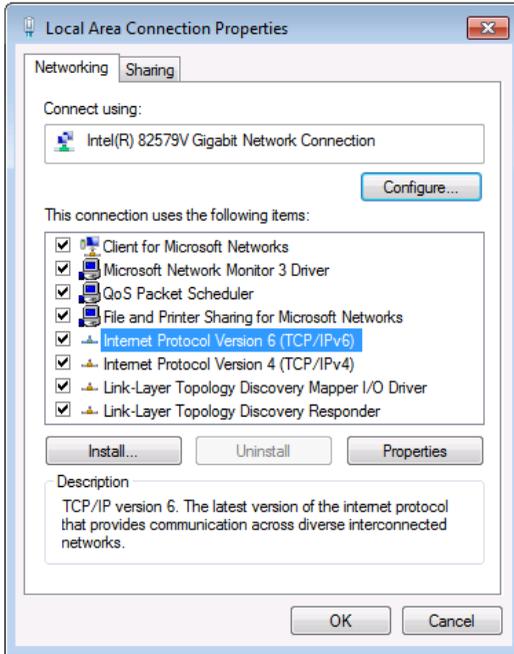


Figure 9: Local Area Connection Properties Window

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 10](#) or [Figure 11](#).

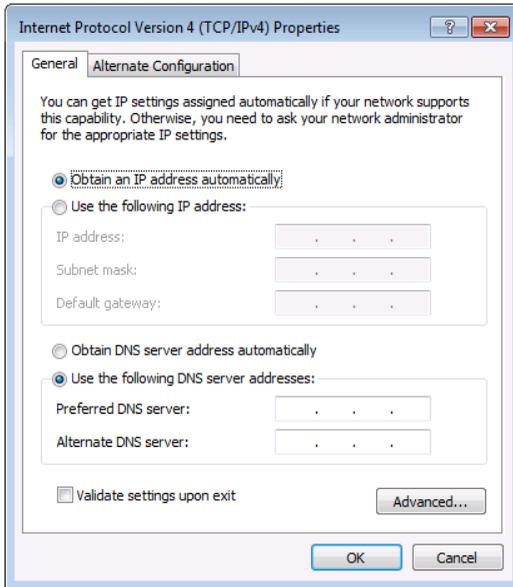


Figure 10: Internet Protocol Version 4 Properties Window

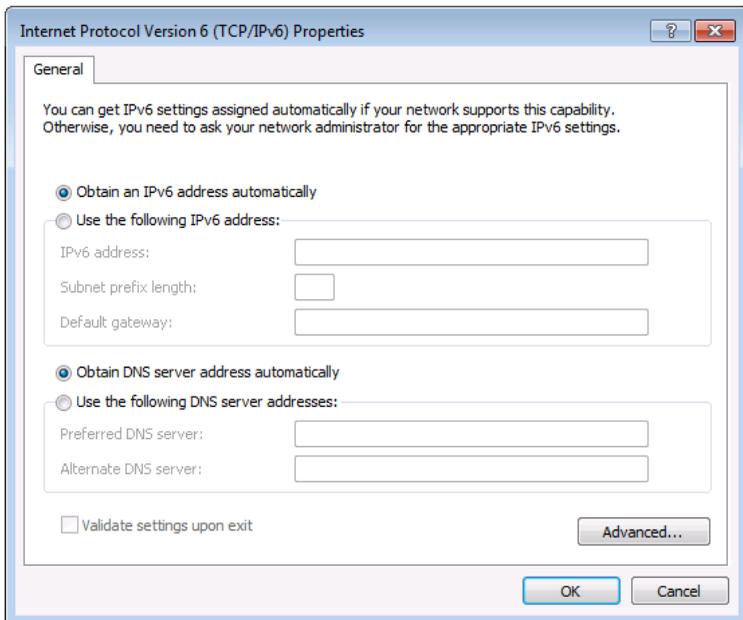


Figure 11: Internet Protocol Version 6 Properties Window

6. Select **Use the following IP Address** for static IP addressing and fill in the details as shown in [Figure 12](#).

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.

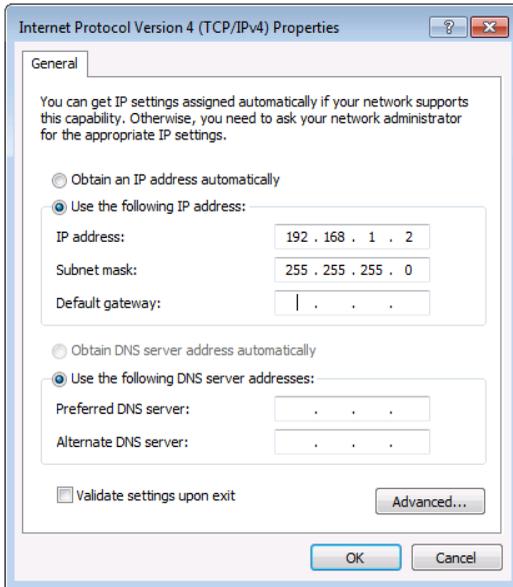


Figure 12: Internet Protocol Properties Window

7. Click **OK**.
8. Click **Close**.

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

You can connect the Ethernet port of the **VP-553xl** to the Ethernet port on a network hub or using a straight-through cable with RJ-45 connectors.

#### 6.4.3 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 the OSD menu to provide initial configuration of the settings (see [Section 6.2.1](#)).

## 6.5 Controlling via the Infrared Remote Control Transmitter

You can control the **VP-553xl** from the infrared remote control transmitter:



Figure 13: Infrared Remote Control Transmitter

| Keys     |        | Function   |
|----------|--------|--|
| POWER    |        | Toggle the power save mode ON or OFF   |
| OUT 1    | BLANK  | Toggle between a blank screen black screen and the display (for both windows)  |
|          | MUTE   | Toggle between muting (blocking out the sound) and enabling the audio output   |
|          | FREEZE | Freeze/unfreeze the output video image (for both windows)  |
| OUT 2    | BLANK  | Toggle between a blank screen black screen and the display (for both windows)  |
|          | MUTE   | Toggle between muting (blocking out the sound) and enabling the audio output   |
|          | FREEZE | Freeze/unfreeze the output video image (for both windows)  |
|          |        | Press ENTER to access menu levels (when in the OSD)  |
| MENU     |        | Enter/Exit the OSD menu and return to the previous menu level  |
| OSD      |        | Select whether the OSD will appear on OUT 1, OUT 2, both or none of them   |
| 720p/XGA |        | Press to reset to the default resolution (toggles between XGA and 720p)  |
| USB      |        | Select a USB input: 1, 2, 3 or 4   |
| OUT 1    |        | Select one of the following inputs to switch to output 1: HDMI 1, HDMI 2, HDMI 3, HDBT 1, HDBT 2, HDBT 3, PC 1, PC 2, TP 1, TP 2, CV 1 or CV 2 |
| OUT 2    |        | Select one of the following inputs to switch to output 2: HDMI 1, HDMI 2, HDMI 3, HDBT 1, HDBT 2 or HDBT 3                                     |

---

## 7 Using the Embedded Web Pages

The **VP-553xl** can be operated remotely using the embedded Web pages. The Web pages are accessed using a Web browser and an Ethernet connection.

Before attempting to connect:

- Perform the procedures in [Section 6.4](#)
- Ensure that your browser is supported

The following operating systems and Web browsers are supported:

- Windows 7:
  - Google Chrome v25
  - FireFox v15
  - Opera v12
  - Microsoft Internet Explorer v9
- Windows XP:
  - Google Chrome v25
  - FireFox v15
- Apple Mac:
  - Google Chrome v25
  - FireFox v20
  - Opera v12.14
  - Safari v6

## 7.1 Browsing the VP-553xl Web Pages

To browse the **VP-553xl** 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 Loading page appears.

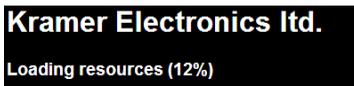


Figure 14: The Loading Page

Once loaded, enter your user name and password:

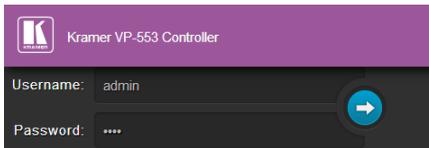


Figure 15: Enter Username and Password

There are eight Web pages:

- The Switching page (see [Section 7.2](#))
- The Scaler page (see [Section 7.3](#))
- The Device Settings page (See [Section 7.4](#))
- The USB Routing page (see [Section 7.5](#))
- The Audio Settings page (see [Section 7.6](#))
- The EDID page (see [Section 7.7](#))
- The Data Routing page (see [Section 7.8](#))
- The Authentication page (see [Section 7.9](#))
- The About page (see [Section 7.10](#))

## 7.2 The Switching Page

[Figure 13](#) shows the Switching page that is also the first page that appears following the loading page. The column on the left shows the switching page selected and below a list of all the other available Web pages. The Switching area lets you switch an input to an output (audio, video or audio-follow-video) the Audio out (below Output) shows the audio input that is routed to the line and monitor outputs. The volume area lets you control the Line and Monitor output audio level.

The lower part of the screen lets you save a configuration and upload a saved configuration.

The model name, FW version, IP number and settings appear on the lower left side of the main page.



Figure 16: The Switching Page

[Figure 17](#) explains the icons used to switch inputs and outputs.

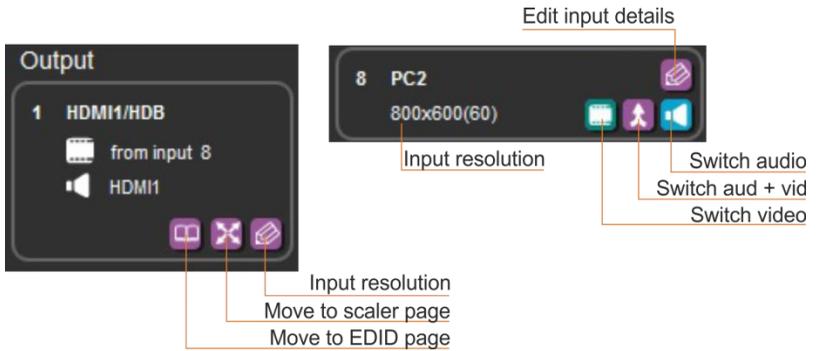


Figure 17: Input and Output Icons

You can also edit the input and output button by clicking the edit icon.

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

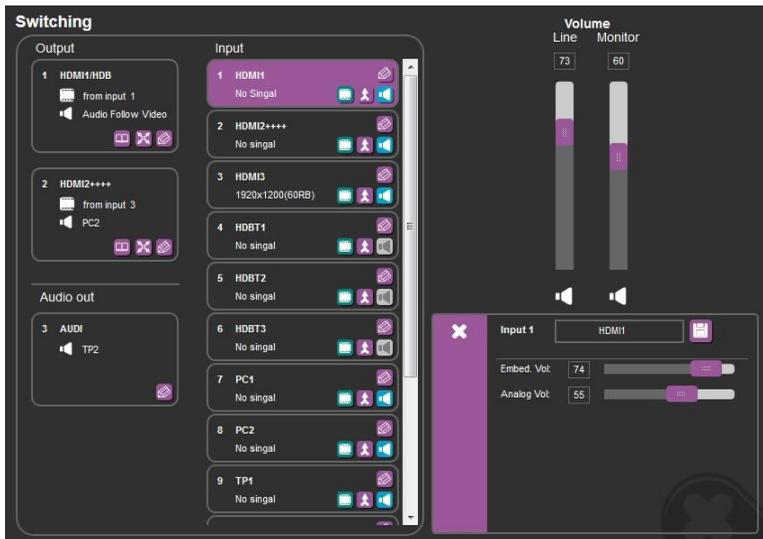


Figure 18: Edit Input Buttons

The input edit window lets you change the name of the input as it will appear on the Web page and save it, and also set the embedded and analog volume separately.

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

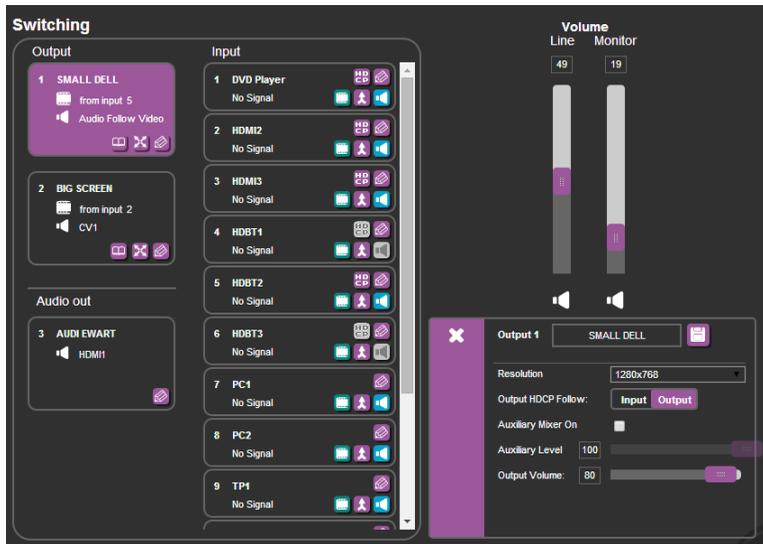


Figure 19: Edit Output Buttons

The output edit window lets you change the name of the output as it will appear on the Web page and save it, set the resolution, the HDCP settings, the Auxiliary mixer ON or OFF and set the Auxiliary level as well as the output volume.

## 7.2.1 Switching an Input to an Output

You can switch the input audio and video signals together to a selected output (AFV) or separately.

To switch an Input to an Output in the AFV mode (see the output 1 button in [Figure 18](#)):

1. Click an output button.  
The button changes color to purple.
2. Click on the Input AFV icon .  
The Output shows the video input next to the video icon and Audio Follow Video next to its audio icon.

To switch separate audio and video inputs to an output (for example, selecting the video from INPUT 3 and the PC2 audio signal from INPUT 8, see the output 2 button in [Figure 18](#)):

1. Click an output button.  
The button changes color to purple.
2. Click the video icon  on Input 3.  
The output 2 button displays **from input 3** next to the video icon.
3. Click the audio icon  on Input 8.  
The Output 2 button displays **PC2** next to the audio icon.

### 7.3 The Scaler Page

The Scaler page lets you set the output 1 and output 2 picture and PC mode separately.

[Figure 20](#) shows the Scaler page for output 1 which includes the picture setup and the PC mode setup.



Note that when the PC inputs are connected all the settings are available. If TP is selected, only the WXGA/XGA is enabled otherwise, PC mode is disabled.

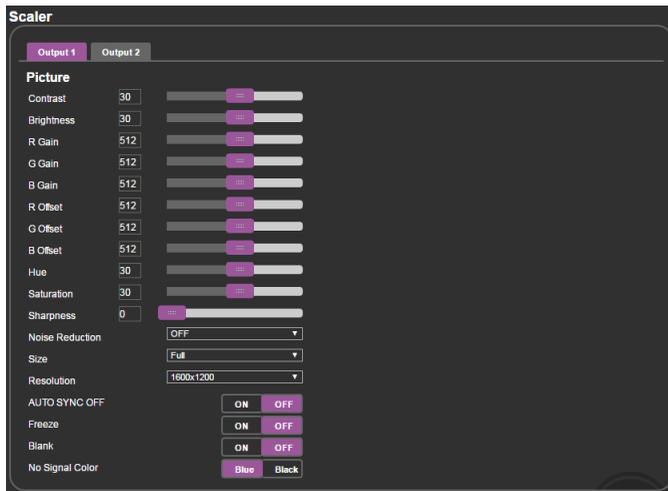


Figure 20: The Scaler Page – Output 1

When an analog input is connected, the PC mode is enabled:

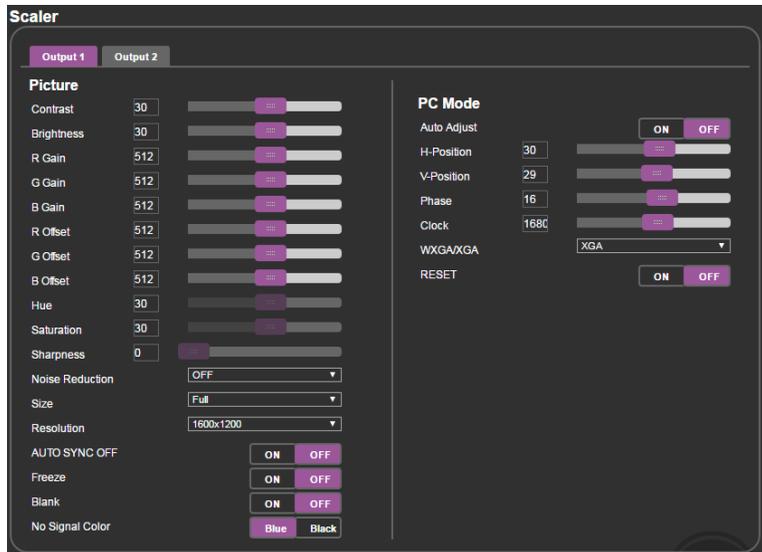


Figure 21: The Scaler Page – Output 1 for an Analog Input

[Figure 22](#) shows the setup for output 2:

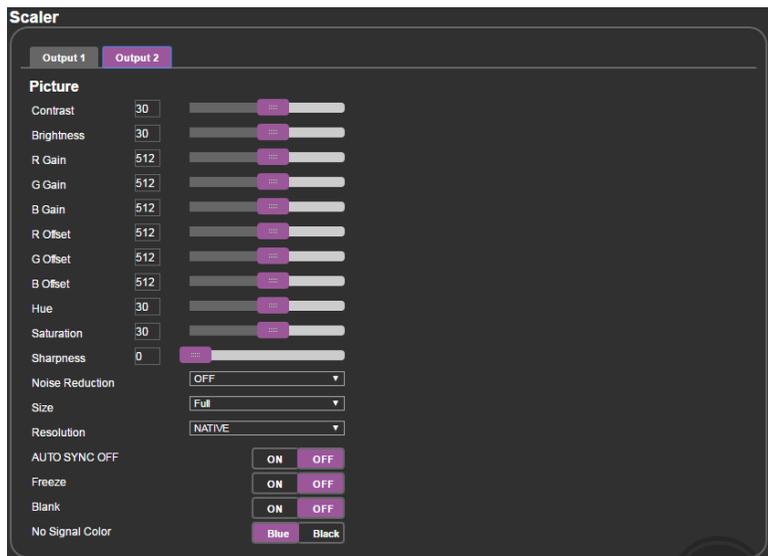
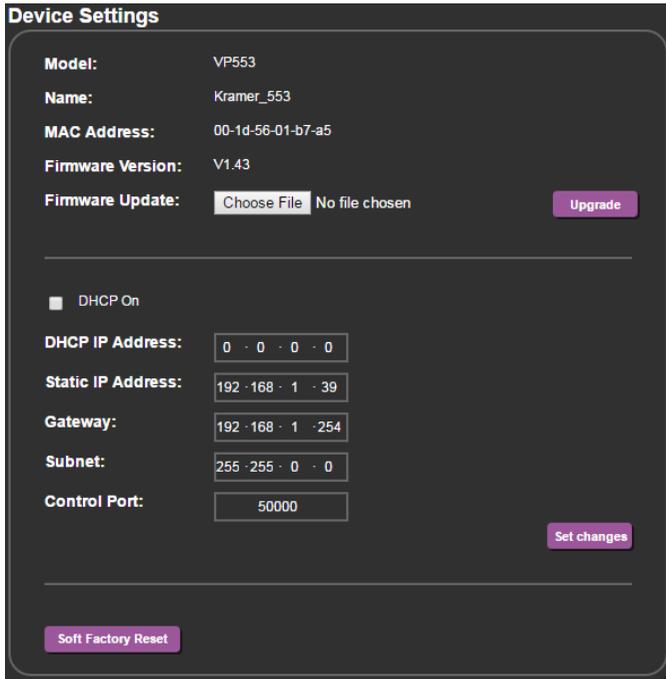


Figure 22: The Scaler Page – Output 2

## 7.4 The Device Settings Page

The device Settings window (in [Figure 23](#)) lets you upgrade the firmware and set the Ethernet parameters.



The screenshot shows the 'Device Settings' interface. At the top, it displays the following information:

- Model:** VP553
- Name:** Kramer\_553
- MAC Address:** 00-1d-56-01-b7-a5
- Firmware Version:** V1.43
- Firmware Update:** A 'Choose File' button is present, followed by the text 'No file chosen' and an 'Upgrade' button.

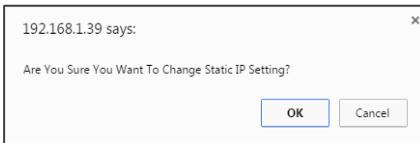
Below this, there is a section for DHCP settings:

- DHCP On
- DHCP IP Address:** 0 · 0 · 0 · 0
- Static IP Address:** 192 · 168 · 1 · 39
- Gateway:** 192 · 168 · 1 · 254
- Subnet:** 255 · 255 · 0 · 0
- Control Port:** 50000

At the bottom of the settings area, there are two buttons: 'Soft Factory Reset' and 'Set changes'.

Figure 23: The Device Settings Page

Any change in the device settings requires confirmation, as illustrated in the example in [Figure 24](#).



The screenshot shows a small dialog box with a title bar that says '192.168.1.39 says:'. The main text inside the dialog asks: 'Are You Sure You Want To Change Static IP Setting?'. At the bottom of the dialog, there are two buttons: 'OK' and 'Cancel'.

Figure 24: The Device Settings Page – Static IP Confirmation.

## 7.4.1 Firmware Upgrade

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

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

The new firmware is uploaded:

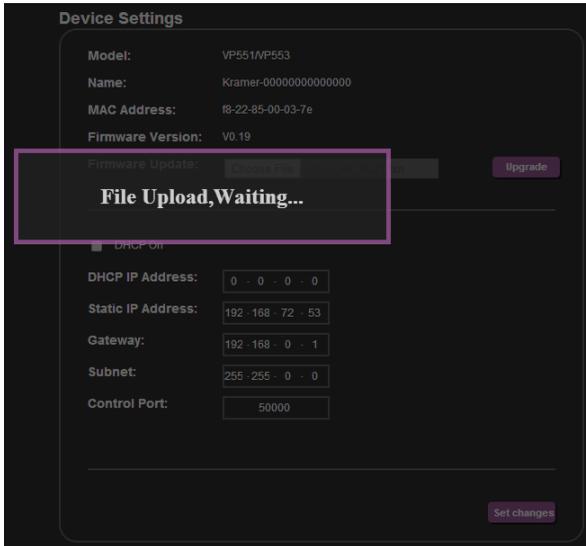


Figure 25: The Device Settings Page – Uploading the New Firmware File

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

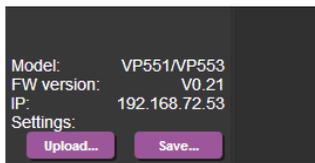


Figure 26: The Device Settings Page –New Firmware Updated

## 7.5 The USB Routing Page

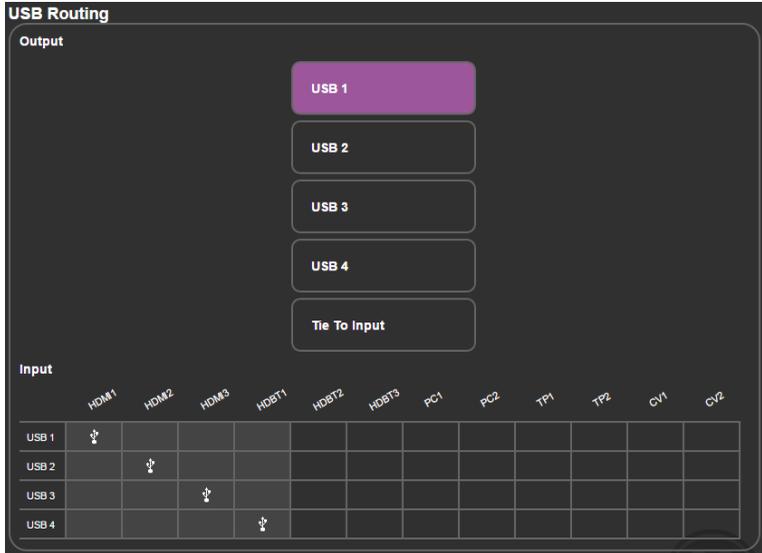


Figure 27: The USB Routing Page

The USB page lets you select one of the USB hosts (buttons USB 1, USB 2, USB 3 or USB 4 – in the example in [Figure 27](#), USB 1 is selected). The selected button is routed to the USB client.

The USB Routing page also lets you tie any of the USB ports to any of the switcher/scaler inputs that are routed to output 1. To do so click the **Tie To Input** button and then assign the USB 1 to 4 ports each to one of the inputs. In the example in [Figure 28](#) (if the Tie To INPUT button was selected) USB 1 is tied to HDMI 1, USB 2 is tied to HDMI 2 and so on.

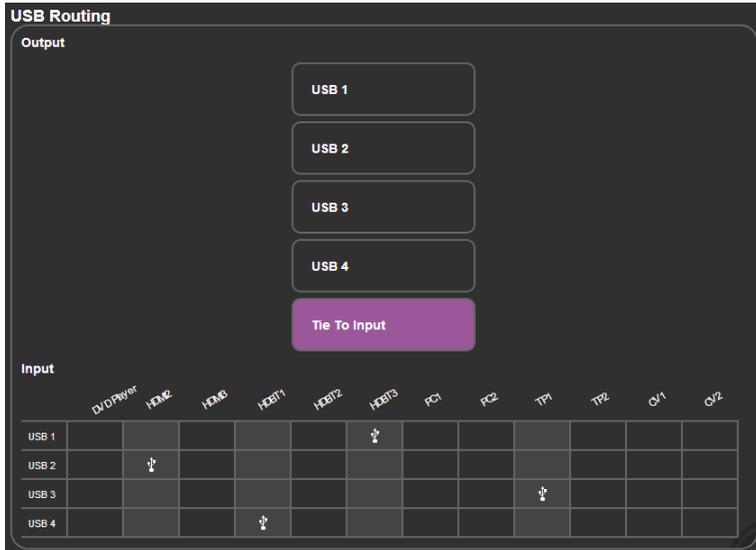


Figure 28: The USB Tied to a Selected Input

## 7.6 The Audio Settings Page

The audio settings page lets you define the audio parameters for the inputs, outputs (1 and 2), and the audio out (Monitor and Line out).

The main page lets you switch and set the selected audio signal to the two outputs and the independent audio output. The rear panel DIP-switch settings (see [Figure 2](#)): Auxiliary Settings, Stereo/Mono and Microphone, are displayed.

Note that the DIP-switch settings cannot be changed via the Web pages only physically on the rear panel.

The Input tab (see [Figure 29](#)) lets you set the volume individually for each input, including the analog and embedded audio HDMI signals.

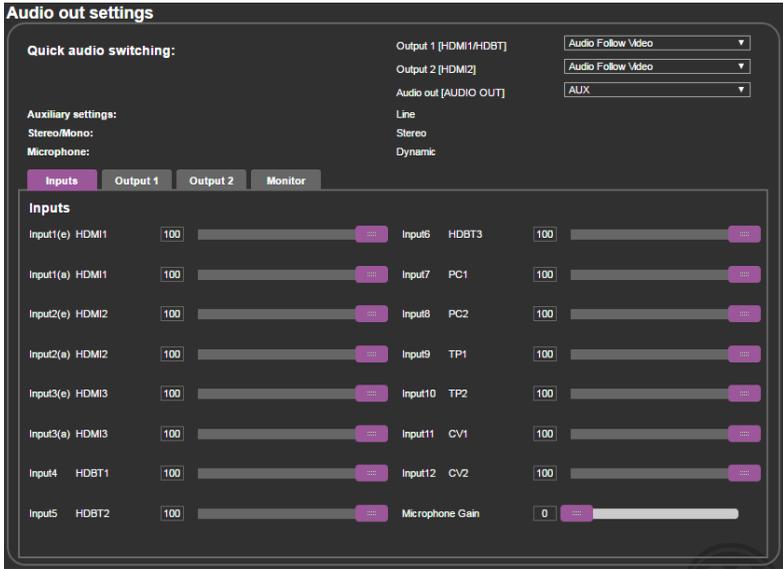


Figure 29: The Audio Settings Page – Inputs

[Figure 30](#) shows the output 1 equalizer settings:

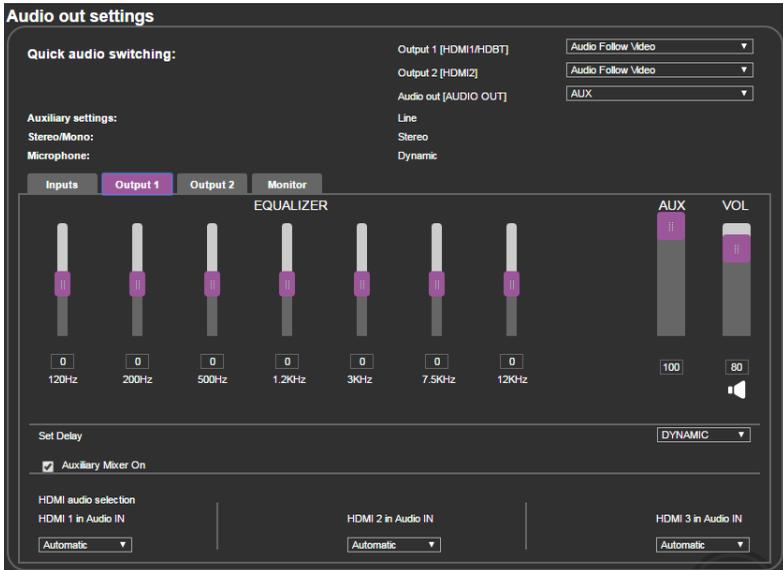


Figure 30: The Audio Settings Page – Output 1

Figure 30 shows the output 2 equalizer settings:

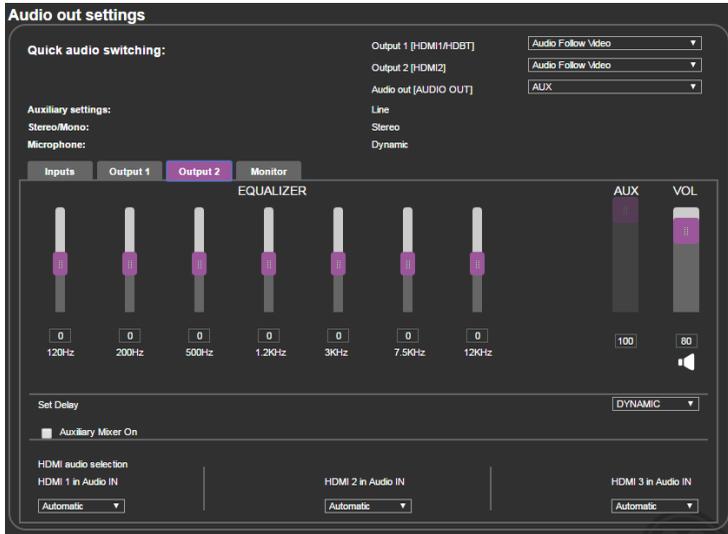


Figure 31: The Audio Settings Page – Output 2

Figure 30 shows the Monitor equalizer settings as well as the volume of the Aux, Line and Monitor volume levels:

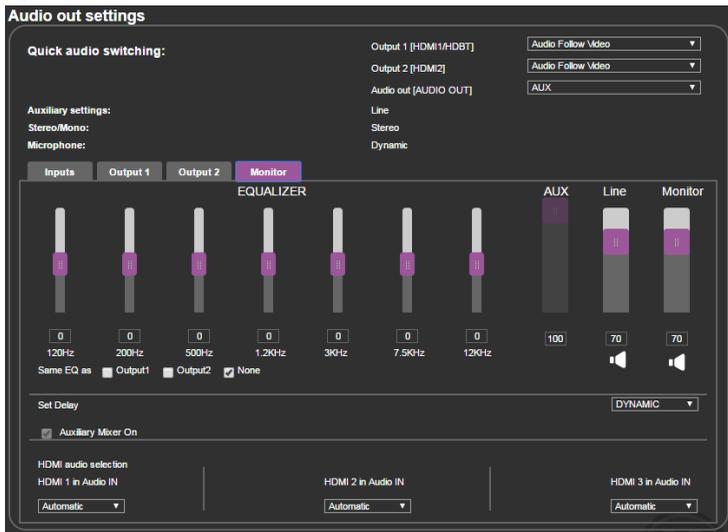


Figure 32: The Audio Settings Page – Monitor

## 7.7 The EDID Page

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

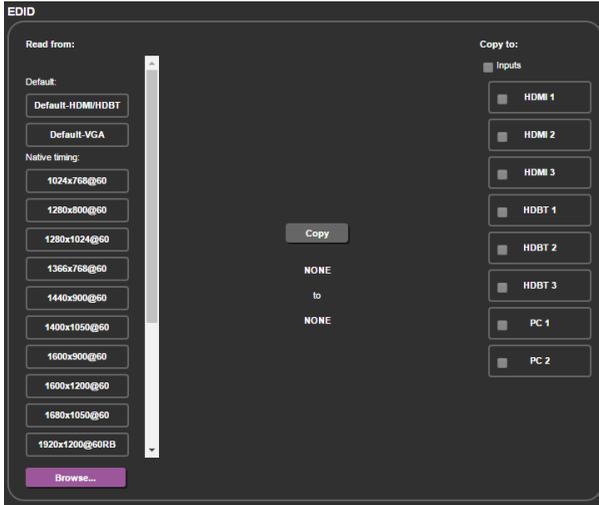


Figure 33: The EDID Page

[Figure 34](#) shows how to select a resolution from the list and select one or more inputs. To copy, click the **Copy** button:

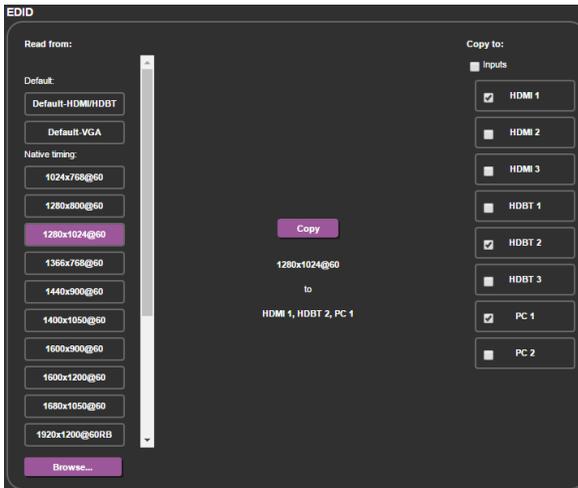


Figure 34: The EDID Page – Copying the Native Timing

Figure 34 shows how to select one of the default resolutions from the list and select one or more inputs. To copy, click the **Copy** button:

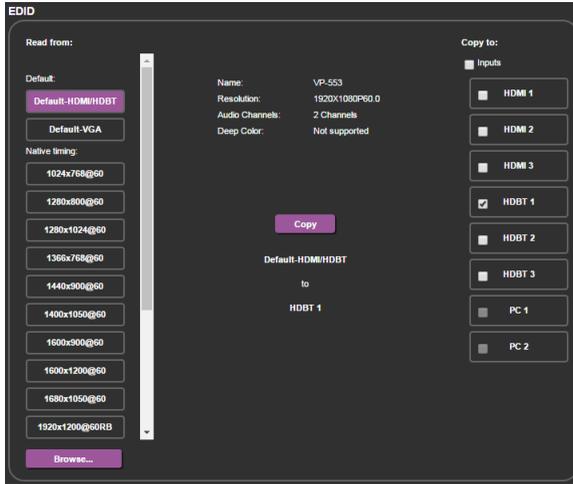


Figure 35: The EDID Page – Copying the Default

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

After clicking the **Copy** button, the EDID page shows the copy EDID results:

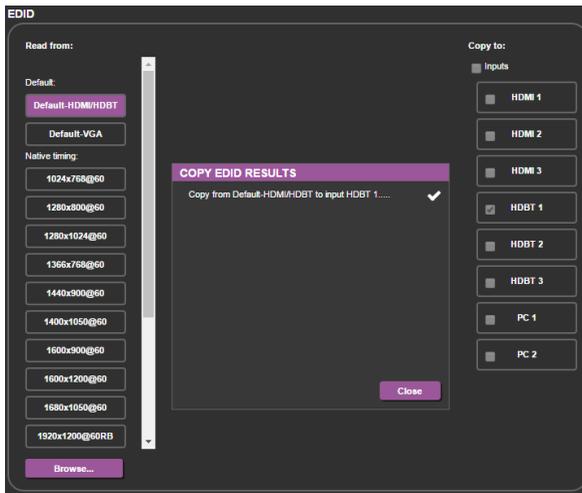


Figure 36: The EDID Page –The Copy EDID Results

## 7.8 The Data Routing Page

The data routing page lets you route the data over the HDBT ports. (each port has a separate UDP IP port) via the RS-232 Data port, or the Ethernet (General or SID-X2N), see [Figure 37](#).

When selecting:

- RS-232 Data, you can transmit data from a controller connected to the RS-232 DATA port to one of the HDBaseT inputs or the HDBaseT output
- Ethernet-General, you can transmit data from a controller connected via the Ethernet port to one of the HDBaseT inputs or the HDBaseT output
- Ethernet-SID-X2N, you can transmit data from a controller connected via the connected SID-X2N to the HDBaseT input to which it is connected

| Data setup  | UDP IP port | Ethernet |         | RS-232 Data |
|-------------|-------------|----------|---------|-------------|
|             |             | SID-X2N  | General |             |
| HDBaseT IN1 | 51000       | ✓        | ✓       |             |
| HDBaseT IN2 | 52000       | ✓        |         |             |
| HDBaseT IN3 | 53000       |          |         |             |
| HDBaseT OUT | 54000       |          |         |             |

Set changes

Port serial configuration:

|             |               |      |
|-------------|---------------|------|
| HDBaseT IN1 | Baud Rate:    | 9600 |
| HDBaseT IN2 | Data Bits:    | 8    |
| HDBaseT IN3 | Parity:       | NONE |
| HDBaseT OUT | Stop Bits:    | 1    |
|             | Flow Control: | OFF  |

Figure 37: The Data Routing Page

Click the Set changes button to set the changes.

RS-232 Data Port: for each HDBaseT port you can set the following data settings:

- **Baud Rate:** 4800, 9600, 19200, 38400, 57600 or 115200
- **Data Bits:** 5, 6, 7 or 8
- **Parity:** NONE, EVEN, ODD, MARK or SPACE
- **Stop Bits:** 1 or 2
- **Flow Control:** OFF or ON

If you check SID-X2N, data passes between the **VP-553xl** and SID-X2N.

If you check RS-232, data passes between the RS-232 Data port and **VP-553xl**.

Note that you can check RS-232 and SID-X2N simultaneously.

## 7.9 The Authentication Page

The Authentication page lets you set the user name and password as well as setting the inactivity logout. [Figure 38](#) shows the Authentication page:

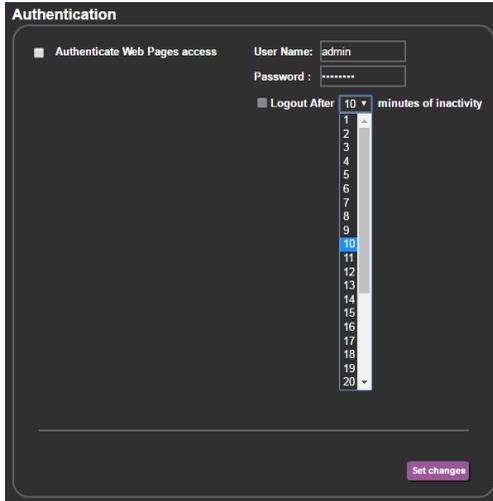


Figure 38: The Authentication Page

## 7.10 The About Page

The **VP-553xl** About page lets you view the Web page version and Kramer Electronics Ltd details.



Figure 39: The About Page

## 8 Technical Specifications

|   |   |
|---|---|
| INPUTS:   | <p>3 HDMI connectors (HDMI, HDCP)<br/>                 2 VGA on 15-pin HD connectors<br/>                 2 composite video on RCA connectors<br/>                 2 analog TP on RJ-45 connectors<br/>                 3 HDBT on RJ-45 connectors<br/>                 4 USB (B type) ports<br/>                 3 unbalanced analog audio on 3.5mm mini jacks for HDMI<br/>                 2 unbalanced analog audio on 3.5mm mini jacks for PC<br/>                 1 Aux in balanced stereo audio on 5-pin terminal block connectors<br/>                 2 balanced audio (L and R) RCA connectors for CV</p> |
| OUTPUTS:  | <p>1 HDBT on RJ-45 connector<br/>                 2 HDMI connectors (HDMI, HDCP)<br/>                 1 USB (A type) port<br/>                 Monitor out balanced stereo on a 5-pin terminal block connector<br/>                 Line out balanced stereo on a 5-pin terminal block connector</p>  |
| OUTPUT RESOLUTIONS:   | <p>NATIVE, 640x480@60, 800x600@60, 1024x768@60, 1280x768@60, 1360x768@60, 1280x720@60, 1280x800@60, 1280x1024@60, 1440x900@60, 1400x1050@60, 1680x1050@60, 1600x1200@60, 1920x1080@60, 1920x1200@60, 720x480p@60, 1280x720p@60, 1920x1080i@60, 1920x1080p@60, 720x576p@60, 1280x720p@50, 1920x1080i@50, 1920x1080p@50</p>   |
| CONTROLS:   | <p>TP 1, TP 2, CV 1, CV 2, HDBT 1, HDBT 2, HDBT 3, PC 1, PC 2, HDMI 1, HDMI 2, HDMI 3, USB 1, USB 2, USB 3, USB 4 input selector buttons; 2 blank, 2 mute, 2 freeze buttons; menu, enter, menu arrows, reset to XGA/720p, OSD SELECT, 2 RS-232, IR, Ethernet, 2 level and EQ trimmers, line/mic selector switch, cond/dyn selector switch, mono/stereo selector switch, REM for muting audio</p>  |
| POWER CONSUMPTION:  | 100-240V AC, 43VA max.  |
| OPERATING TEMPERATURE:  | 0° to +40°C (32° to 104°F)  |
| STORAGE TEMPERATURE:  | -40° to +70°C (-40° to 158°F)   |
| HUMIDITY:   | 10% to 90%, RHL non-condensing  |
| DIMENSIONS:   | 19" x 7" x 2U (W, D, H) rack mountable  |
| WEIGHT:   | 2.7kg (6lbs) approx.  |
| INCLUDED ACCESSORIES:   | Power cord, rack ears, IR remote control  |
| OPTIONS:  | Kramer BC-HDKat6a cable   |
| Specifications are subject to change without notice at <a href="http://www.kramerav.com">www.kramerav.com</a> |   |

## 8.1 Default Communication Parameters

| RS-232  |  |
|---|--|
| Baud Rate:  | 115,200  |
| Data Bits:  | 8  |
| Stop Bits:  | 1  |
| Parity:   | None   |
| Command Format:   | ASCII  |
| Example (Route the video from the HDMI3 input to the HDMI1 output port):  | #ROUTE 1,1,2<cr>   |
| Ethernet  |  |
| To reset the IP settings to the factory reset values go to : Menu-> Factory-> RESET->Change the option to YES and press Enter |  |
| IP Address:   | 192.168.1.39   |
| Subnet mask:  | 255.255.255.0  |
| Default gateway:  | 192.168.1.254  |
| Default UDP Port #:   | 50000  |
| Maximum UDP Ports:  | 4  |
| Full Factory Reset  |  |
| OSD   | Go to : Menu-> Factory-> RESET->Change the option to YES and press Enter |

## 8.2 Input Resolutions

| Resolution/Refresh Rate  | CV  | PC  | HDMI |
|--------------------------|-----|-----|------|
| NTSC                     | Yes | No  | No   |
| PAL                      | Yes | No  | No   |
| 640x480 (@60/72/75Hz)    | No  | Yes | Yes  |
| 800x600 (@56/60/72/75Hz) | No  | Yes | Yes  |
| 1024x768 (@60/70/75Hz)   | No  | Yes | Yes  |
| 1152x864 @75Hz           | No  | Yes | Yes  |
| 1280x720 @60Hz           | No  | Yes | Yes  |
| 1280x768 @60Hz           | No  | Yes | No   |
| 1280x800 @60Hz           | No  | Yes | Yes  |
| 1280x960 @60Hz           | No  | Yes | Yes  |
| 1280x1024 (@60/75Hz)     | No  | Yes | Yes  |
| 1360x768 @60Hz           | No  | Yes | Yes  |
| 1400x1050 @60Hz          | No  | Yes | Yes  |
| 1440x900 @60Hz           | No  | Yes | Yes  |
| 1600x900 RB @60Hz        | No  | Yes | Yes  |
| 1600x1200 @60Hz          | No  | Yes | Yes  |
| 1680x1050 RB @60Hz       | No  | Yes | Yes  |
| 1920x1080 @60Hz          | No  | Yes | Yes  |
| 1920x1200 RB @60Hz       | No  | Yes | Yes  |
| 480i/576i                | No  | No  | Yes  |
| 480P/576P                | No  | No  | Yes  |
| 720P (@50/60Hz)          | No  | No  | Yes  |
| 1080i (@50/60Hz)         | No  | No  | Yes  |
| 1080P (@24/30Hz)         | No  | No  | Yes  |
| 1080P (@50/60Hz)         | No  | No  | Yes  |

# 9 The VP-553xl RS-232 Communication Protocol

The **VP-553xl** can be operated using serial commands from a PC, remote controller, or touch screen. The unit communicates using the default Kramer Protocol 3000.

- Kramer Protocol 3000 syntax (see [Section 9.1](#))
- Kramer Protocol 3000 command list (see [Section 9.2](#))
- Kramer Protocol 3000 detailed commands (See [Section 9.3](#))

## 9.1 Kramer Protocol 3000 Syntax

Protocol 3000 communicates at a data rate of 115200 baud, no parity, 8 data bits and 1 stop bit.

### 9.1.1 Host Message Format

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

#### Simple Command

Command string with only one command without addressing:

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

#### Command String

Formal syntax with commands concatenation and addressing:

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

### 9.1.2 Device Message Format

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

#### Device Long Response

Echoing command:

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

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

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

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

### 9.1.3 Command Terms

#### Command

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

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

#### Parameters

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

#### Message string

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

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

#### Message starting character

'#' – For host command/query

'~' – For machine response

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

K-NET Device ID followed by '@'

#### Query sign

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

#### Message closing character

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

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

#### Command chain separator character

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

Spaces between parameters or command terms are ignored.

#### 9.1.4 Entering Commands

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

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

#### 9.1.5 Command Forms

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

#### 9.1.6 Command Chaining

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

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

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

#### 9.1.7 Maximum String Length

64 characters

## 9.2 Kramer Protocol 3000 – Command List

| Command      | Short Form | Description  |
|--------------|------------|--|
| #            |            | Protocol handshaking   |
| #HELP        |            | List of commands   |
| #BUILD-DATE? |            | Read device build date   |
| #MODEL?      |            | Read device model  |
| #PROT-VER?   |            | Read device protocol version   |
| #PROG-ACTION |            | Set step-in button action bitmap   |
| #SN?         |            | Read device serial number  |
| #RESET       |            | Reset device   |
| #NAME-RST    |            | Reset machine name to factory default (DNS)  |
| #VERSION?    |            | Read device firmware version   |
| #NET-MAC?    | NTMC?      | Get MAC address  |
| #NET-IP      | NTIP       | Set device IP address  |
| #NET-IP?     | NTIP?      | Get device IP address  |
| #NET-GATE    | NTGT       | Set Gateway IP   |
| #NET-GATE?   | NTGT?      | Get Gateway IP   |
| #NET-MASK    | NTMSK      | Set device subnet mask   |
| #NET-MASK?   | NTMSK?     | Get device subnet mask   |
| #NET-DHCP    | NTDH       | Set DHCP mode  |
| #NET-DHCP?   | NTDH?      | Get DHCP mode  |
| #CPEDID      |            | Copy output EDID to input  |
| #LDEDID      |            | Write EDID data from external application to device inputs                                 |
| #GEDID       |            | Set EDID data from device  |
| #GEDID?      |            | Get EDID support on certain input/output   |
| #ROUTE       |            | Set the video, audio, USB and serial data routing (see <a href="#">Section 9.3.3</a> )     |
| #ROUTE?      |            | Display the video, audio, USB and serial data routing (see <a href="#">Section 9.3.3</a> ) |
| #SIGNAL?     |            | Get input signal lock status   |
| #DISPLAY?    |            | Get output HPD status  |
| #LOCK-FP     | LCK        | Lock front panel   |
| #LOCK-FP?    | LCK?       | GET Lock front panel   |
| #HDCP-MOD    |            | Set HDCP mode  |
| #HDCP-MOD?   |            | Get HDCP mode  |
| #HDCP-STAT?  |            | Get HDCP signal status   |
| #VID-RES     |            | Set input/output resolution  |
| #VID-RES?    |            | Get input/output resolution  |
| #VMUTE       |            | Set video blank  |
| #VMUTE?      |            | Display video blank status   |
| #VFRZ        |            | Set freeze on selected output  |
| #VFRZ?       |            | Get output freeze status   |
| #AUD-LVL     |            | Set audio level  |

| Command            | Short Form | Description                         |
|--------------------|------------|-------------------------------------|
| #AUD-LVL?          |            | Get audio level                     |
| #MIX               |            | Set mix on/off                      |
| #MIX?              |            | Display mix on/off status           |
| #MIX-LVL           |            | Set mix volume                      |
| #MIX-LVL?          |            | Display mix volume                  |
| #MUTE              |            | Set audio mute                      |
| #MUTE?             |            | Display the audio mute status       |
| #SCLR-AS           |            | Set auto sync on/off                |
| #SCLR-AS?          |            | Display the auto sync on/off status |
| #IMAGE-PROP        |            | Set the screen size                 |
| #IMAGE-PROP?       |            | Display the screen size             |
| #SCLR-PCAUTO       |            | Run PC auto                         |
| #SCLR-AUDIO-DELAY  |            | Set audio delay                     |
| #SCLR-AUDIO-DELAY? |            | Display the audio delay value       |
| #EQ-LVL            |            | Set EQ                              |
| #EQ-LVL?           |            | Display EQ                          |
| #SHOW-OSD          |            | Set the OSD display                 |
| #SHOW-OSD?         |            | Get the OSD display                 |
| #MIC-GAIN          |            | Set Mic volume                      |
| #MIC-GAIN?         |            | Display Mic volume                  |
| #DPSW-STATUS?      |            | Get the DIP-switch status           |
| #ETH-PORT          |            | Set UDP port                        |
| #ETH-PORT?         |            | Display UDP port                    |
| #STANDBY           |            | Set Standby mode                    |
| #STANDBY?          |            | Get Standby mode status             |
| #VOLUME            |            | Set global volume (+1 or -1)        |

## 9.3 Kramer Protocol 3000 – Detailed Commands

This section describes the detailed commands list (see [Section 9.3.4](#)) as well as the Port number key (see [Section 9.3.1](#)) and the video resolutions key (see [Section 9.3.2](#)).

### 9.3.1 Port Number Key

| Video  | #  |
|--------|----|
| HDMI 1 | 0  |
| HDMI 2 | 1  |
| HDMI 3 | 2  |
| HDBT 1 | 3  |
| HDBT 2 | 4  |
| HDBT 3 | 5  |
| PC 1   | 6  |
| PC 2   | 7  |
| TP 1   | 8  |
| TP 2   | 9  |
| CV 1   | 10 |
| CV 2   | 11 |

| Audio input  | #   |
|--------------|-----|
| HDMI 1 (EMB) | 0:1 |
| HDMI 1 (A)   | 0:2 |
| HDMI 2 (EMB) | 1:1 |
| HDMI 2 (A)   | 1:2 |
| HDMI 3 (EMB) | 2:1 |
| HDMI 3 (A)   | 2:2 |
| HDBT 1       | 3   |
| HDBT 2       | 4   |
| HDBT 3       | 5   |
| PC 1         | 6   |
| PC 2         | 7   |
| TP 1         | 8   |
| TP 2         | 9   |
| CV 1         | 10  |
| CV 2         | 11  |
| Aux IN       | 12  |

| Video Output | # |
|--------------|---|
| HDMI 1       | 0 |
| HDBT 1       | 1 |
| HDMI 2       | 2 |

| USB Host | # |
|----------|---|
| USB 1    | 0 |
| USB 2    | 1 |
| USB 3    | 2 |
| USB 4    | 3 |

| Audio Output | # |
|--------------|---|
| HDMI 1+HDBT  | 0 |
| HDMI 2       | 1 |
| Line OUT     | 2 |
| Monitor OUT  | 3 |

### 9.3.2 The Resolutions key

| # | Resolution | #  | Resolution | #  | Resolution |
|---|------------|----|------------|----|------------|
| 0 | Native     | 9  | 1440x900   | 18 | 720P60     |
| 1 | 640x480    | 10 | 1400x1050  | 19 | 1080P60    |
| 2 | 800x600    | 11 | 1680x1050  | 20 | 1080I60    |
| 3 | 1024x768   | 12 | 1600x1200  | 21 | N/A        |
| 4 | 1280x768   | 13 | 1920x1080  | 22 | 576P50     |
| 5 | 1360x768   | 14 | N/A        | 23 | 720P50     |
| 6 | 1280x720   | 15 | N/A        | 24 | 1080P50    |
| 7 | 1280x800   | 16 | 1920x1200  | 25 | 1080I50    |
| 8 | 1280x1024  | 17 | 480P60     | 26 | N/A        |

### 9.3.3 ROUTE Command Options Key

| Description   | P1:<br>Value + Definition | P2:<br>Value + Definition  | P3:<br>Value + Definition  |
|---|---------------------------|--|--|
| Set/display video source  | Value=1<br>Video          | Value=1~2<br>1:Output1<br>2:Output2  | Value=0~11<br>0: HDMI1<br>1: HDMI2<br>2: HDMI3<br>3: HDBT1<br>4: HDBT2<br>5: HDBT3<br>6: PC1<br>7: PC2<br>8: TP1<br>8: TP2<br>10: CV1<br>11: CV2   |
| SID-X2N mode – set video source (set SID-X2N source at the same time) | Value=1<br>Video          | Value=0~3<br>0: no change (same VP-553xl video source)<br>1: Output1<br>2: Output2<br>3: All outputs (1~2) | Value=(3~5):(1~4)<br>3:1: HDBT1 (SID-X2N: select HDMI)<br>3:2: HDBT1 (SID-X2N: select DP)<br>3:3: HDBT1 (SID-X2N: select DVI)<br>3:4: HDBT1 (SID-X2N: select PC)<br>4:1: HDBT2 (SID-X2N select HDMI)<br>4:2: HDBT2 (SID-X2N select DP)<br>4:3: HDBT2 (SID-X2N: select DVI)<br>4:4: HDBT2 (SID-X2N: select PC)<br>5:1: HDBT3 (SID-X2N: select HDMI)<br>5:2: HDBT3 (SID-X2N: select DP)<br>5:3: HDBT3 (SID-X2N: select DVI)<br>5:4: HDBT3 (SID-X2N: select PC) |
| Set audio source  | Value=2<br>Audio          | Value=0~2<br>0: Audio Out<br>1: Output1<br>2: Output2  | Value=0~12<br>0: HDMI1<br>1: HDMI2<br>2: HDMI3<br>3: HDBT1<br>4: HDBT2<br>5: HDBT3<br>6: PC1<br>7: PC2<br>8: TP1<br>8: TP2<br>10: CV1<br>11: CV2<br>12: AUX  |
| Set audio source: embedded or analog                                  | Value=2<br>Audio          | Value=0~2<br>0:Audio Out<br>1:Output1<br>2:Output2   | Value=(0~2):(1~2)<br>0:1: HDMI1 Embedded<br>0:2: HDMI1 Analog<br>1:1: HDMI2 Embedded<br>1:2: HDMI2 Analog<br>2:1: HDMI3 Embedded   |

| Description  | P1:<br>Value + Definition | P2:<br>Value + Definition | P3:<br>Value + Definition  |  |
|--|---------------------------|---------------------------|--|--|
|  |                           |                           | 2:2: HDM3 Analog   |  |
| Set USB  | Value=3                   | Value=1                   | Value=1~4  |  |
|  | USB                       | Fixed                     | 1: USB1<br>2: USB2<br>3: USB3<br>4: USB4   |  |
| Set serial data                                    | Value=4                   | Value=0                   | Value=3~5/12   |  |
|  | Serial data               | 0: none                   | 3: HDBT1<br>4: HDBT2<br>5: HDBT3<br>12: HDBT Out1  |  |
| Set serial data                                    | Value=4                   | Value=1                   | Value=3~5/12   |  |
|  | Serial data               | 1:Eth_Gen                 | 3: HDBT1<br>4: HDBT2<br>5: HDBT3<br>12: HDBT Out1  |  |
| Set serial data                                    | Value=4                   | Value=2                   | Value=3~5/12   |  |
|  | Serial data               | 2:RS-232                  | 3: HDBT1<br>4: HDBT2<br>5: HDBT3<br>12: HDBT Out1  |  |
| Set serial data                                    | Value=4                   | Value=3                   | Value=3~5  |  |
|  | Serial data               | 3: SID-X2N                | 3: HDBT1<br>4: HDBT2<br>5: HDBT3   |  |
| Set video + audio source                           | Value=12                  | Value=1~2                 | Value=0~11   |  |
|  | Video+audio               | 1: Output1<br>2: Output2  | 0: HDMI1<br>1: HDMI2<br>2: HDMI3<br>3: HDBT1<br>4: HDBT2<br>5: HDBT3   | 6: PC1<br>7: PC2<br>8: TP1<br>9: TP2<br>10: CV1<br>11: CV2 |
| Set video + audio source – set embedded or analog  | Value=12                  | Value=1~2                 | Value=(0-2):(1-2)  |  |
|  | Video+audio               | 1: Output1<br>2: Output2  | 0:1: HDMI1 Embedded<br>0:2: HDMI1 Analog<br>1:1: HDMI2 Embedded<br>1:2: HDMI2 Analog<br>2:1: HDMI3 Embedded<br>2:2: HDMI3 Analog |  |
| Set video source – set USB to "tie to input"       | Value=13                  | Value=1                   | Value=0~11   |  |
|  | Video+USB                 | Output1                   | 0: HDMI1<br>1: HDMI2<br>2: HDMI3<br>3: HDBT1<br>4: HDBT2<br>5: HDBT3<br>6: PC1   | 7: PC2<br>8: TP1<br>9: TP2<br>10: CV1<br>11: CV2           |
| Set video+audio source – set USB to "tie to input" | Value=123                 | Value=1                   | Value=0~11   |  |
|  | video+audio+USB           | Output1                   | 0: HDMI1<br>1: HDMI2<br>2: HDMI3<br>3: HDBT1<br>4: HDBT2<br>5: HDBT3<br>6: PC1   | 7: PC2<br>8: TP1<br>9: TP2<br>10: CV1<br>11: CV2           |

| Description   | P1:<br>Value + Definition        | P2:<br>Value + Definition | P3:<br>Value + Definition   |
|---|----------------------------------|---------------------------|---|
| Set<br>video+audio<br>source<br>set<br>Embedded or<br>Analog also<br>set USB to<br>"tie to input"<br>also | Value=123<br><br>video+audio+USB | Value=1<br><br>Output1    | Value=(0-2):(1-2)<br><br>0:1: HDMI1 Embedded<br>0:2: HDMI1 Analog<br>1:1: HDMI2 Embedded<br>1:2: HDMI2 Analog<br>2:1: HDMI3 Embedded<br>2:2: HDMI3 Analog |

### 9.3.4 The Commands

| Command – <b>HELP</b>   |   | Command Type – System-mandatory   |              |
|---|---|---|--------------|
| Command Name  |   | Permission  | Transparency |
| Set:  | -   | -   | -            |
| Get:  | <b>HELP</b>                                   | End User  | -            |
| Description   |   | Syntax  |              |
| Set:  | -   | -   |              |
| Get :   | Get command list or help for specific command | 2 options:<br>1. # <b>HELP</b> <sub>CR</sub><br>2. # <b>HELP</b> <sub>SP</sub> command_name <sub>CR</sub> |              |
| Response  |   |   |              |
| 1. Multi-line: ~ <sub>nn</sub> @ <b>Device available protocol 3000 commands</b> : <sub>CR LF</sub> command <sub>SP</sub> command.. <sub>CR LF</sub>     |   |   |              |
| <b>To get help for command use : HELP (COMMAND_NAME)</b> <sub>CR LF</sub>   |   |   |              |
| 2. Multi-line: ~ <sub>nn</sub> @ <b>HELP</b> <sub>SP</sub> command: <sub>CR LF</sub> description <sub>CR LF</sub> <b>USAGE</b> : usage <sub>CR LF</sub> |   |   |              |

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

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

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

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

| Command – <b>PROG-ACTION</b>   |                                  | Command Type - Step-in   |              |
|--|----------------------------------|--|--------------|
| Command Name   |                                  | Permission   | Transparency |
| Set:   | <b>PROG-ACTION</b>               | End user   | Public       |
| Get:   | <b>PROG-ACTION?</b>              | End user   | Public       |
| Description  |                                  | Syntax   |              |
| Set:   | Set step-in button action bitmap | # <b>PROG-ACTION</b> <sub>[SP]</sub> <i>type, port_id, button_id, actions_bitmap</i> <sub>[CR]</sub> |              |
| Get :  | Get step-in button action bitmap | # <b>PROG-ACTION?</b> <sub>[SP]</sub> <i>port_type, port_id, button_id</i> <sub>[CR]</sub>           |              |
| Response   |                                  |  |              |
| ~ <b>nn</b> @ <b>PROG-ACTION</b> <sub>[SP]</sub> <i>port_type, port_id, button_id, actions_bitmap</i> <sub>[CR LF]</sub>   |                                  |  |              |
| Parameters   |                                  |  |              |
| <i>port_type</i> – 0=input<br><i>port_id</i> – 3=HDBT1, 4=HDBT2, 5=HDBT3<br><i>button_id</i> - 1<br><i>actions_bitmap</i> – 0x00=ALL OFF, 0x01=OUT1, 0x02=OUT2, 0x04=AUDIO OUT |                                  |  |              |
| Notes  |                                  |  |              |
| Programs matrix action as a response for external event (programmable button pressed)  |                                  |  |              |

| Command – <b>SN?</b>  |                          | Command Type – System-mandatory |              |
|---|--------------------------|---------------------------------|--------------|
| Command Name  |                          | Permission                      | Transparency |
| Set:  | -                        | -                               | -            |
| Get:  | <b>SN?</b>               | End User                        | Public       |
| Description   |                          | Syntax                          |              |
| Set:  | -                        | -                               |              |
| Get :   | Get device serial number | # <b>SN?</b> <sub>[CR]</sub>    |              |
| Response  |                          |                                 |              |
| ~ <b>nn</b> @ <b>SN</b> <sub>[SP]</sub> <i>serial_number</i> <sub>[CR LF]</sub> |                          |                                 |              |
| Parameters  |                          |                                 |              |
| <i>serial_number</i> - 14 decimal digits, factory assigned                      |                          |                                 |              |

| Command – <b>RESET</b>   |              | Command Type – System-mandatory |              |
|--|--------------|---------------------------------|--------------|
| Command Name   |              | Permission                      | Transparency |
| Set:   | <b>RESET</b> | Administrator                   | -            |
| Get:   | -            | -                               | -            |
| Description  |              | Syntax                          |              |
| Set:   | Reset device | # <b>RESET</b> <sub>[CR]</sub>  |              |
| Get :  | -            | -                               |              |
| Response   |              |                                 |              |
| ~ <b>nn</b> @ <b>RESET</b> <sub>[SP]</sub> <b>OK</b> <sub>[CR LF]</sub>  |              |                                 |              |
| Notes  |              |                                 |              |
| To avoid locking the port due to a USB bug in Windows, disconnect USB connections immediately after running this command. If the port was locked, disconnect and reconnect the cable to reopen the port. |              |                                 |              |

| Command - <b>NAME-RST</b>   |   | Command Type - System (Ethernet)           |              |
|---|---|--|--------------|
| Command Name  |   | Permission                                 | Transparency |
| Set:  | <b>NAME-RST</b>                             | Administrator                              | Public       |
| Get:  | -   | -  | -            |
| Description   |   | Syntax                                     |              |
| Set:  | Reset machine (DNS) name to factory default | # <b>NAME-RST</b> <input type="checkbox"/> |              |
| Get:  | -   | -  |              |
| Response  |   |  |              |
| ~ <input type="checkbox"/> @ <b>NAME-RST</b> <input type="checkbox"/> OK <input type="checkbox"/> |   |  |              |
| Notes   |   |  |              |
| Factory default of machine (DNS) name is "KRAMER_" + 4 last digits of device serial number        |   |  |              |

| Command – <b>VERSION?</b>  |                    | Command Type – System-mandatory            |              |
|--|--------------------|--|--------------|
| Command Name   |                    | Permission                                 | Transparency |
| Set:   | -                  | -  | -            |
| Get:   | <b>VERSION?</b>    | End User                                   | -            |
| Description  |                    | Syntax                                     |              |
| Set:   | -                  | -  |              |
| Get :  | Get version number | # <b>VERSION?</b> <input type="checkbox"/> |              |
| Response   |                    |  |              |
| ~ <input type="checkbox"/> @ <b>VERSION</b> <input type="checkbox"/> firmware_version <input type="checkbox"/> |                    |  |              |
| Parameters   |                    |  |              |
| <i>firmware_version</i> – Format: XX.XX.XXXX where the digits group are: major.minor.build version             |                    |  |              |

| Command – <b>NET-MAC?</b>   |                 | Command Type – Communication               |              |
|---|-----------------|--|--------------|
| Command Name  |                 | Permission                                 | Transparency |
| Set:  | -               | -  | -            |
| Get:  | <b>NET-MAC?</b> | End User                                   | -            |
| Description   |                 | Syntax                                     |              |
| Set:  |                 |  |              |
| Get :   | Get MAC address | # <b>NET-MAC?</b> <input type="checkbox"/> |              |
| Response  |                 |  |              |
| ~ <input type="checkbox"/> @ <b>NET-MAC</b> <input type="checkbox"/> mac_address <input type="checkbox"/> |                 |  |              |
| Parameters  |                 |  |              |
| <i>mac_address</i> – Unique MAC address. Format: XX-XX-XX-XX-XX-XX where X is hex digit.                  |                 |  |              |

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

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

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

| Command – <b>NET-DHCP</b>  |  | Command Type – Communication             |              |
|--|--|--|--------------|
| Command Name   |  | Permission                               | Transparency |
| Set:   | <b>NET-DHCP</b>  | Administrator                            | -            |
| Get:   | <b>NET-DHCP?</b>   | End User                                 | -            |
| Description  |  | Syntax                                   |              |
| Set:   | Set DHCP mode  | #NET-DHCP <sub>SP</sub> P1 <sub>CR</sub> |              |
| Get :  | Get DHCP mode  | #NET-DHCP? <sub>CR</sub>                 |              |
| Response   |  |  |              |
| Set:   | ~nn@ NET-DHCP <sub>SP</sub> P1 <sub>SP</sub> OK <sub>CR LF</sub> |  |              |
| Get:   | ~nn@ NET-DHCP <sub>SP</sub> mode <sub>CR LF</sub>                |  |              |
| Parameters   |  |  |              |
| P1 (Off/On)– 0=off; 1=on   |  |  |              |
| 0 – Do not use DHCP. Use the IP set by the factory or using the IP set command.<br>1 – Try to use DHCP. If unavailable, use IP as above.   |  |  |              |
| Notes  |  |  |              |
| Connecting Ethernet to devices with DHCP may take more time in some networks.<br>To connect with a randomly assigned IP by DHCP, specify the device DNS name (if available) using the command "NAME". You can also get an assigned IP by direct connection to USB or RS-232 protocol port if available.<br>For proper settings consult your network administrator. |  |  |              |

| Command - <b>CPEDID</b>   |  | Command Type - System  |              |
|---|--|--|--------------|
| Command Name  |  | Permission   | Transparency |
| Set:  | <b>CPEDID</b>                                      | End User   | Public       |
| Get:  | -  | -  | -            |
| Description   |  | Syntax   |              |
| Set:  | Copy EDID data from the output to the input EEPROM | # <b>CPEDID</b> <input type="checkbox"/> P1, P2, P3, P4 <input type="checkbox"/> |              |
| Get:  | -  | -  |              |
| Response  |  |  |              |
| ~ <input type="checkbox"/> @ <b>CPEDID</b> <input type="checkbox"/> P1, P2, P3, P4 <input type="checkbox"/>   |  |  |              |
| Parameters  |  |  |              |
| P1 (source type) – 1=output<br>P2 (source ID) – 0=HDMI1; 1=HDBT1; 2=HDMI2<br>P3 (destination type) – 0=input<br>P4 (bitmap representing destination IDs) – 0=HDMI1; 1=HDMI2; 2=HDMI3; 3=HDBT1; 4=HDBT2; 5=HDBT3<br>Format: XXXX...X, where X is hex digit. The binary form of every hex digit represents corresponding destinations. Setting '1' says that EDID data has to be copied to this destination |  |  |              |
| Response Triggers   |  |  |              |
| Response is sent to the com port from which the Set was received (before execution)   |  |  |              |
| Notes   |  |  |              |
| Destination bitmap size depends on device properties (for 64 inputs it is a 64-bit word)<br>Example: bitmap 0x0013 means inputs 1,2 and 5 are loaded with the new EDID  |  |  |              |

| Command - <b>LDEDID</b>   |   | Command Type - EDID Handling            |              |
|---|---|---|--------------|
| Command Name  |   | Permission                              | Transparency |
| Set:  | <b>LDEDID</b>                                       | End User                                | Public       |
| Get:  | -   | -                                       | -            |
| Description   |   | Syntax                                  |              |
| Set:  | Write EDID data from external application to device | Multi-step syntax (see following steps) |              |
| Get:  | None  | None                                    |              |
| Communication Steps (Command and Response)  |   |   |              |
| Step 1: # <b>LDEDID</b> <sub>SP</sub> <i>dst_type, dest_bitmask, size, safe_mode</i> <sub>CR</sub>  |   |   |              |
| Response 1: ~ <b>nn</b> @ <b>LDEDID</b> <sub>SP</sub> <i>dst_type, dest_bitmask, size, safe_mode</i> <sub>SP</sub> <b>READY</b> <sub>CR LF</sub> or<br>~ <b>nn</b> @ <b>LDEDID</b> <sub>SP</sub> <b>ERRnn</b> <sub>CR LF</sub>  |   |   |              |
| Step 2: If <b>ready</b> was received, send <b>EDID_DATA</b>   |   |   |              |
| Response 2: ~ <b>nn</b> @ <b>LDEDID</b> <sub>SP</sub> <i>dst_type, dest_bitmask, size, safe_mode</i> <sub>SP</sub> <b>OK</b> <sub>CR LF</sub> or<br>~ <b>nn</b> @ <b>LDEDID</b> <sub>SP</sub> <b>ERRnn</b> <sub>CR LF</sub>   |   |   |              |
| Parameters  |   |   |              |
| <i>dst_type</i> - EDID destination type – input=0   |   |   |              |
| <i>dest_bitmask</i> – (see table below) bitmap representing destination IDs. The binary presentation of this number is a bit mask for destinations. Setting ‘1’ means EDID data has to be copied to this destination  |   |   |              |
| <i>size</i> - EDID data size (see table below)  |   |   |              |
| <i>safe_mode</i> - 0 - Device accepts the EDID as is without trying to adjust <b>EDID_DATA</b> - data in protocol packets (see <a href="#">Section 9.3.5</a> )  |   |   |              |
| <i>dest_bitmask</i>   | <i>size</i>   | <i>dest_bitmask</i>                     | <i>size</i>  |
| 0x01=HDMI1  | 256   | 0x10=HDBT2                              | 256          |
| 0x02=HDMI2  | 256   | 0x20=HDBT3                              | 256          |
| 0x04=HDMI3  | 256   | 0x01=PC1                                | 128          |
| 0x08=HDBT1  | 256   | 0x02=PC2                                | 128          |
| Response Triggers   |   |   |              |
| Response is sent to the com port from which the <b>Set</b> (before execution)   |   |   |              |
| Notes   |   |   |              |
| When the unit receives the <b>LDEDID</b> command it replies with <b>READY</b> and enters the special EDID packet wait mode. In this mode the unit can receive only packets and not regular protocol commands.<br>If the unit does not receive correct packets for 30 seconds or is interrupted for more than 30 seconds before receiving all packets, it sends timeout error ~ <b>nn</b> @ <b>LDEDID</b> <sub>SP</sub> <b>ERR01</b> <sub>CR LF</sub> and returns to the regular protocol mode. If the unit received data that is not a correct packet, it sends the corresponding error and returns to the regular protocol mode. |   |   |              |

| Command - <b>GEDID</b>   |  | Command Type - System                      |              |
|--|--|--|--------------|
| Command Name   |  | Permission                                 | Transparency |
| Set:   | <b>GEDID</b>                             | Administrator                              | Public       |
| Get:   | <b>GEDID?</b>                            | End User                                   | Public       |
| Description  |  | Syntax                                     |              |
| Set:   | Set EDID data from device                | #GEDID <sub>SP</sub> P1, P2 <sub>CR</sub>  |              |
| Get:   | Get EDID support on certain input/output | #GEDID? <sub>SP</sub> P1, P2 <sub>CR</sub> |              |
| Response   |  |  |              |
| Set:   |  |  |              |
| Multi-line response:   |  |  |              |
| ~nn@GEDID <sub>SP</sub> P1,P2,size <sub>CR LF</sub>  |  |  |              |
| EDID_data <sub>CR LF</sub>   |  |  |              |
| ~nn@GEDID <sub>SP</sub> P1,P2 <sub>SP</sub> OK <sub>CR LF</sub>  |  |  |              |
| Get:   |  |  |              |
| ~nn@GEDID <sub>SP</sub> P1, P2,size <sub>CR LF</sub>   |  |  |              |
| Parameters   |  |  |              |
| P1 (stage) – 0=input; 1=output   |  |  |              |
| P2 (stage_id) - (Input/Output number valid according to the selected Input/Output according to P1) – video inputs=(0~7); Video outputs =(0,1,2) (see <a href="#">Section 9.3.1</a> ) |  |  |              |
| Size - EDID data size. For Set, size of data to be sent from device, for Get, 0 means no EDID support  |  |  |              |
| Response Triggers  |  |  |              |
| Response is sent to the com port from which the Set (before execution) / Get command was received  |  |  |              |
| Notes  |  |  |              |
| For Get, size=0 means EDID is not supported  |  |  |              |
| For old devices that do not support this command, ~nn@ ERR 002 <sub>CR LF</sub> is received  |  |  |              |

| Command – <b>ROUTE</b>   |                   | Command Type –                              |              |
|--|-------------------|---|--------------|
| Command Name   |                   | Permission                                  | Transparency |
| Set:   | <b>ROUTE</b>      | End User                                    | -            |
| Get:   | <b>ROUTE?</b>     | End User                                    | -            |
| Description  |                   | Syntax                                      |              |
| Set:   | Set layer routing | #ROUTE <sub>SP</sub> P1,P2,P3 <sub>CR</sub> |              |
| Get :  | Get layer routing | #ROUTE? <sub>SP</sub> P1,P2 <sub>CR</sub>   |              |
| Response   |                   |   |              |
| ~nn@ROUTE <sub>SP</sub> P1,P2,P3 <sub>CR LF</sub>  |                   |   |              |
| Parameters (see <a href="#">Section 9.3.3</a> )  |                   |   |              |
| P1 (Layer number) – 1=Video; 2=Audio; 3=USB; 12=Video+Audio; 13=Video+USB; 123=Video+Audio+USB   |                   |   |              |
| P2 (Route to, 0-1-2 are valid according to the selected layer according to P1) – 0=Audio Out; 1=Scaler1; 2=Scaler2   |                   |   |              |
| P3 (Route from, valid values are in accordance to the selected layer and Route to selected according to P1 and P2) – video inputs=(0~11); Audio inputs=(0~12); USB hosts=(0~3) – see <a href="#">Section 9.3.1</a> |                   |   |              |
| Notes  |                   |   |              |
| This command replaces all other routing commands.  |                   |   |              |

| Command – <b>SIGNAL</b>  |                              | Command Type - System   |              |
|--|------------------------------|---|--------------|
| Command Name   |                              | Permission  | Transparency |
| Set :  | -                            | -   | -            |
| Get  | <b>SIGNAL?</b>               | End User  | Public       |
| Description  |                              | Syntax  |              |
| Set:   | -                            | -   |              |
| Get:   | Get input signal lock status | # <b>SIGNAL?</b> <input type="checkbox"/> _SP P1 <input type="checkbox"/> _CR |              |
| Response   |                              |   |              |
| ~ <input type="checkbox"/> _nn@ <b>SIGNAL</b> <input type="checkbox"/> _SP P1,P2 <input type="checkbox"/> _CR LF   |                              |   |              |
| Parameters   |                              |   |              |
| P1 (Input number)– 0: HDMI1; 1: HDMI2; 2: HDMI3; 3: HDBT1; 4: HDBT2; 5: HDBT3<br>P2 – 0=Off; 1=On  |                              |   |              |
| Response triggers  |                              |   |              |
| <ul style="list-style-type: none"> <li>• After execution, response is sent to the com port from which the <b>Get</b> was received</li> <li>• Response is sent after every change in input signal status <b>ON to OFF</b>, or <b>OFF to ON</b></li> </ul> |                              |   |              |

| Command – <b>DISPLAY?</b>   |                       | Command Type - System  |              |
|---|-----------------------|--|--------------|
| Command Name  |                       | Permission   | Transparency |
| Set :   | -                     | -  | -            |
| Get   | <b>DISPLAY?</b>       | End User   | Public       |
| Description   |                       | Syntax   |              |
| Set:  | -                     | -  |              |
| Get:  | Get output HPD status | # <b>DISPLAY?</b> <input type="checkbox"/> _SP P1 <input type="checkbox"/> _CR |              |
| Response  |                       |  |              |
| ~ <input type="checkbox"/> _nn@ <b>DISPLAY</b> <input type="checkbox"/> _SP P1,P2 <input type="checkbox"/> _CR LF   |                       |  |              |
| Parameters  |                       |  |              |
| P1 (Output number) – 0=HDMI1; 1=HDBT1; 2=HDMI2<br>P2 – 0=Off; 1=On  |                       |  |              |
| Response triggers   |                       |  |              |
| <ul style="list-style-type: none"> <li>• After execution, response is sent to the com port from which the <b>Get</b> was received</li> <li>• Response is sent after every change in output HPD status <b>ON to OFF</b></li> <li>• Response is sent after every change in output HPD status <b>OFF to ON</b> and ALL parameters (new EDID, etc.) are stable and valid</li> </ul> |                       |  |              |

| Command – <b>LOCK-FP</b>  |                            | Command Type – System                               |              |
|---|----------------------------|---|--------------|
| Command Name  |                            | Permission  | Transparency |
| Set:  | <b>LOCK-FP</b>             | End User  | -            |
| Get:  | <b>LOCK-FP?</b>            | End User  | -            |
| Description   |                            | Syntax  |              |
| Set:  | Lock front panel           | # <b>LOCK-FP</b> <sub>[SP]</sub> P1 <sub>[CR]</sub> |              |
| Get :   | Get front panel lock state | # <b>LOCK-FP?</b> <sub>[CR]</sub>                   |              |
| Response  |                            |   |              |
| nn@ <b>LOCK-FP</b> <sub>[SP]</sub> P1 <sub>[SP]</sub> OK <sub>[CR LF]</sub> |                            |   |              |
| Parameters  |                            |   |              |
| P1 (Off/On)– 0=Off; 1=On  |                            |   |              |

| Command – <b>HDCP-MOD</b>  |                  | Command Type – System                                      |              |
|--|------------------|--|--------------|
| Command Name   |                  | Permission   | Transparency |
| Set:   | <b>HDCP-MOD</b>  | Administrator  | Public       |
| Get:   | <b>HDCP-MOD?</b> | End User   | Public       |
| Description  |                  | Syntax   |              |
| Set:   | Set HDCP mode    | # <b>HDCP-MOD</b> <sub>[SP]</sub> P1,P2,P3 <sub>[CR]</sub> |              |
| Get :  | Get HDCP mode    | # <b>HDCP-MOD?</b> <sub>[SP]</sub> P1,P2 <sub>[CR]</sub>   |              |
| Response   |                  |  |              |
| Set / Get : ~ nn@ <b>HDCP-MOD</b> <sub>[SP]</sub> P1,P2,P3 <sub>[CR LF]</sub>  |                  |  |              |
| Parameters   |                  |  |              |
| P1 (Input/Output) – 0=Input; 1=Output<br>P2 (Scaler number) – 1=Scaler1; 2=Scaler2<br>P3 (Status) – 0=Off; 1=On; 2=Follow In, 3=Follow Out   |                  |  |              |
| Response triggers  |                  |  |              |
| <ul style="list-style-type: none"> <li>Response is sent to the com port from which the <b>Set</b> (before execution) / <b>Get</b> command was received</li> <li>Response is sent to all com ports after execution if HDCP-MOD was set any other external control device (button press, device menu and similar) or genlock status changed</li> </ul> |                  |  |              |
| Notes  |                  |  |              |
| Set HDCP working mode <b>on device input</b> :<br>HDCP supported – HDCP_ON [default]<br>HDCP not supported – HDCP OFF<br>HDCP support changes following detected sink – MIRROR OUTPUT  |                  |  |              |

| Command – <b>HDCP-STAT</b>  |                        | Command Type - System                                 |              |
|---|------------------------|---|--------------|
| Command Name  |                        | Permission  | Transparency |
| Set :   | -                      | -   | -            |
| Get   | <b>HDCP-STAT?</b>      | End User  | Public       |
| Description   |                        | Syntax  |              |
| Set:  | None                   | -   |              |
| Get:  | Get HDCP signal status | # <b>HDCP-STAT?</b> <sub>SP</sub> P1,P2 <sub>CR</sub> |              |
| Response  |                        |   |              |
| Set / Get: ~ <b>nn</b> @ <b>HDCP-STAT</b> <sub>SP</sub> P1,P2 <sub>CR LF</sub>  |                        |   |              |
| Parameters  |                        |   |              |
| P1 (Input/Output) – 0=Input; 1=Output<br>P2 –1=Scaler1, 2=Scaler2   |                        |   |              |
| Response triggers   |                        |   |              |
| Response is sent to the com port from which the Set (before execution) / Get command was received<br>Response is sent to all com ports after execution if HDCP-STAT was set by any other external control device (button press, device menu and similar) or HDCP mode changed |                        |   |              |
| Notes   |                        |   |              |
| On output – sink status<br>On input – signal status   |                        |   |              |

| Command – <b>VID-RES</b>  |                      | Command Type - Video                                     |              |
|---|----------------------|--|--------------|
| Command Name  |                      | Permission   | Transparency |
| Set :   | <b>VID-RES</b>       | End User   | Public       |
| Get   | <b>VID-RES?</b>      | End User   | Public       |
| Description   |                      | Syntax   |              |
| Set:  | Set video resolution | # <b>VID-RES</b> <sub>SP</sub> P1,P2,P3,P4 <sub>CR</sub> |              |
| Get:  | Get video resolution | # <b>VID-RES?</b> <sub>SP</sub> P1,P2,P3 <sub>CR</sub>   |              |
| Response  |                      |  |              |
| ~ <b>nn</b> @ <b>VID-RES</b> <sub>SP</sub> P1,P2,P3,P4 <sub>CR LF</sub>   |                      |  |              |
| Parameters  |                      |  |              |
| P1 – 0=Input; 1=Output<br>P2 – 1=Scaler1; 2=Scaler2<br>P3 – 0=Off; 1=On<br>P4 - video resolutions see <a href="#">Section 9.3.2</a>   |                      |  |              |
| Response triggers   |                      |  |              |
| <ul style="list-style-type: none"> <li>After execution, response is sent to the com port from which the <b>Set /Get</b> was received</li> <li>After execution, response is sent to all com ports if <b>VID-RES</b> was set by any other external control device (button press, device menu and similar)</li> </ul>  |                      |  |              |
| Notes   |                      |  |              |
| <ol style="list-style-type: none"> <li>“Set” command is only applicable for <b>stage=Output</b></li> <li>“Set” command with <i>is_native</i>=ON sets native resolution on selected output (resolution index sent = 0). Device sends as answer actual VIC ID of native resolution</li> <li>“Get” command with <i>is_native</i>=ON returns native resolution VIC, with <i>is_native</i>=OFF returns current resolution</li> </ol> |                      |  |              |

| Command – <b>VMUTE</b>  |                                     | Command Type – Video   |              |
|---|-------------------------------------|--|--------------|
| Command Name  |                                     | Permission   | Transparency |
| Set:  | <b>VMUTE</b>                        | End User   | -            |
| Get:  | <b>VMUTE?</b>                       | End User   | -            |
| Description   |                                     | Syntax   |              |
| Set:  | Set enable/ disable video on output | # <b>VMUTE</b> <input type="checkbox"/> <sub>SP</sub> P1,P2 <input type="checkbox"/> <sub>CR</sub> |              |
| Get :   | Get video on output status          | # <b>VMUTE?</b> <input type="checkbox"/> <sub>SP</sub> P1 <input type="checkbox"/> <sub>CR</sub>   |              |
| Response  |                                     |  |              |
| Set / Get : ~ <input type="checkbox"/> <input type="checkbox"/> @ <b>VMUTE</b> <input type="checkbox"/> <sub>SP</sub> P1,P2 <input type="checkbox"/> <sub>CR LF</sub> |                                     |  |              |
| Parameters  |                                     |  |              |
| P1 (Scaler number) – 1=Scaler1; 2=Scaler2<br>P2 (Off/On) – 0=Off; 1=On  |                                     |  |              |

| Command – <b>VFRZ</b>  |                               | Command Type – Video  |              |
|--|-------------------------------|---|--------------|
| Command Name   |                               | Permission  | Transparency |
| Set:   | <b>VFRZ</b>                   | End User  | Public       |
| Get:   | <b>VFRZ?</b>                  | End User  | Public       |
| Description  |                               | Syntax  |              |
| Set:   | Set freeze on selected output | # <b>VFRZ</b> <input type="checkbox"/> <sub>SP</sub> P1,P2 <input type="checkbox"/> <sub>CR</sub> |              |
| Get :  | Get output freeze status      | # <b>VFRZ?</b> <input type="checkbox"/> <sub>SP</sub> P1 <input type="checkbox"/> <sub>CR</sub>   |              |
| Response   |                               |   |              |
| ~ <input type="checkbox"/> <input type="checkbox"/> @ <b>VFRZ</b> <input type="checkbox"/> <sub>SP</sub> P1,P2 <input type="checkbox"/> <sub>CR LF</sub> |                               |   |              |
| Parameters   |                               |   |              |
| P1 (Scaler number) – 1=Scaler1; 2=Scaler2<br>P2 (Off/On) – 0=Off; 1=On   |                               |   |              |

| Command – <b>AUD-LVL</b>  |   | Command Type – Audio  |              |
|---|---|---|--------------|
| Command Name  |   | Permission  | Transparency |
| Set:  | <b>AUD-LVL</b>                              | End User  | -            |
| Get:  | <b>AUD-LVL?</b>                             | End User  | -            |
| Description   |   | Syntax  |              |
| Set:  | Set audio level in specific amplifier stage | # <b>AUD-LVL</b> <input type="checkbox"/> <sub>SP</sub> P1,P2,P3 <input type="checkbox"/> <sub>CR</sub> |              |
| Get :   | Get audio level in specific amplifier stage | # <b>AUD-LVL?</b> <input type="checkbox"/> <sub>SP</sub> P1,P2 <input type="checkbox"/> <sub>CR</sub>   |              |
| Response  |   |   |              |
| ~ <input type="checkbox"/> <input type="checkbox"/> @ <b>AUD-LVL</b> <input type="checkbox"/> <sub>SP</sub> P1,P2 <input type="checkbox"/> <sub>CR LF</sub>   |   |   |              |
| Parameters  |   |   |              |
| P1 (Input/Output)– 0=Input; 1=Output<br>P2 (Input/Output number valid according to the selected Input/Output according to P1) – video inputs=(0-11); Audio inputs=(0-12);Audio Outputs (– see <a href="#">Section 9.3.1</a> )<br>P3 – 0-100 |   |   |              |

| Command – <b>MIX</b>  |               | Command Type – Audio                           |              |
|---|---------------|--|--------------|
| Command Name  |               | Permission                                     | Transparency |
| Set:  | <b>MIX</b>    | End User                                       | -            |
| Get:  | <b>MIX?</b>   | End User                                       | -            |
| Description   |               | Syntax   |              |
| Set:  | Set audio MIX | # <b>MIX</b> <sub>SP</sub> P1,P2 <sub>CR</sub> |              |
| Get :   | Get audio MIX | # <b>MIX?</b> <sub>SP</sub> P1 <sub>CR</sub>   |              |
| Response  |               |  |              |
| ~ <b>nn</b> @ <b>MIX</b> <sub>SP</sub> channel, mix_mode <sub>CR LF</sub>           |               |  |              |
| Parameters  |               |  |              |
| P1 (Output number) – 0=Audio out; 1=Scaler 1; 2=Scaler2<br>P2 (Off/On)– 0=Off; 1=On |               |  |              |

| Command – <b>MIX-LVL</b>  |   | Command Type –[Audio]                              |              |
|---|---|--|--------------|
| Command Name  |   | Permission   | Transparency |
| Set:  | <b>MIX-LVL</b>                              | End User   | Public       |
| Get:  | <b>MIX-LVL?</b>                             | End User   | Public       |
| Description   |   | Syntax   |              |
| Set:  | Set the mixing level of the selected output | # <b>MIX-LVL</b> <sub>SP</sub> P1,P2 <sub>CR</sub> |              |
| Get :   | Get the mixing level of the selected output | # <b>MIX-LVL?</b> <sub>SP</sub> P1 <sub>CR</sub>   |              |
| Response  |   |  |              |
| Set / Get : ~ <b>nn</b> @ <b>MIX-LVL</b> <sub>SP</sub> P1,P2 <sub>CR LF</sub>   |   |  |              |
| Parameters  |   |  |              |
| P1 (Output number)– 0=Audio out; 1=Scaler 1; 2=Scaler2<br>P2 (Level) – 0 to 100   |   |  |              |
| Response triggers   |   |  |              |
| <ul style="list-style-type: none"> <li>• Response is sent to the com port from which the <b>Set</b> (before execution) / <b>Get</b> command was received</li> <li>• After execution, response is sent to all com ports if CMD-NAME was set any other external control device (button press, device menu and similar) or genlock status was changed</li> </ul> |   |  |              |
| Notes   |   |  |              |
| Sets the mixing level between the audio of the selected video In and the selected AUX audio channel   |   |  |              |

| Command – <b>MUTE</b>   |                          | Command Type – [Audio]  |              |
|---|--------------------------|---|--------------|
| Command Name  |                          | Permission  | Transparency |
| Set:  | <b>MUTE</b>              | End User  | Public       |
| Get:  | <b>MUTE?</b>             | End User  | Public       |
| Description   |                          | Syntax  |              |
| Set:  | Mute the selected output | # <b>MUTE</b> <input type="checkbox"/> <sub>SP</sub> P1,P2 <input type="checkbox"/> <sub>CR</sub> |              |
| Get :   | Mute the selected output | # <b>MUTE?</b> <input type="checkbox"/> <sub>SP</sub> P1 <input type="checkbox"/> <sub>CR</sub>   |              |
| Response  |                          |   |              |
| Set / Get : ~ <input type="checkbox"/> <sub>nn</sub> @ <b>MUTE</b> <input type="checkbox"/> <sub>SP</sub> P1,P2. <input type="checkbox"/> <sub>CR</sub> <input type="checkbox"/> <sub>LF</sub>  |                          |   |              |
| Parameters  |                          |   |              |
| P1 – 2=Line out; 3=Monitor Out; 1=Scaler1; 2=Scaler2<br>P2 – 0=Off; 1=On  |                          |   |              |
| Response triggers   |                          |   |              |
| Response is sent to the com port from which the <b>Set</b> (before execution) / <b>Get</b> command was received<br>After execution, response is sent to all com ports if CMD-NAME was set any other external control device (button press, device menu and similar) or genlock status was changed |                          |   |              |
| Notes   |                          |   |              |
| Mutes the selected audio output   |                          |   |              |

| Command – <b>SCLR-AS</b>  |                 | Command Type – [Audio]   |              |
|---|-----------------|--|--------------|
| Command Name  |                 | Permission   | Transparency |
| Set:  | <b>SCLR-AS</b>  | End User   | Public       |
| Get:  | <b>SCLR-AS?</b> | End User   | Public       |
| Description   |                 | Syntax   |              |
| Set:  | Set the         | # <b>SCLR-AS</b> <input type="checkbox"/> <sub>SP</sub> P1,P2 <input type="checkbox"/> <sub>CR</sub> |              |
| Get :   | Get the         | # <b>SCLR-AS?</b> <input type="checkbox"/> <sub>SP</sub> P1 <input type="checkbox"/> <sub>CR</sub>   |              |
| Response  |                 |  |              |
| Set / Get : ~ <input type="checkbox"/> <sub>nn</sub> @ <b>SCLR-AS</b> <input type="checkbox"/> <sub>SP</sub> P1,P2.... <input type="checkbox"/> <sub>CR</sub> <input type="checkbox"/> <sub>LF</sub>  |                 |  |              |
| Parameters  |                 |  |              |
| P1 –(Scaler Number)1=Scaler 1; 2=Scaler2<br>P2 (Off/On)– 0=Off; 1=On  |                 |  |              |
| Response triggers   |                 |  |              |
| Response is sent to the com port from which the <b>Set</b> (before execution) / <b>Get</b> command was received<br>After execution, response is sent to all com ports if CMD-NAME was set any other external control device (button press, device menu and similar) or genlock status was changed |                 |  |              |
| Notes   |                 |  |              |
| Sets the Auto Sync features for the selected Scaler   |                 |  |              |

| Command – <b>IMAGE-PROP</b>   |                    | Command Type – [Video]   |              |
|---|--------------------|--|--------------|
| Command Name  |                    | Permission   | Transparency |
| Set:  | <b>IMAGE-PROP</b>  | End User   | Public       |
| Get:  | <b>IMAGE-PROP?</b> | End User   | Public       |
| Description   |                    | Syntax   |              |
| Set:  | Set the image size | # <b>IMAGE-PROP</b> <input type="checkbox"/> <sub>SP</sub> P1 <input type="checkbox"/> <sub>CR</sub>         |              |
| Get :   | Get the image size | # <b>IMAGE-PROP?</b> <input type="checkbox"/> <sub>SP</sub> P1,...,P6 <input type="checkbox"/> <sub>CR</sub> |              |
| Response  |                    |  |              |
| Set / Get : ~ <input type="checkbox"/> <sub>nn</sub> @ <b>IMAGE-PROP</b> <input type="checkbox"/> <sub>SP</sub> P1,P2... <input type="checkbox"/> <sub>CR</sub> <input type="checkbox"/> <sub>LF</sub>  |                    |  |              |
| Parameters  |                    |  |              |
| P1 (Scaler number) –1=Scaler 1; 2=Scaler2   |                    |  |              |
| P2 (Status) – 0=Over Scan; 1=Full; 2=Best Fit; 3=PanScan; 3=Letter Box; 5=Under 2; 6=Under 1  |                    |  |              |
| Response triggers   |                    |  |              |
| Response is sent to the com port from which the <b>Set</b> (before execution) / <b>Get</b> command was received<br>After execution, response is sent to all com ports if CMD-NAME was set any other external control device (button press, device menu and similar) or genlock status was changed |                    |  |              |
| Notes   |                    |  |              |
| Sets the image properties of the selected scaler  |                    |  |              |

| Command – <b>SCLR-PCAUTO</b>  |                    | Command Type – [Video]   |              |
|---|--------------------|--|--------------|
| Command Name  |                    | Permission   | Transparency |
| Set:  | <b>SCLR-PCAUTO</b> | End User   | Public       |
| Get:  |                    | End User   | Public       |
| Description   |                    | Syntax   |              |
| Set:  | Set                | # <b>SCLR-PCAUTO</b> <input type="checkbox"/> <sub>SP</sub> P1,P2 <input type="checkbox"/> <sub>CR</sub> |              |
| Get :   |                    |  |              |
| Response  |                    |  |              |
| Set / Get : ~ <input type="checkbox"/> <sub>nn</sub> @ <b>SCLR-PCAUTO</b> <input type="checkbox"/> <sub>SP</sub> P1,P2... <input type="checkbox"/> <sub>CR</sub> <input type="checkbox"/> <sub>LF</sub>   |                    |  |              |
| Parameters  |                    |  |              |
| P1 (Scaler number) –1=Scaler 1; 2=Scaler2   |                    |  |              |
| P2 (Off/On) – 0=Off; 1=On   |                    |  |              |
| Response triggers   |                    |  |              |
| Response is sent to the com port from which the Set (before execution) / Get command was received<br>After execution, response is sent to all com ports if CMD-NAME was set any other external control device (button press, device menu and similar) or genlock status was changed |                    |  |              |
| Notes   |                    |  |              |
| Sets the PC Auto sync of the selected scaler  |                    |  |              |

| Command – <b>SCLR-AUDIO-DELAY</b>   |                            | Command Type – [Audio]  |              |
|---|----------------------------|---|--------------|
| Command Name  |                            | Permission  | Transparency |
| Set:  | <b>SCLR-AUDIO-DELAY</b>    | End User  | Public       |
| Get:  | <b>SCLR-AUDIO-DELAY?</b>   | End User  | Public       |
| Description   |                            | Syntax  |              |
| Set:  | Set the scaler audio delay | # <b>SCLR-AUDIO-DELAY</b> <input type="checkbox"/> <sub>SP</sub> P1,P2 <input type="checkbox"/> <sub>CR</sub> |              |
| Get :   | Get the scaler audio delay | # <b>SCLR-AUDIO-DELAY?</b> <input type="checkbox"/> <sub>SP</sub> P1 <input type="checkbox"/> <sub>CR</sub>   |              |
| Response  |                            |   |              |
| Set / Get : ~ <input type="checkbox"/> <sub>nn</sub> @ <b>SCLR-AUDIO-DELAY</b> <input type="checkbox"/> <sub>SP</sub> P1,P2 <input type="checkbox"/> <sub>CR LF</sub>   |                            |   |              |
| Parameters  |                            |   |              |
| P1 (Audio output number) – 0=Audio out; 1=Scaler 1; 2=Scaler2<br>P2 (Level selection) – 0=Off; 1 to8=10ms to80ms in 10ms steps; 9=Auto  |                            |   |              |
| Response triggers   |                            |   |              |
| Response is sent to the com port from which the Set (before execution) / Get command was received<br>After execution, response is sent to all com ports if CMD-NAME was set any other external control device (button press, device menu and similar) or genlock status was changed |                            |   |              |
| Notes   |                            |   |              |
| Sets the audio delay for the selected audio output  |                            |   |              |

| Command – <b>EQ-LVL</b>   |                            | Command Type – [Audio]   |              |
|---|----------------------------|--|--------------|
| Command Name  |                            | Permission   | Transparency |
| Set:  | <b>EQ-LVL</b>              | End User   | Public       |
| Get:  | <b>EQ-LVL?</b>             | End User   | Public       |
| Description   |                            | Syntax   |              |
| Set:  | Set the equalization level | # <b>EQ-LVL</b> <input type="checkbox"/> <sub>SP</sub> P1,P2,P3 <input type="checkbox"/> <sub>CR</sub> |              |
| Get :   | Get the equalization level | # <b>EQ-LVL?</b> <input type="checkbox"/> <sub>SP</sub> P1,P2 <input type="checkbox"/> <sub>CR</sub>   |              |
| Response  |                            |  |              |
| Set / Get : ~ <input type="checkbox"/> <sub>nn</sub> @ <b>EQ-LVL</b> <input type="checkbox"/> <sub>SP</sub> P1,P2,P3 <input type="checkbox"/> <sub>CR LF</sub>  |                            |  |              |
| Parameters  |                            |  |              |
| P1 (Audio output number) – 0=Audio out; 1=Scaler 1; 2=Scaler2<br>P2 (frequency number) – 0=120; 1=200; 3=500; 4=1200; 5=3000; 6=7500; 8=12000<br>P3 (Level) – 0=-10dB 20=0dB; 40=10dB   |                            |  |              |
| Response triggers   |                            |  |              |
| Response is sent to the com port from which the Set (before execution) / Get command was received<br>After execution, response is sent to all com ports if CMD-NAME was set any other external control device (button press, device menu and similar) or genlock status was changed |                            |  |              |
| Notes   |                            |  |              |
| Sets the EQ level for the selected frequency of the selected audio output   |                            |  |              |

| Command – <b>SHOW-OSD</b>   |                     | Command Type – [Video]   |              |
|---|---------------------|--|--------------|
| Command Name  |                     | Permission   | Transparency |
| Set:  | <b>SHOW-OSD</b>     | End User   | Public       |
| Get:  | <b>SHOW-OSD?</b>    | End User   | Public       |
| Description   |                     | Syntax   |              |
| Set:  | Set the OSD display | # <b>SHOW-OSD</b> <input type="checkbox"/> <sub>SP</sub> P1 <input type="checkbox"/> <sub>CR</sub> |              |
| Get :   | Get the OSD display | # <b>SHOW-OSD?</b> <input type="checkbox"/> <sub>SP</sub> <input type="checkbox"/> <sub>CR</sub>   |              |
| Response  |                     |  |              |
| Set / Get : ~ <input type="checkbox"/> <sub>nn</sub> @ <b>SHOW-OSD</b> <input type="checkbox"/> <sub>SP</sub> P1 <input type="checkbox"/> <sub>CR</sub> LF  |                     |  |              |
| Parameters  |                     |  |              |
| P1 (Scaler number) – 0=Both Off; 1=1 On; 2=2 On; 99=Both On   |                     |  |              |
| Response Triggers   |                     |  |              |
| Response is sent to the com port from which the Set (before execution) / Get command was received<br>After execution, response is sent to all com ports if CMD-NAME was set any other external control device (button press, device menu and similar) or genlock status was changed |                     |  |              |
| Notes   |                     |  |              |
| Displays the OSD of the selected Scaler   |                     |  |              |

| Command – <b>MIC-GAIN</b>   |                         | Command Type – [Audio]  |              |
|---|-------------------------|---|--------------|
| Command Name  |                         | Permission  | Transparency |
| Set:  | <b>MIC-GAIN</b>         | End User  | Public       |
| Get:  | <b>MIC-GAIN?</b>        | End User  | Public       |
| Description   |                         | Syntax  |              |
| Set:  | Set the microphone gain | # <b>MIC-GAIN</b> <input type="checkbox"/> <sub>SP</sub> P1,P2 <input type="checkbox"/> <sub>CR</sub> |              |
| Get :   | Get the microphone gain | # <b>MIC-GAIN?</b> <input type="checkbox"/> <sub>SP</sub> P1 <input type="checkbox"/> <sub>CR</sub>   |              |
| Response  |                         |   |              |
| Set / Get : ~ <input type="checkbox"/> <sub>nn</sub> @ <b>MIC-GAIN</b> <input type="checkbox"/> <sub>SP</sub> P1,P2 <input type="checkbox"/> <sub>CR</sub> LF   |                         |   |              |
| Parameters  |                         |   |              |
| P1 (Input number, for VP-553xl always 0) = 0<br>P2 (level) – 0 to 100   |                         |   |              |
| Response Triggers   |                         |   |              |
| Response is sent to the com port from which the Set (before execution) / Get command was received<br>After execution, response is sent to all com ports if CMD-NAME was set any other external control device (button press, device menu and similar) or genlock status was changed |                         |   |              |
| Notes   |                         |   |              |
| Sets the Microphone input audio gain  |                         |   |              |

| Command – <b>DIPSW-STATUS</b>   |                           | Command Type – [Machine]   |              |
|---|---------------------------|--|--------------|
| Command Name  |                           | Permission   | Transparency |
| Set:  |                           | End User   | Public       |
| Get:  | <b>DPSW-STATUS?</b>       | End User   | Public       |
| Description   |                           | Syntax   |              |
| Set:  |                           |  |              |
| Get :   | Get the DIP-switch status | # <b>DPSW-STATUS?</b> <input type="checkbox"/> <sub>SP</sub> P1 <input type="checkbox"/> <sub>CR</sub> |              |
| Response  |                           |  |              |
| Get : ~ <input type="checkbox"/> <sub>nn</sub> @ <b>DPSW-STATUS</b> <input type="checkbox"/> <sub>SP</sub> P2 <input type="checkbox"/> <sub>CR LF</sub>   |                           |  |              |
| Parameters  |                           |  |              |
| P1 –0=SW 0;... 2=SW2<br>P2 (Off/On) – Off=0, On=1   |                           |  |              |
| Response Triggers   |                           |  |              |
| Response is sent to the com port from which the Set (before execution) / Get command was received<br>After execution, response is sent to all com ports if CMD-NAME was set any other external control device (button press, device menu and similar) or genlock status was changed |                           |  |              |
| Notes   |                           |  |              |
| Gets the DIP status for the selected DIP switch   |                           |  |              |

| Command – <b>ETH-PORT</b>   |                            | Command Type - Communication  |              |
|---|----------------------------|---|--------------|
| Command Name  |                            | Permission  | Transparency |
| Set :   | <b>ETH-PORT</b>            | Administrator   | Public       |
| Get   | <b>ETH-PORT?</b>           | End User  | Public       |
| Description   |                            | Syntax  |              |
| Set:  | Set Ethernet port protocol | # <b>ETH-PORT</b> <input type="checkbox"/> <sub>SP</sub> portType, ETHPort <input type="checkbox"/> <sub>CR</sub> |              |
| Get:  | Get Ethernet port protocol | # <b>ETH-PORT?</b> <input type="checkbox"/> <sub>SP</sub> portType <input type="checkbox"/> <sub>CR</sub>         |              |
| Response  |                            |   |              |
| ~ <input type="checkbox"/> <sub>nn</sub> @ <b>ETH-PORT</b> <input type="checkbox"/> <sub>SP</sub> portType, ETHPort <input type="checkbox"/> <sub>CR LF</sub> |                            |   |              |
| Parameters  |                            |   |              |
| portType - UDP<br>ETHPort –UDP=50000-50999  |                            |   |              |

| Command – <b>STANDBY</b>  |                         | Command Type - Audio   |              |
|---|-------------------------|--|--------------|
| Command Name  |                         | Permission   | Transparency |
| Set :   | <b>STANDBY</b>          | End User   | Public       |
| Get   | <b>STANDBY?</b>         | End User   | Public       |
| Description   |                         | Syntax   |              |
| Set:  | Set Standby mode        | # <b>STANDBY</b> <input type="checkbox"/> <i>on_off</i> <input type="checkbox"/> |              |
| Get:  | Get Standby mode status | # <b>STANDBY?</b> <input type="checkbox"/>                                       |              |
| Response  |                         |  |              |
| ~ <input type="checkbox"/> @ <b>STANDBY</b> <input type="checkbox"/> <i>value</i> <input type="checkbox"/> <input type="checkbox"/> |                         |  |              |
| Parameters  |                         |  |              |
| on_off – 0=Off; 1=On  |                         |  |              |

| Command – <b>VOLUME</b>   |                               | Command Type - Audio   |              |
|---|-------------------------------|--|--------------|
| Command Name  |                               | Permission   | Transparency |
| Set :   | <b>VOLUME</b>                 | End User   | -            |
| Get   |                               |  | -            |
| Description   |                               | Syntax   |              |
| Set:  | Set global output audio level | # <b>VOLUME</b> <input type="checkbox"/> P1 <input type="checkbox"/> |              |
| Get:  |                               |  |              |
| Response  |                               |  |              |
| ~~ <input type="checkbox"/> @ <b>VOLUME</b> <input type="checkbox"/> P1 <input type="checkbox"/> OK <input type="checkbox"/>                                    |                               |  |              |
| Parameters  |                               |  |              |
| P1 (Input/Output)– + = increase current level; - = decrease current level   |                               |  |              |
| Notes   |                               |  |              |
| To set / get an "input" level or audio level in other amplifier stage, use command #AUD-LVL / #AUD-LVL?<br>to set / get audio level in specific amplifier stage |                               |  |              |

### 9.3.5 Packet Protocol Structure

The packet protocol is designed to transfer large amounts of data, such as files, IR commands, EDID data, etc.

#### 9.3.5.1 Using the Packet Protocol

To use the packet protocol:

1. Send a command: LDRV, LOAD, IROUT, LDEDID
2. Receive Ready or ERR###

3. If Ready:

- Send a packet
- Receive OK on the last packet
- Receive OK for the command

4. Packet structure:

- Packet ID (1, 2, 3...) (2 bytes in length)
- Length (data length + 2 for CRC) - (2 bytes in length)
- Data (data length -2 bytes)
- CRC - 2 bytes

| 01        | 02 | 03     | 04 | 05... |     |
|-----------|----|--------|----|-------|-----|
| Packet ID |    | Length |    | Data  | CRC |

5. Response:

~NNNN SP OK CR LF

Where NNNN is the received packet ID in ASCII hex digits.

### 9.3.5.2 Calculating the CRC

The polynomial for the 16-bit CRC is:

CRC-CCITT:  $0x1021 = x^{16} + x^{12} + x^5 + 1$

Initial value: 0000

Final XOR Value: 0

For a code example, see:

[http://sanity-free.org/133/crc\\_16\\_ccitt\\_in\\_csharp.html](http://sanity-free.org/133/crc_16_ccitt_in_csharp.html)

CRC example:

Data = "123456789"

Result => 0x31C3

## LIMITED WARRANTY

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

### What is Covered

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

### What is Not Covered

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

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

### How Long Does this Coverage Last

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

### Who is Covered

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

### What Kramer Electronics will do

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

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

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

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

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

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#### **SAFETY WARNING**

Disconnect the unit from the power supply before opening and servicing

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