KRAMER ELECTRONICS LTD.

USER MANUAL

MODEL:

VP-553

Presentation Switcher/Scaler

P/N: 2900-300326 Rev 6

VP-553 Quick Start Guide

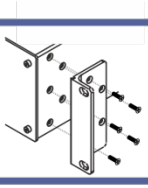
This guide helps you install and use your product for the first time. For more detailed information, go to **http://www.kramerav.com/manual/VP-553** to download the latest manual (or scan the QR code) and check if firmware upgrades are available.

Step 1: Check what's in the box

- ☑ The **VP-553** Presentation Switcher/Scaler
- ☑ IR remote control transmitter with batteries
- ☑ 1 Power cord
- ☑ 4 Rubber feet
- ☑ 1 Set of rack ears
- ☑ 1 Quick start guide

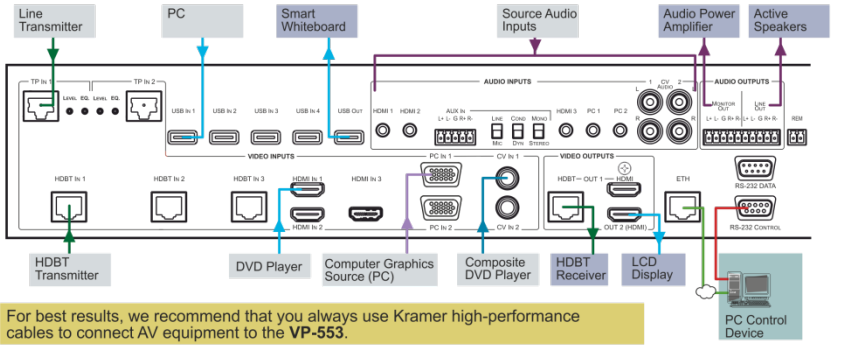
Step 2: Install the VP-553

To rack mount the machine attach both ear brackets to the machine (by removing the five 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

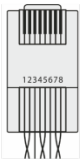
Always switch OFF the power on each device before connecting it to your **VP-553**.



For best results, we recommend that you always use Kramer high-performance cables to connect AV equipment to the **VP-553**.

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. These specially built cables significantly outperform regular CAT 6 cables.

Connect the audio output:

L+ L- G R+ R-

To a balanced acceptor:

L+ L- G R+ R-

To an unbalanced acceptor:

Connect the audio AUX IN input:

AUX IN

L+ L- G R+ R-

To a balanced source:

AUX IN

L+ L- G R+ R-

To an unbalanced source:

Step 4: Connect the power

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

Step 5: Set operation parameters via OSD menu

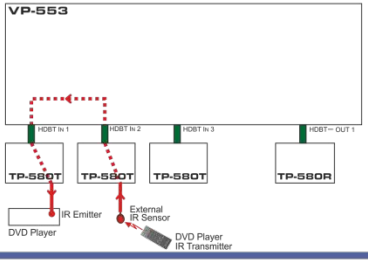
To View the OSD, press the OSD SELECT button until the front-panel OSD LED corresponding to the output you are viewing is lit.
Enter the OSD menu via the MENU button on the front panel or the IR remote control transmitter. Select a menu item and set parameters as required.

If you cannot see any images, verify that the display, TV, or projector is in good working order and is connected to the **VP-553**. If you still don't see an image, press and hold the RESET TO XGA/720P button for 2 seconds to reset the output to XGA or 720p resolution.

Mode	Function
OUTPUT 1	Set the output 1 parameters
OUTPUT 2	Set the output 2 parameters
AUDIO OUT	Set the audio output parameters
AUDIO SET	Set the audio input parameters
USB	Set the USB ports behavior
OSD	Set the OSD parameters
FACTORY	Select YES to reset to the default parameters.
ETHER(NET)	IP MODE, SET STATIC IP, CONTROL PORT
MISC.	Select the IR transmission route for each of the units that are connected to the HDBT connectors (IN+OUT): HDBT1 (IR OUT), HDBT2 (IR OUT), HDBT3 (IR OUT), HDBT OUT (IR OUT), DATA UART OUT
INFO.	Displays the RESOLUTION, HDCP, DIP SWITCH, VERSION

Step 6: Control peripheral devices via IR remote controller:

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.



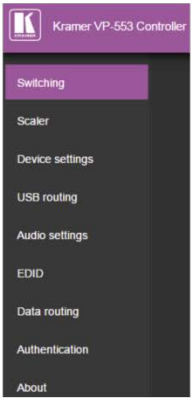
Step 7: Operate via the front panel buttons and via the:

IR Remote Controller

RS-232 and Ethernet

RS-232	
Baud Rate:	Any baud rate up to 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
TCP Port #:	Not supported
Default UDP Port #:	50000
Maximum UDP Ports:	4
Full Factory Reset	
OSD	Go to : Menu-> Factory-> RESET->Change the option to YES and press Enter

Embedded Web Page



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1 Introduction

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

Our 1,000-plus different models now appear in 14 groups that are clearly defined by function: GROUP 1: Distribution Amplifiers; GROUP 2: Switchers and Routers; GROUP 3: Control Systems; GROUP 4: Format/Standards Converters; GROUP 5: Range Extenders and Repeaters; GROUP 6: Specialty AV Products; GROUP 7: Scan Converters and Scalers; GROUP 8: Cables and Connectors; GROUP 9: Room Connectivity; GROUP 10: Accessories and Rack Adapters; GROUP 11: Sierra Video Products; GROUP 12: Digital Signage; GROUP 13: Audio; and GROUP 14: Collaboration.

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

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

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-553 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-553** 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*.

3 Overview

The **VP-553** 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-553** 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-553**:

- 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-553** 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-553** 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-553 Presentation Switcher/Scaler

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

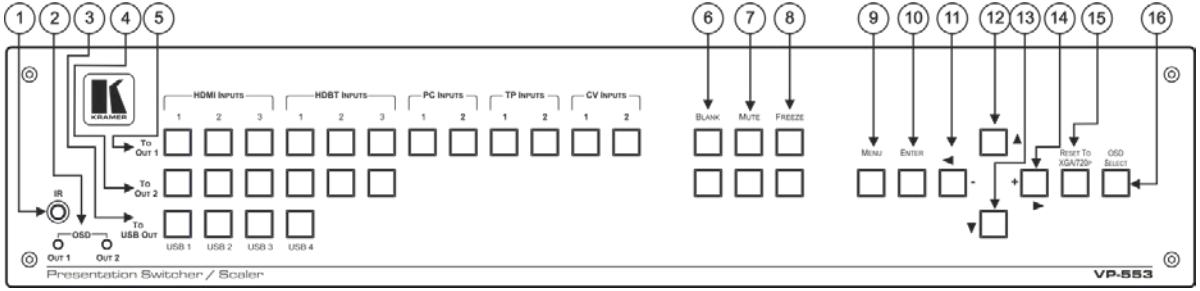


Figure 1: VP-553 Presentation Switcher/Scaler Front Panel

#	Feature		Function
1	IR Receiver		Receives signals from the remote control transmitter
2	OSD OUT LEDs		Red LEDS indicate whether the OSD is displayed on OUT 1 and/or OUT 2
3	Input Selector Buttons	TO USB OUT	Press a button to switch a USB input to the output (from USB 1 to USB 4)
4		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)
5		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)
6	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 Section 6.2.5)
7	MUTE Buttons		Press to toggle between muting (blocking out the sound) and enabling the embedded audio output for OUT 1 and OUT 2 separately Note that the mute button will not affect the LINE and MONITOR outputs
8	FREEZE Buttons		Press to freeze/unfreeze the output video image on OUT 1 and OUT 2 separately; can be programmed to follow MUTE (see Section 6.2.5)
9	MENU Button		Displays the OSD menu (see Section 6.2)
10	ENTER Button		Press to accept changes and change the SETUP parameters (see Section 6.2)
11	Navigation Buttons	◄/- Button	Press to decrease numerical values or select from several definitions When not within the OSD menu mode, press to reduce volume (for embedded HDMI inputs, this does not affect the embedded output)
12		▲ Button	Press to move up the menu list values (see Section 6.2)
13		▼ Button	Press to move down the menu list (see Section 6.2)
14		►/+ Button	Press to increase numerical values or select from several definitions When not within the OSD menu mode, press to increase volume (for embedded HDMI inputs, this does not affect the embedded output)
15	RESET TO XGA/720p Button		Press to reset the video resolution of both scalers to XGA or 720p Press and hold for about 2 seconds to reset to XGA; or press and hold for about 5 seconds to reset to 720p
16	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)

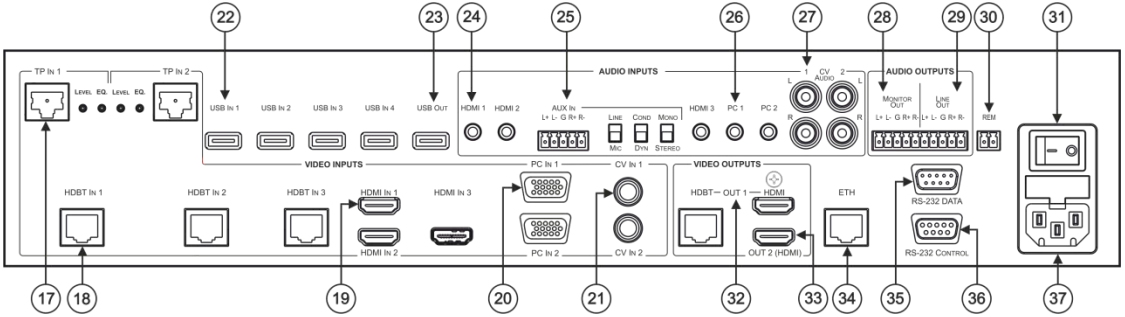


Figure 2: VP-553 Presentation Switcher/Scaler Rear Panel

#	Feature		Function	
17	VIDEO INPUT Connectors	TP IN	RJ-45	Connect to a TP transmitter, for example the **TP-121xl** (from 1 to 2)
			LEVEL Trimmer	Use to adjust the input signal level
			EQ. Trimmer	Use to adjust the cable compensation equalization level
18		HDBT IN	Connect to an HDBT Transmitter (for example, the Kramer **TP-580Txr**) to pass audio and video signals as well as serial commands (from 1 to 3)	
19		HDMI IN	Connect to the HDMI source (from 1 to 3)	
20		PC IN 15-pin HD	Connect to the computer graphics source (from 1 to 2)	
21		CV RCA	Connect to the composite video source (from 1 to 2)	
22	USB (A type) IN Connectors		Connect to a USB host (from 1 to 4)	
23	USB OUT (A type) Connector		Connect to a USB client	
24	AUDIO INPUT Connectors	HDMI 3.5mm Mini Jack	Connect to the analog audio HDMI source (from 1 to 3)	
25		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
26		PC 3.5mm Mini Jack	Connect to the analog audio computer graphics source (from 1 to 2)	
27		CV	Connect to the L and R analog audio composite video source (from 1 to 2)	

#	Feature		Function	
28	AUDIO OUTPUT Terminal Block Connectors	MONITOR OUT	Connect to a stereo analog audio acceptor (for example, active speakers or an audio power amplifier)	
29		LINE OUT	Connect to a stereo analog audio acceptor (for example, active speakers or an audio power amplifier)	
30	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	
31	POWER Switch		Switch for turning the unit ON or OFF	
32	VIDEO OUTPUT Connectors	OUT 1	HDMI	Connect to an HDMI acceptor
			HDBT RJ-45	Connect to an HDBT Receiver (for example, the Kramer **TP-580Rxr**)
33		OUT 2	Connect to an HDMI acceptor	
34	ETHERNET Connector		Connects to the PC or other Serial Controller through computer networking	
35	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	
36	RS-232 CONTROL 9-pin D-sub Port		Connect to the PC or the remote controller	
37	Power Connector with Fuse		AC connector, enabling power supply to the unit	

4 Installing in a Rack

This section provides instructions for rack mounting the unit.

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

OPERATING TEMPERATURE:	0º to +40ºC (32º to 104ºF)
STORAGE TEMPERATURE:	-40º to +70ºC (-40º to 158ºF)
HUMIDITY:	10% to 90%, RHL non-condensing

CAUTION!

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

1. It is located within the recommended environmental conditions, as the operating ambient temperature of a closed or multi unit rack assembly may exceed the room ambient temperature.

2. Once rack mounted, enough air will still flow around the machine.

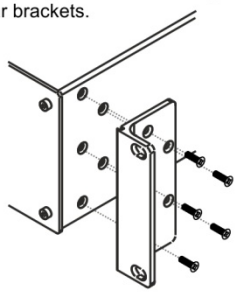
3. The machine is placed straight in the correct horizontal position.

4. You do not overload the circuit(s). When connecting the machine to the supply circuit, overloading the circuits might have a detrimental effect on overcurrent protection and supply wiring. Refer to the appropriate nameplate ratings for information. For example, for fuse replacement, see the value printed on the product label.

5. The machine is earthed (grounded) in a reliable way and is connected only to an electricity socket with grounding. Pay particular attention to situations where electricity is supplied indirectly (when the power cord is not plugged directly into the socket in the wall), for example, when using an extension cable or a power strip, and that you use only the power cord that is supplied with the machine.

To rack-mount a machine:

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

5 Connecting the VP-553

Always switch off the power to each device before connecting it to your **VP-553**. After connecting your **VP-553**, 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-553**, as illustrated in the example in Figure 3, do the following:

1. Connect an HDMI source (for example, a DVD 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-553 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

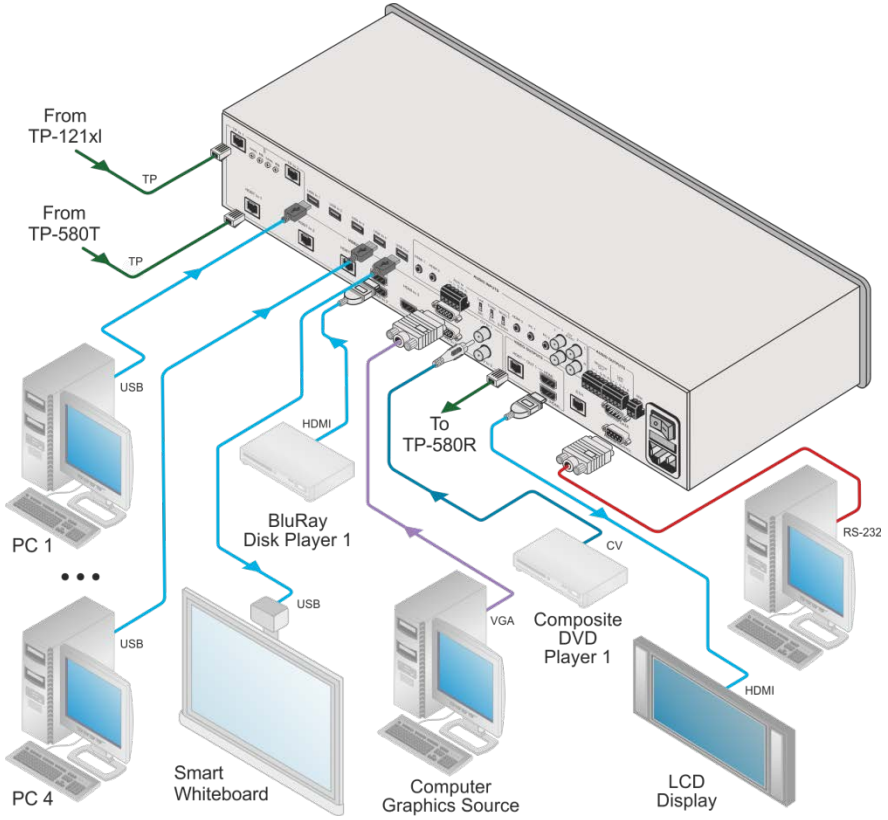


Figure 3: Connecting the VP-553 Presentation Switcher / Scaler

5.1 Connecting the Balanced Stereo Audio Input and Outputs

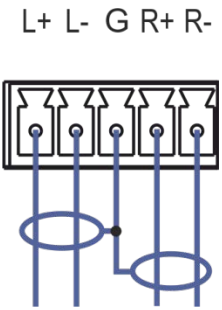


Figure 4: Balanced Stereo Audio Connection

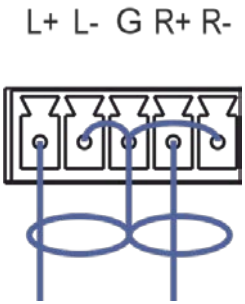


Figure 5: Unbalanced Stereo Audio Output Connection

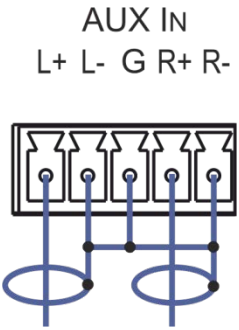


Figure 6: Unbalanced Stereo Audio Input Connection

6 Controlling the VP-553

The **VP-553** 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-553** 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 ADJUST menu (see Section 6.2.2).

6.2 Using the OSD Menu

The control buttons let you control the **VP-553** 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 Section 6.2.2
OUTPUT 2	Set the output 2 parameters, see Section 6.2.3
AUDIO OUT	Set the audio output parameters, see Section 6.2.4
AUDIO SET	Set the audio input parameters, see Section 6.2.5
USB	Set the USB ports behavior, see Section 6.2.6
OSD	Set the OSD parameters: H POSITION, V POSITION, TIMER, BACKGROUND and DISPLAY, see Section 6.2.7
FACTORY	Select YES to reset to the default parameters. 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)	**IP MODE**: Set to DHCP or STATIC. When selecting STATIC IP, the IP number appears next to IP ADDRESS **SET STATIC IP**: set the IP ADDRESS, DEF. GATEWAY (default gateway), and SUBNET MASK. **CONTROL PORT**: 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 (see Section 7.2.1). Select the IR transmission route for each of the units that are connected to the HDBT connectors (IN+OUT): **HDBT1 (IR OUT)**: set to HDBT2, HDBT3 or HDBT OUT (to set the IR route from/to HDBT2, HDBT3 or HDBT OUT to HDBT1) **HDBT2 (IR OUT)**: set to HDBT1, HDBT3 or HDBT OUT (to set the IR route from HDBT1, HDBT3 or HDBT OUT to HDBT2) **HDBT3 (IR OUT)**: set to HDBT1, HDBT2 or HDBT OUT (to set the IR route from HDBT1, HDBT2 or HDBT OUT to HDBT3) **HDBT OUT (IR OUT)**: set to HDBT1, HDBT2 or HDBT3 (to set the IR route from HDBT1, HDBT2 or HDBT3 to HDBT OUT) 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 Figure 25 **HDCP INPUT**: select the HDCP option for each HDMI and HDBT input to either ON (the default) or OFF. 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)

Mode	Function
INFO.	Displays the: **OUTPUT 1** information – resolution, HDCP status and input source **OUTPUT 2** information – resolution and input source **DIP SWITCH**: set MICHROPHONE, PHANTOM POWER, STEREO and MUTE CONTROL ON or OFF **VERSION**: shows the firmware version

6.2.2 The OUTPUT 1 Menu

<table>
<tr><th>Mode</th><th colspan="4">Function</th></tr>
<tr><td>SOURCE</td><td colspan="4">Select the source:</td></tr>
<tr><td></td><td>Source input</td><td>Appears as:</td><td>Source input</td><td>Appears as:</td></tr>
<tr><td></td><td>HDMI 1</td><td>HDMI1</td><td>VGA 1</td><td>PC1</td></tr>
<tr><td></td><td>HDMI 2</td><td>HDMI2</td><td>VGA 2</td><td>PC2</td></tr>
<tr><td></td><td>HDMI 3</td><td>HDMI3</td><td>Twisted pair 1</td><td>TP1</td></tr>
<tr><td></td><td>HDBT 1</td><td>HDBT1</td><td>Twisted pair 2</td><td>TP2</td></tr>
<tr><td></td><td>HDBT 2</td><td>HDBT2</td><td>CV 1</td><td>CV1</td></tr>
<tr><td></td><td>HDBT 3</td><td>HDBT3</td><td>CV 2</td><td>CV2</td></tr>
<tr><td>PICTURE</td><td colspan="4">CONTRAST: Set the contrast (the range and default values vary according to the input signal)
BRIGHTNESS: Set the brightness (the range and default values vary according to the input signal)
COLOR: set the red (R), green (G) and blue (B) shades and offsets
HUE: Set the color hue
SATURATION: Set the color saturation
SHARPNESS: Set the sharpness of the picture
NR: Select the noise reduction: OFF, LOW, MIDDLE and HIGH</td></tr>
<tr><td>SIZE</td><td colspan="4">Select the size of the display: FULL, OVER SCAN, UNDER1, UNDER2, LETTER BOX, PAN SCAN, BEST FIT (default, FULL)
UNDER1 refers to an underscan of 6%; UNDER2 refers to an underscan of 9%</td></tr>
<tr><td>RESOLUTION</td><td colspan="4">Select the output resolution from the menu (default NATIVE):</td></tr>
<tr><td></td><td>Output resolution:</td><td>Appears as:</td><td>Output resolution:</td><td>Appears as:</td></tr>
<tr><td></td><td>Native</td><td></td><td>1600x1200</td><td>1600x1200 60</td></tr>
<tr><td></td><td>640x480</td><td>640x480 60</td><td>1920x1080</td><td>1920x1080 60</td></tr>
<tr><td></td><td>800x600</td><td>800x600 60</td><td>1920x1200</td><td>1920x1200 60</td></tr>
<tr><td></td><td>1024x768</td><td>1024x768 60</td><td>480p @60Hz</td><td>720x480P 60</td></tr>
<tr><td></td><td>1280x768</td><td>1280x768 60</td><td>720p @60Hz</td><td>1280x720P 60</td></tr>
<tr><td></td><td>1360x768</td><td>1360x768 60</td><td>1080i @60Hz</td><td>1920x1080I 60</td></tr>
<tr><td></td><td>1280x720</td><td>1280x720 60</td><td>1080p @60Hz</td><td>1920x1080P 60</td></tr>
<tr><td></td><td>1280x800</td><td>1280x800 60</td><td>576p @50Hz</td><td>720x576P 60</td></tr>
<tr><td></td><td>1280x1024</td><td>1280x1024 60</td><td>720p @50Hz</td><td>1280x720P 50</td></tr>
<tr><td></td><td>1440x900</td><td>1440x900 60</td><td>1080i @50Hz</td><td>1920x1080I 50</td></tr>
<tr><td></td><td>1400x1050</td><td>1400x1050 60</td><td>1080p @50Hz</td><td>1920x1080P 50</td></tr>
<tr><td></td><td>1680x1050</td><td>1680x1050 60</td><td></td><td></td></tr>
<tr><td></td><td colspan="4">Native - Select Native to select the output resolution from the EDID of the connected HDMI monitor</td></tr>
</table>

Mode	Function	
OUTPUT HDCP	Select **FOLLOW INPUT** or **FOLLOW OUTPUT** to define whether the HDCP will follow the input or the output When **FOLLOW INPUT** is selected, it changes its HDCP output setting (for the HDMI output) according to the HDCP of the input. This option is recommended when the HDMI output is connected to a splitter/switcher When **FOLLOW OUTPUT** is selected, the scaler matches its HDCP output to the HDCP setting of the HDMI acceptor to which it is connected	
AUTOSYNC OFF	Turn the auto sync ON/OFF. When ON, this de-activates the output after a few minutes if no input is present. 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 Section 6.2.2.1)	
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	
NO SIGNAL COLOR	Select a BLUE or BLACK window color if no signal is detected	
PC	AUTO ADJUST	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
	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 In order to route embedded audio (HDMI or HDBT) to an analog audio output, that video source must be routed to one of the video outputs.	
EMBEDDED AUDIO	HDMI AUDIO IN (1, 2 and 3)	Select the HDMI 1, HDMI 2 and HDMI 3 audio sources behavior: **AUTOMATIC**: the embedded audio on the HDMI input is selected for an HDMI signal, or the analog audio input is selected if the input is not HDMI (for example, for a DVI input signal) **EMBEDDED**: the embedded audio in the HDMI signal is selected **ANALOG**: the analog audio input is selected 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 DYNAMIC	
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

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

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)	Select the HDMI 1, HDMI 2 and HDMI 3 audio sources behavior: **AUTOMATIC**: the embedded audio on the HDMI input is selected for an HDMI signal, or the analog audio input is selected if the input is not HDMI (for example, for a DVI input signal) **EMBEDDED**: the embedded audio in the HDMI signal is selected **ANALOG**: the analog audio input is selected 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 DYNAMIC	
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 AUX	
EMBEDDED AUDIO	HDMI AUDIO IN (1, 2 and 3)	Select the HDMI 1, HDMI 2 and HDMI 3 audio sources behavior: **AUTOMATIC**: the embedded audio on the HDMI input is selected for an HDMI signal, or the analog audio input is selected if the input is not HDMI (for example, for a DVI input signal) **EMBEDDED**: the embedded audio in the HDMI signal is selected **ANALOG**: the analog audio input is selected HDMI AUDIO IN is enabled only when one of the HDMI inputs is selected
OUTPUT VOLUME (see Figure 7)	LINE	Set the LINE OUT volume
	MONITOR	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 DYNAMIC	
MICROPHONE MIX	Set to ON or OFF Set to ON to mix the microphone input with the selected audio input or set to OFF	
MIX LEVEL	Adjust the mix level	
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 7 shows the output volume level (dB) vs. the OSD volume setting:

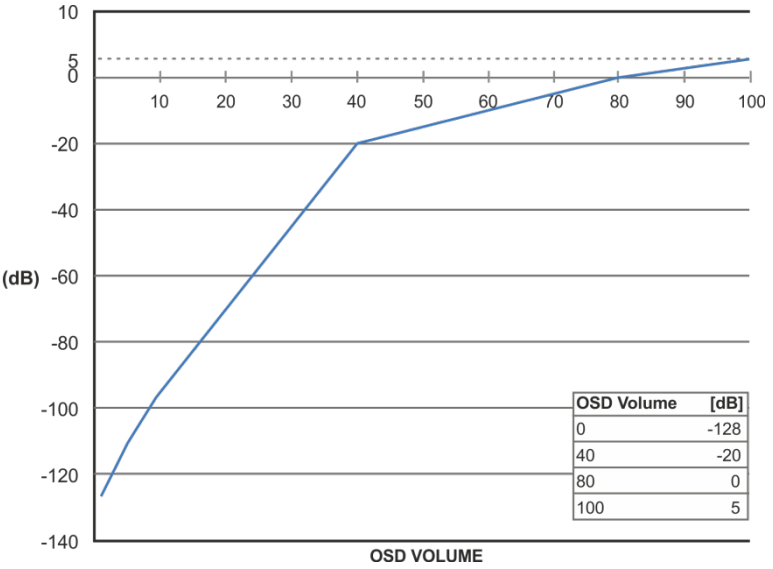


Figure 7: VP-553 Audio Volume Level (dB) vs. OSD Volume Values

6.2.5 The AUD SET Menu

Parameter	Function
MICROPHONE GAIN	Set the microphone gain
INPUT VOLUME	Set the volume for each input: HDMI1 (embedded), HDMI2 (embedded), HDMI3 (embedded) 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: **NONE**: the audio muting is independent of the FREEZE and BLANK functions **FREEZE** **BLANK** **FREEZE+BLANK**: 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. 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) or set to OFF
TRANSPARENCY	Set the OSD background between 0 (transparent) and 50 (opaque)
DISPLAY	Select the information shown on the screen during operation: **OFF**: the information is not shown **ON**: the information is shown permanently **INFO**: the information is shown for a few seconds

6.3 Connecting to the VP-553 via RS-232

The **VP-553** 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-553**

You can connect to the **VP-553** 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-553** 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-553** 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-553** 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-553** with the factory configured default IP address.

After connecting the **VP-553** to the Ethernet port, configure your PC as follows:

1. Click **Start** > **Control Panel** > **Network and Sharing Center**.
2. Click **Change Adapter Settings**.
3. Highlight the network adapter you want to use to connect to the device and click **Change settings of this connection**.
   The Local Area Connection Properties window for the selected network adapter appears as shown in Figure 8.

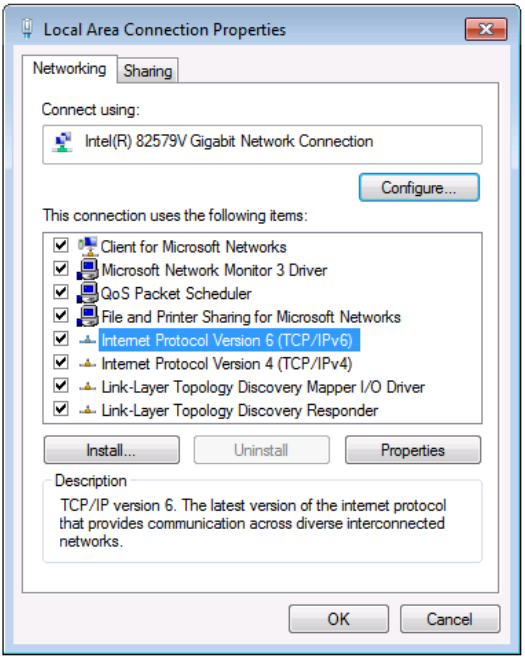


Figure 8: Local Area Connection Properties Window

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

5. Click **Properties**.
   The Internet Protocol Properties window relevant to your IT system appears as shown in Figure 9 or Figure 10.

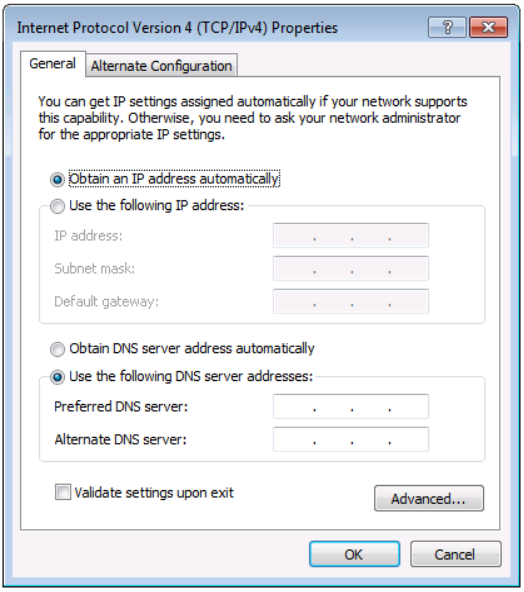


Figure 9: Internet Protocol Version 4 Properties Window

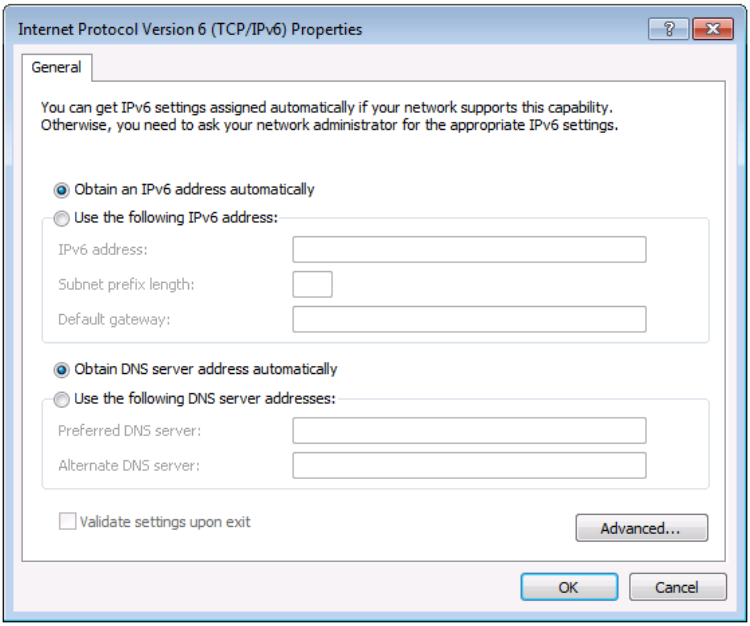


Figure 10: Internet Protocol Version 6 Properties Window

6. Select **Use the following IP Address** for static IP addressing and fill in the details as shown in Figure 11.
   For TCP/IPv4 you can use any IP address in the range 192.168.1.1 to 192.168.1.255 (excluding 192.168.1.39) that is provided by your IT department.

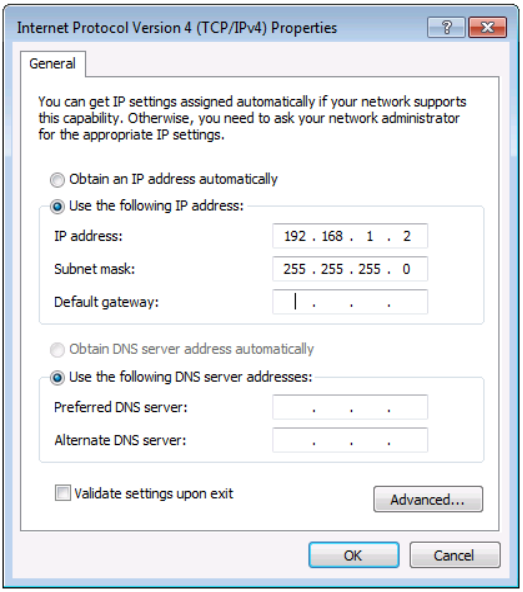


Figure 11: Internet Protocol Properties Window

7. Click **OK**.

8. Click **Close**.

6.4.2 Connecting the Ethernet Port via a Network Hub or Switch

You can connect the Ethernet port of the **VP-553** 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-553** from the infrared remote control transmitter:

Figure 12: 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) Use the up and down arrows to adjust numerical values and adjust the output volume level (when not within 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-553** can be operated remotely using the embedded Web pages. The Web pages are accessed using a Web browser and an Ethernet connection.

Before attempting to connect:

- Perform the procedures in Section 6.4
- Ensure that your browser is supported

The following operating systems and Web browsers are supported:

Windows 7:

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

Mac (PC):

- Chrome version 35
- Firefox version 27

Android OS:

- Chrome version 35

iOS:

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

7.1 Browsing the VP-553 Web Pages

To browse the VP-553 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.

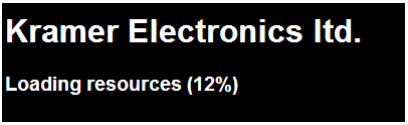


Figure 13: The Loading Page

Once loaded, enter your user name and password:

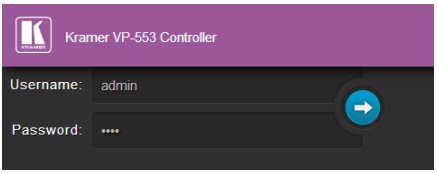


Figure 14: Enter Username and Password

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

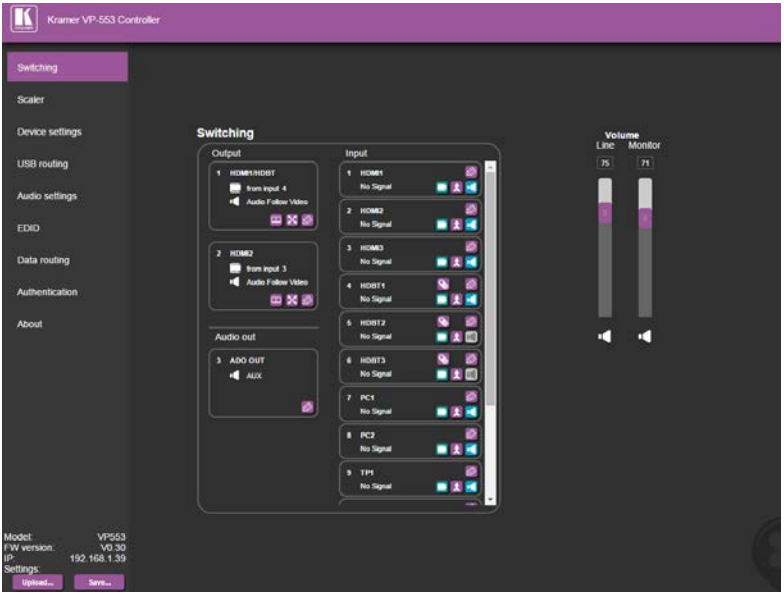


Figure 15: The Switching Page

Figure 16 explains the icons used to switch inputs and outputs.

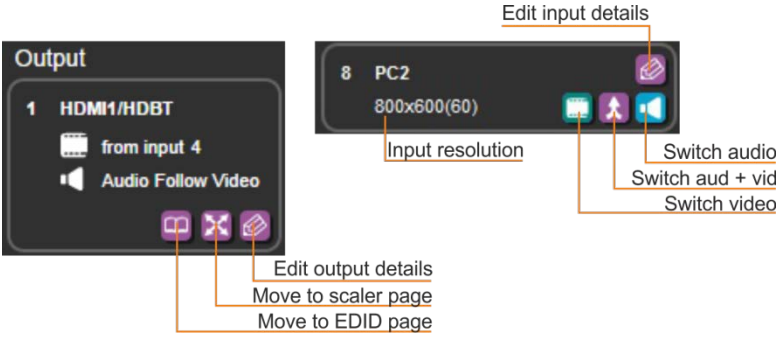


Figure 16: Switching Page – Input and Output Icons

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

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

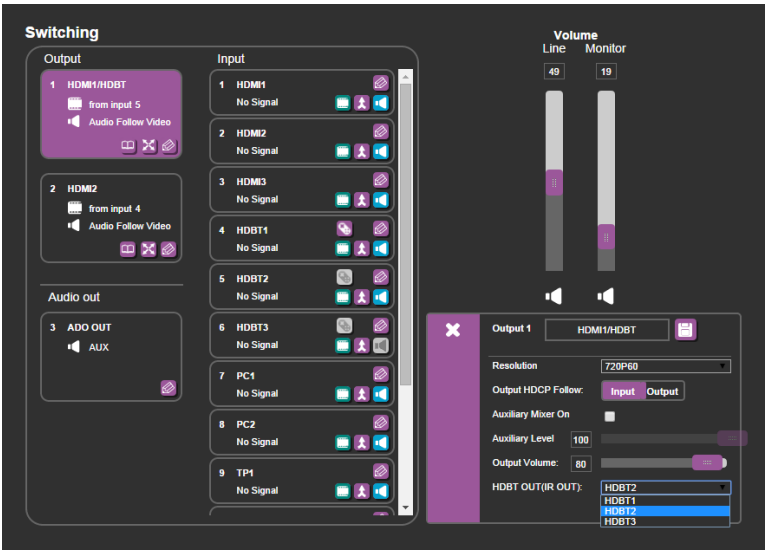


Figure 17: Edit Output Buttons

The OUT 1 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 and the IR transmission route to the HDBT output (see Section 7.2.1).

OUT 2 does not include the IR routing selection line:

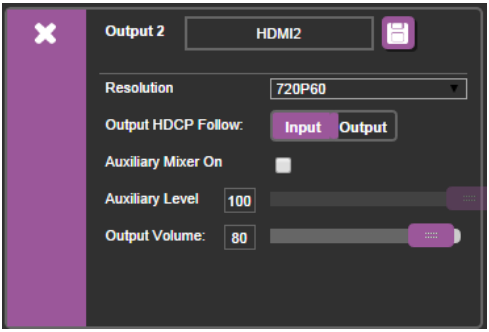


Figure 18: Edit Output Buttons

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

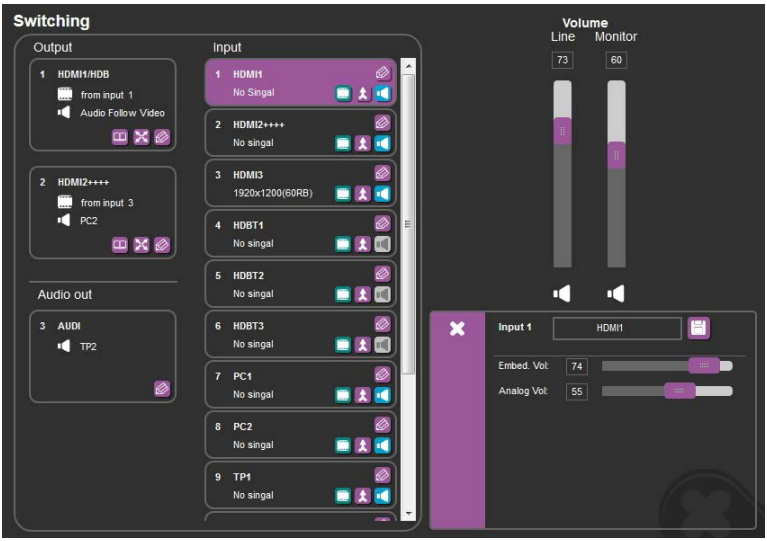


Figure 19: Edit Input Buttons

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.

The input details editing window (see Figure 16) is slightly different for each input type.

When selecting an HDMI input you can rename the input, set the embedded and analog audio volume and set HDCP to ON or OFF:

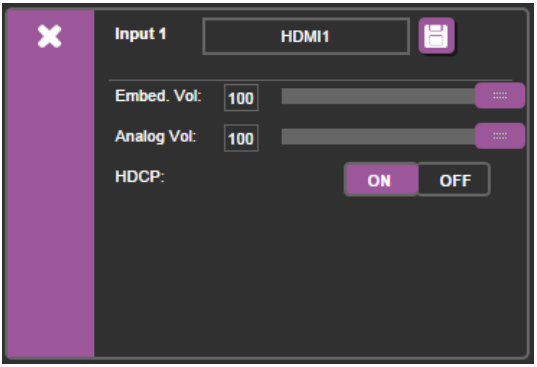


Figure 20: Switching Page – HDMI input Window

When selecting the HDBT input, you can rename the input, set the embedded audio volume, set the HDCP to ON or OFF, and set the HDBT IR OUT signal route (see Section 7.2.1):

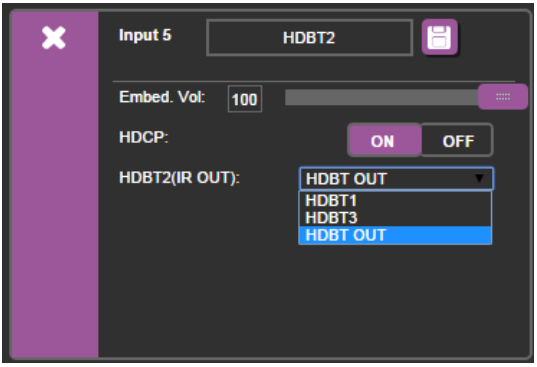


Figure 21: Switching Page – HDBT input Window

For HDBT inputs, when a Kramer **SID-X2N** unit is connected to the HDBT input, click the **SID-X2N** icon (see Figure 22) to open the **SID-X2N** setup window (see Figure 23).

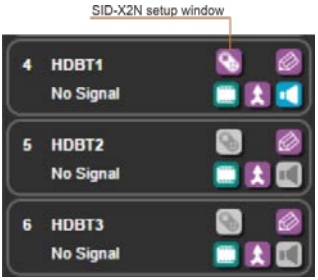


Figure 22: Switching Page – SID-X2N Setup Icon

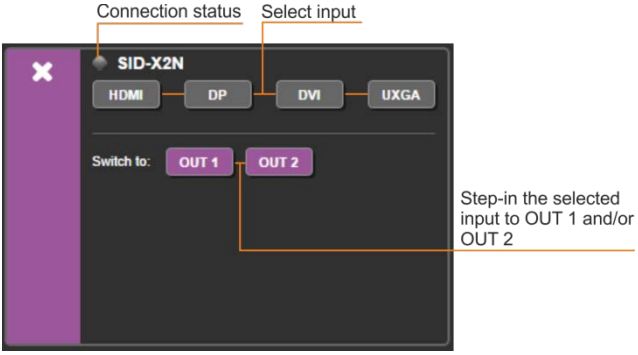


Figure 23: Switching Page – SID-X2N Setup Window

The connection status indicator appears gray if the device is not connected, red if it is connected but without a valid signal and green if a signal is routed to the output.

When connecting a PC or TP or CV input, you can rename the input and set the analog audio:

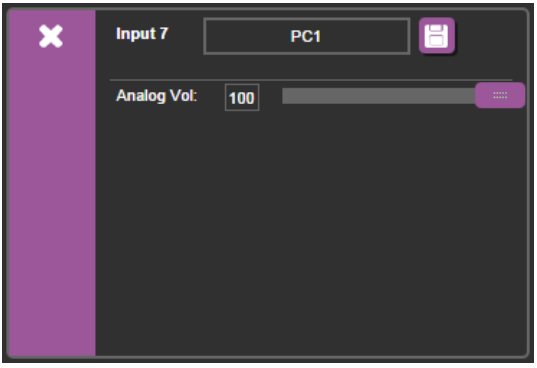


Figure 24: Switching Page – PC, TP or CV input Window

7.2.1 Setting the IR Transmission Route

IR can be routed from any of the HDBT ports to one or more of the other HDBT ports.

For example, Output 1, when used with its HDBT connector (not the HDMI) can be used as an IR output as well, defining the IR input via the drop down menu.

Figure 25 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-553** and the IR Emitter to the DVD player, which responds to the command sent. At the same time you can also set HDBT 3 to HDBT 1, thus sending IR commands from HDBT also to HDBT 3 (see blue line in Figure 25). This will work only if the devices are set appropriately.

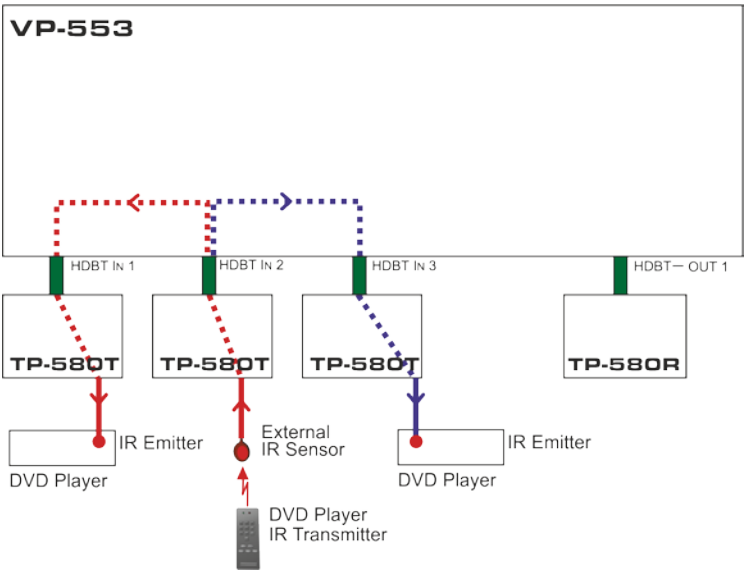


Figure 25: HDBT IR transmission Example

7.2.2 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 19:

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 19):

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 26 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.

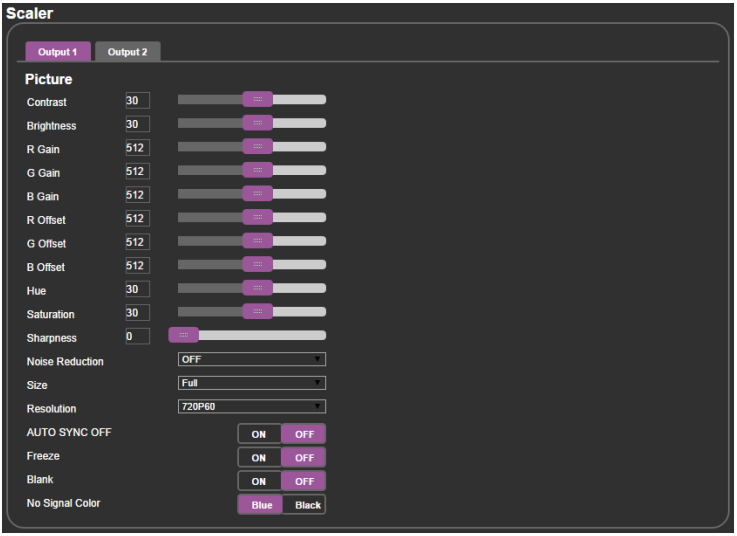


Figure 26: The Scaler Page – Output 1

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

Figure 27: The Scaler Page – Output 1 for an Analog Input

Figure 28 shows the setup for output 2:

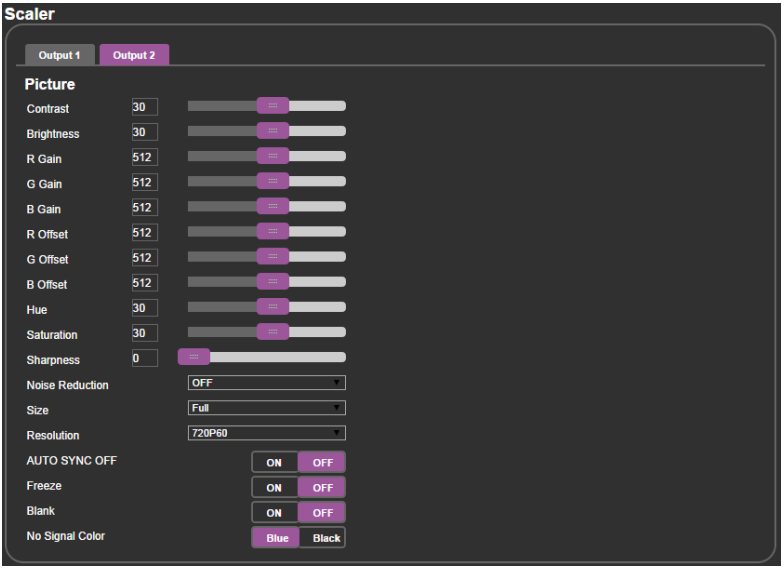


Figure 28: The Scaler Page – Output 2

7.4 The Device Settings Page

The device Settings window (in Figure 29) lets you upgrade the firmware and set the Ethernet parameters.

Figure 29: The Device Settings Page

Any change in the device settings requires confirmation, as illustrated in the example in Figure 30.

Figure 30: 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:

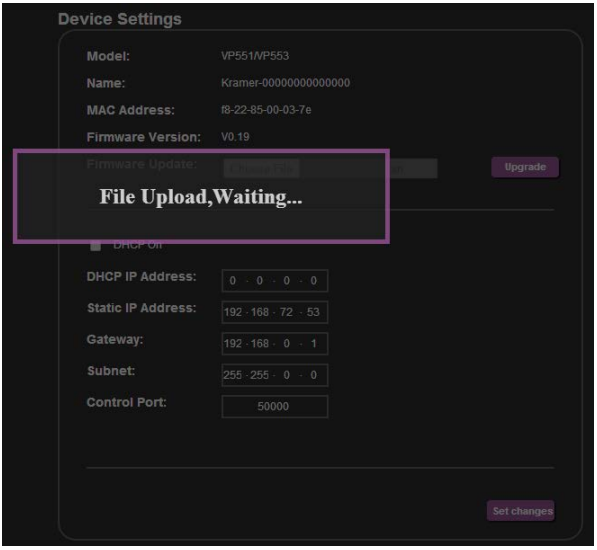


Figure 31: The Device Settings Page – Uploading the New Firmware File

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

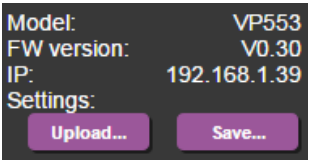


Figure 32: The Device Settings Page – New Firmware Updated

7.4.2 Soft Factory Reset

Click the Soft Factory Reset button to reset all the device parameters except for the IP Address. The following message appears:

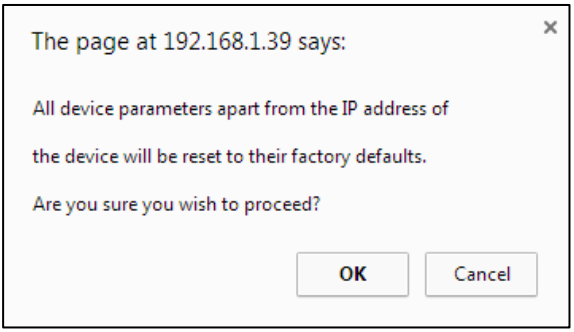


Figure 33: The Device Settings Page – Soft Factory Reset Message

Click OK to proceed.

7.5 The USB Routing Page

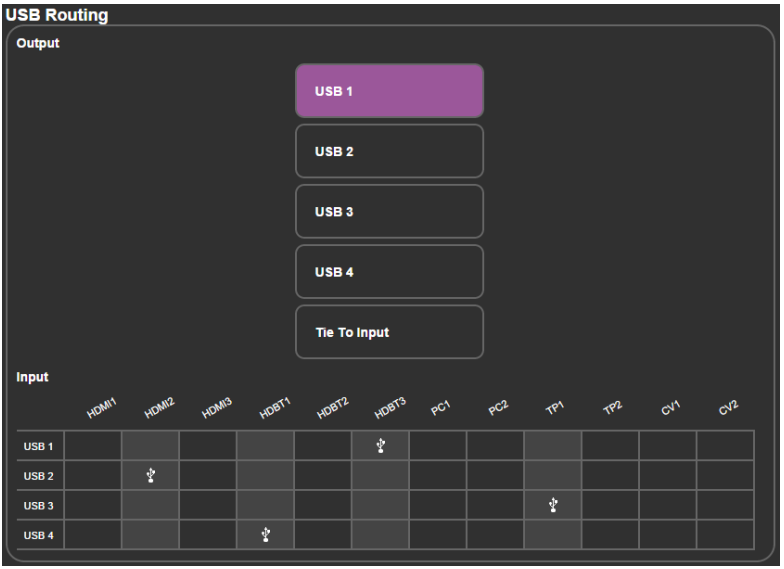


Figure 34: The USB Routing Page

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 34, 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 35 (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.

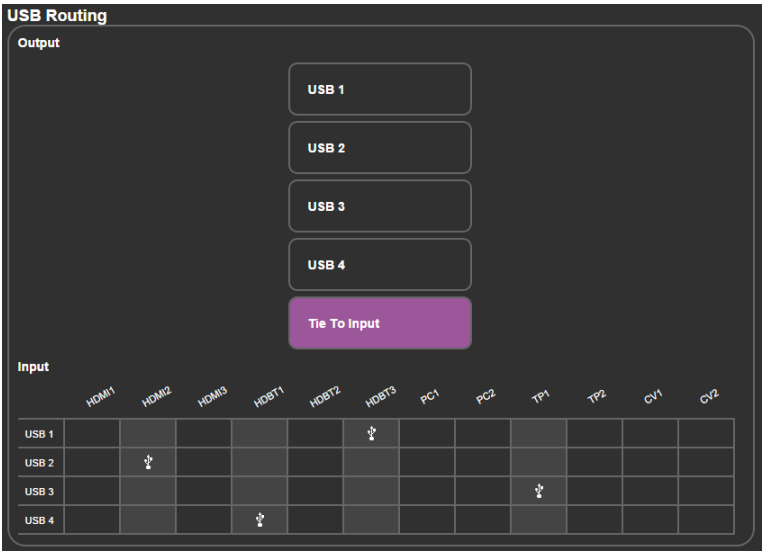


Figure 35: The USB Tied to a Selected Input

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 36) lets you set the volume individually for each input, including the analog and embedded audio HDMI signals.

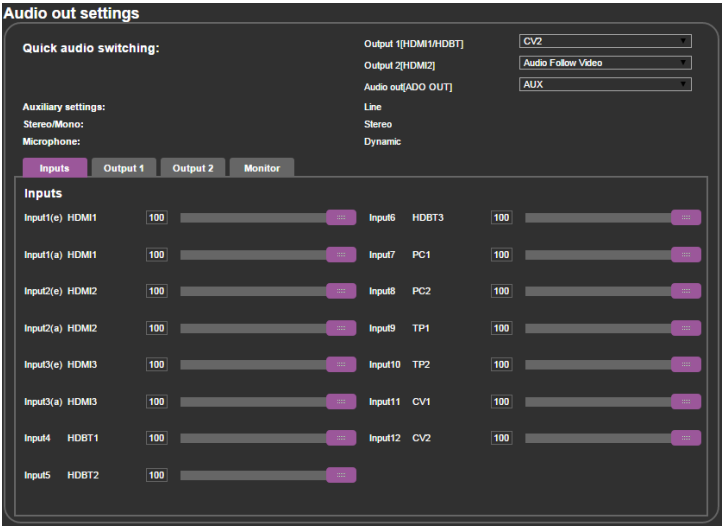


Figure 36: The Audio Settings Page – Inputs

Figure 37 shows the output 1 equalizer settings:

Figure 37: The Audio Settings Page – Output 1

Figure 38 shows the output 2 equalizer settings:

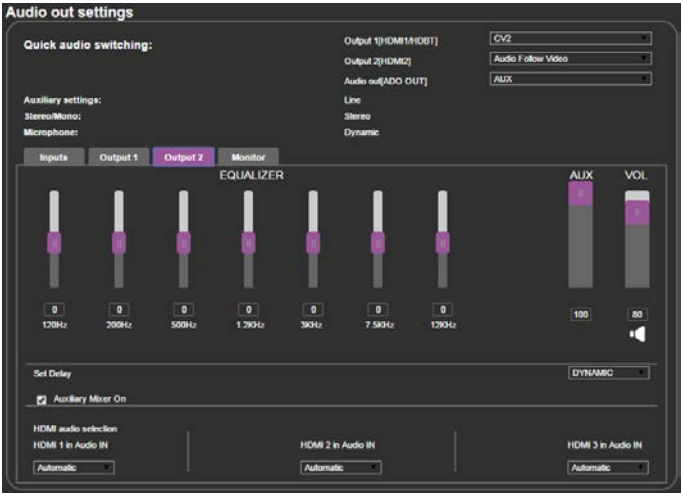


Figure 38: The Audio Settings Page – Output 2

Figure 39 shows the Monitor equalizer settings as well as the volume of the Aux, Line and Monitor volume levels:

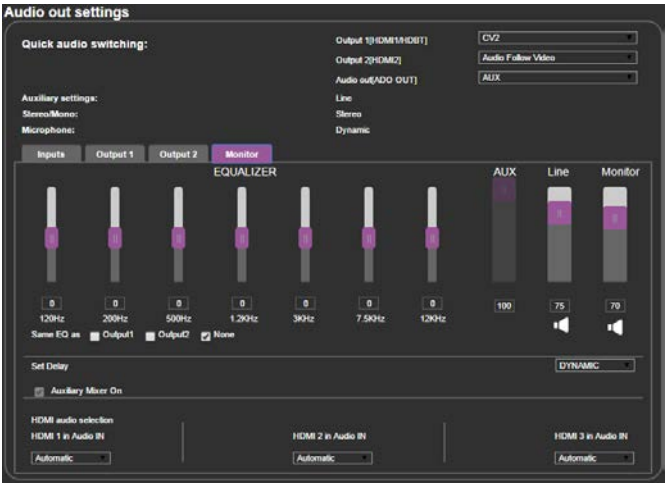


Figure 39: The Audio Settings Page – Monitor

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.

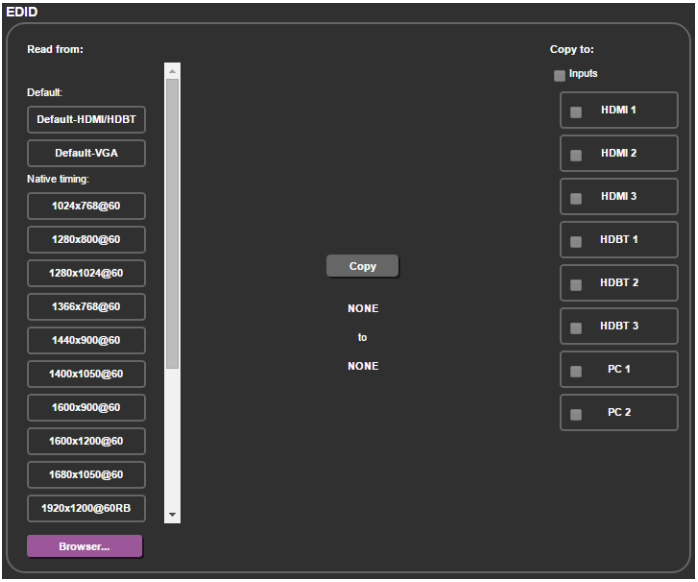


Figure 40: The EDID Page

Figure 41 shows how to select a resolution from the list and select one or more inputs. To copy, click the **Copy** button:

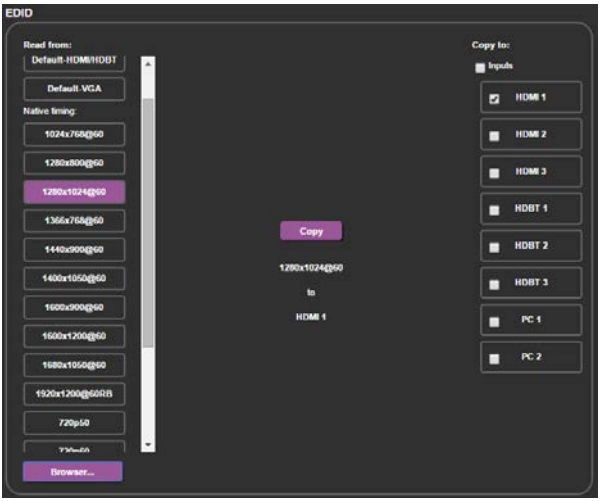


Figure 41: The EDID Page – Copying the Native Timing

Figure 41 shows how to select one of the default resolutions from the list and select one or more inputs. To copy, click the **Copy** button:

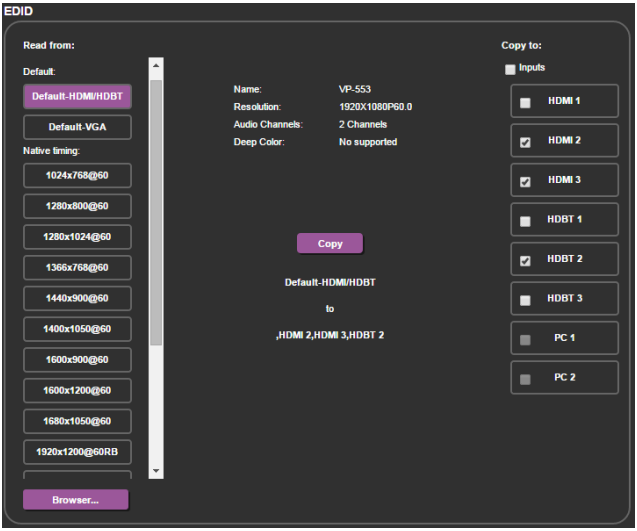


Figure 42: The EDID Page – Copying the Default

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:

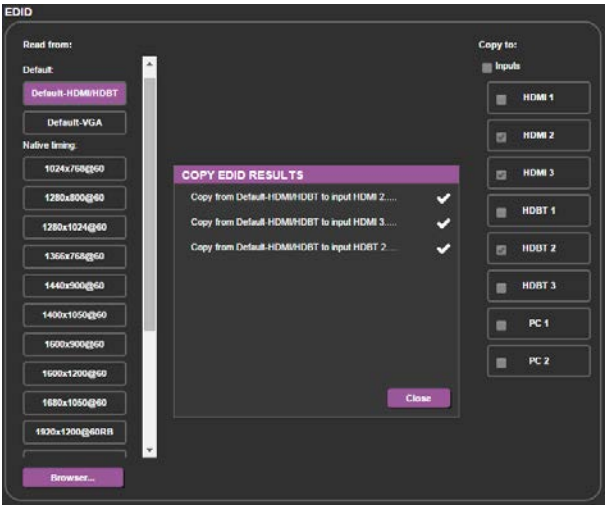


Figure 43: The EDID Page –The Copy EDID Results

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 44.

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

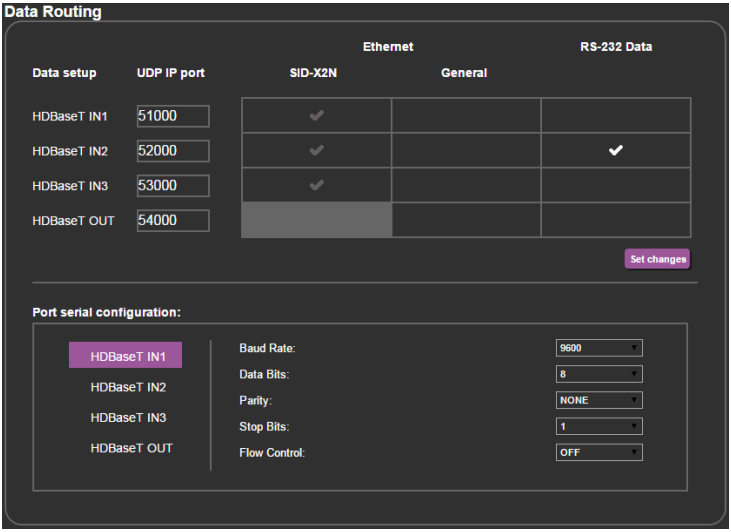


Figure 44: The Data Routing Page

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-553** and SID-X2N.

If you check RS-232, data passes between the RS-232 Data port and **VP-553**. 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 45 shows the Authentication page:

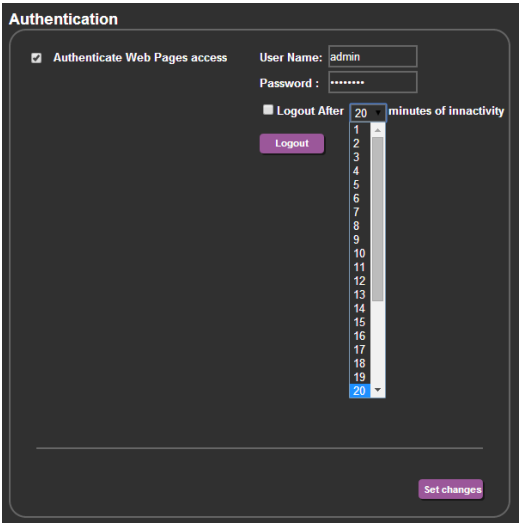


Figure 45: The Authentication Page

7.10 The About Page

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

Figure 46: The About Page

8 Technical Specifications

Inputs:	3 HDMI connectors (HDMI, HDCP) 2 VGA on 15-pin HD connectors 2 composite video on RCA connectors 2 analog TP on RJ-45 connectors 3 HDBT on RJ-45 connectors 4 USB ports 3 unbalanced analog audio on 3.5mm mini jacks for HDMI 2 unbalanced analog audio on 3.5mm mini jacks for PC 1 Aux in balanced stereo audio on 5-pin terminal block connectors 2 balanced audio (L and R) RCA connectors for CV
Outputs:	1 HDBT on RJ-45 connector 2 HDMI connectors (HDMI, HDCP) 1 USB port Monitor out balanced stereo on a 5-pin terminal block connector Line out balanced stereo on a 5-pin terminal block connector
Output Resolutions:	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
Controls:	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
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 11.9" x 2U (W, D, H) rack mountable
Shipping Dimensions:	52.6cm x 47.5cm x 18.4cm (20.7 x 18.7 x 7.2") W, D, H
Weight:	3.65 kg (8lbs) approx.
Shipping Weight:	5.1kg (11.2lbs) approx.
Included Accessories:	Power cord, rack ears, IR remote control
Options:	Kramer BC−UNIKat cable
Specifications are subject to change without notice at www.kramerav.com	

8.1 Default Communication Parameters

RS-232	
Baud Rate:	Any baud rate up to 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
TCP Port #:	Not supported
Default UDP Port #:	50000
Maximum UDP Ports:	4
Full Factory Reset	
OSD	Go to : Menu-> Factory-> RESET->Change the option to YES and press Enter

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-553 RS-232 Communication Protocol

The **VP-553** 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
#	*Destination_id@*	**Message**	CR

Simple Command

Command string with only one command without addressing:

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

Command String

Formal syntax with commands concatenation and addressing:

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

9.1.2 Device Message Format

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

Device Long Response

Echoing command:

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

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

9.1.3 Command Terms

Command

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

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

Parameters

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

Message string

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

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

Message starting character

'#' – For host command/query

'~' – For machine response

Device address (Optional, for K-NET)

K-NET Device ID followed by '@'

Query sign

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

Message closing character

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

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

Command chain separator character

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

Spaces between parameters or command terms are ignored.

9.1.4 Entering Commands

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

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

9.1.5 Command Forms

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

9.1.6 Command Chaining

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

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

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

9.1.7 Maximum String Length

64 characters

9.2 Kramer Protocol 3000 – Command List

Command	Short Form	Description
#		Protocol handshaking
#HELP		List of commands
#BUILD-DATE?		Read device build date
#FACTORY		Reset to factory default configuration
#MODEL?		Read device model
#PROT-VER?		Read device protocol version
#PROG-ACTION		Set step-in button action bitmap
#SN?		Get device serial number
#RESET		Reset device
#NAME-RST		Reset machine (DNS) name to factory default
#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 Section 9.3.4)
#ROUTE?		Display the video, audio, USB and serial data routing (see Section 9.3.4)
#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
#HDCP-MOD?		Display the HDCP status
#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

Command	Short Form	Description
#VFRZ?		Get output freeze status
#AUD-LVL		Set audio level
#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		Set PC auto sync of scaler
#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?		Display switch status
#ETH-PORT		Set UDP port
#ETH-PORT?		Display UDP port
#STANDBY		Set Standby mode
#STANDBY?		Get Standby mode status
#VOLUME +		Set global audio level
#VOLUME -		Set audio global level

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 Input Resolutions Key

#	Resolution	#			Resolution
206	640x480@60	233	1280x960@60	258	1440x480i@60
208	640x480@72	236	1280x1024@60	259	720x480p@60
209	640x480@75	239	1360x768@60	260	1440x576i@50
211	800x600@56	241	1366x768@60	261	720x576p@50
212	800x600@60	242	1400x1050@60	262	1280x720p@50
214	800x600@72	244	1440x900@60	263	1280x720p@60
215	800x600@75	246	1600x900@60	264	1920x1080i@50
219	1024x768@60	247	1600x1200@60	265	1920x1080i@60
220	1024x768@70	251	1680x1050@60RB	266	1920x1080p@24
222	1024x768@75	252	1680x1050@60	267	1920x1080p@25
226	1152x864@75	254	1920x1200@60RB	268	1920x1080p@50
229	1280x720@60	255	1280x800@60	269	1920x1080p@60
231	1280x768@60	257	1920x1080@60	271	1920x1080p@30

9.3.3 Output Resolutions Key

#	Resolution	#	Resolution
200	Native	214	N/A
201	640x480@60	215	N/A
202	800x600@60	216	1920x1200@60RB
203	1024x768@60	217	720x480p@60
204	1280x768@60	218	1280x720p@60
205	1360x768@60	219	1920x1080p@60
206	1280x720@60	220	1920x1080i@60
207	1280x800@60	221	N/A
208	1280x1024@60	222	720x576p@50
209	1440x900@60	223	1280x720p@50
210	1400x1050@60	224	1920x1080p@50
211	1680x1050@60	225	1920x1080i@50
212	1600x1200@60		
213	1920x1080@60		

9.3.4 ROUTE Command Options Key

Description	P1: Value + Definition	P2: Value + Definition	P3: Value + Definition
Set video source	Value=1	Value=1~2	Value=0~11
	Video	1:Output1 2:Output2	0: HDMI1 1: HDMI2 2: HDMI3 3: HDBT 1 4: HDBT 2 5: HDBT 3 6: PC 1 7: PC 2 8: TP 1 9: TP 2 10: CV 1 11: CV 2
SID-X2N mode – set video source (set SID-X2N source at the same time)	Value=1	Value=0~3	Value=(3~5):(1~4)
	Video	0: no change (same VP-553 video source) 1: Output1 2: Output2 3: All outputs (1~2)	3:1: HDBT1 SID-X2N HDMI 3:2: HDBT1 SID-X2N DP 3:3: HDBT1 SID-X2N DVI 3:4: HDBT1 SID-X2N PC 4:1: HDBT2 SID-X2N HDMI 4:2: HDBT2 SID-X2N DP 4:3: HDBT2 SID-X2N DVI 4:4: HDBT2 SID-X2N PC 5:1: HDBT3 SID-X2N HDMI 5:2: HDBT3 SID-X2N DP 5:3: HDBT3 SID-X2N DVI 5:4: HDBT3 SID-X2N PC
Set audio source	Value=2	Value=0~2	Value=0~12
	Audio	0: Audio Out 1: Output1 2: Output2	0: HDMI1 1: HDMI2 2: HDMI3 3: HDBT 1 4: HDBT 2

Description	P1: Value + Definition	P2: Value + Definition	P3: Value + Definition
			5: HDBT 3 6: PC 1 7: PC 2 8: TP 1 9: TP 2 10: CV 1 11: CV 2 12: AUX
Set audio source: embedded or analog	Value=2	Value=0~2	Value=(1~2):(1~2)
	Audio	0: Audio Out 1: Output1 2: Output2	0:1: HDMI1 Embedded 0:2: HDMI1 Analog 1:1: HDMI2 Embedded 1:2: HDMI2 Analog 2:1: HDMI3 Embedded 2:2: HDMI3 Analog
Set USB	Value=3	Value=1	Value=1~4
	USB	Fixed	1: USB1 2: USB2 3: USB3 4: USB4
Set serial data	Value=4	Value=0	Value=3~5/12
	Serial data	0: none	3:HDBT1 4:HDBT2 5:HDBT3 12:HDBT Out1
Set serial data	Value=4	Value=1	Value=3~5/12
	Serial data	1:Eth_Gen	3:HDBT1 4:HDBT2 5:HDBT3 12:HDBT Out1
Set serial data	Value=4	Value=2	Value=3~5/12
	Serial data	2:RS-232	3:HDBT1 4:HDBT2 5:HDBT3 12:HDBT Out1
Set serial data	Value=4	Value=3	Value=3~5
	Serial data	3: SID-X2N	3:HDBT1 4:HDBT2 5:HDBT3
Set video + audio source	Value=12	Value=1~2	Value=0~11
	Video+audio	1: Output1 2: Output2	0: HDMI1 1: HDMI2 2: HDMI3 3: HDBT 1 4: HDBT 2 5: HDBT 3 6: PC 1 7: PC 2 8: TP 1 9: TP 2 10: CV 1 11: CV 2
Set video + audio source – set embedded or analog	Value=12	Value=1~2	Value=(0~2):(1~2)
	Video+audio	1: Output1 2: Output2	0:1: HDMI1 Embedded 0:2: HDMI1 Analog 1:1: HDMI2 Embedded 1:2: HDMI2 Analog 2:1: HDMI3 Embedded 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 1: HDMI2 2: HDMI3 6: PC 1 7: PC 2 8: TP 1

Description	P1: Value + Definition	P2: Value + Definition	P3: Value + Definition	
			3: HDBT 1 4: HDBT 2 5: HDBT 3	9: TP 2 10: CV 1 11: CV 2
Set video+audio source – set USB to "tie to input"	Value=123	Value=1	Value=0~11	
	video+audio+USB	Output1	0: HDMI1 1: HDMI2 2: HDMI3 3: HDBT 1 4: HDBT 2 5: HDBT 3	6: PC 1 7: PC 2 8: TP 1 9: TP 2 10: CV 1 11: CV 2
Set video+audio source set Embedded or Analog at the same time set USB to "tie to input" also.	Value=123	Value=1	Value=(0~2):(1~2)	
	video+audio+USB	Output1	0:1: HDMI1 Embedded 0:2: HDMI1 Analog 1:1: HDMI2 Embedded 1:2: HDMI2 Analog 2:1: HDMI3 Embedded 2:2: HDMI3 Analog	

9.3.5 The Commands

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

Command – **BUILD-DATE**	Command Type – System-mandatory

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

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

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

Command – **PROT-VER?**	Command Type – System-mandatory

Command Name		Permission	Transparency
Set:	**-**	-	-
Get:	**PROT-VER?**	End User	-
Description		**Syntax**	
Set:	-	-	
Get :	Get protocol version	#PROT-VER?CR	
Response			
~nn@**PROT-VER**SP3000:*version*CR LF			
Parameters			
Version – Format: XX.XX where X is a decimal digit			

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

Command – **SN?**		Command Type – System-mandatory	
Command Name		**Permission**	**Transparency**
Set:	**-**	-	-
Get:	**SN?**	End User	Public
Description		**Syntax**	
Set:	-	-	
Get :	Get device serial number	#**SN?**CR	
Response			
~nn@**SN**SP*serial_number*CR LF			
Parameters			
serial_number - 14 decimal digits, factory assigned			

Command – **RESET**	Command Type – System-mandatory

Command Name		Permission	Transparency
Set:	**RESET**	Administrator	-
Get:	**-**	-	-
Description		**Syntax**	
Set:	Reset device	#RESET[CR]	
Get :	-	-	
Response			
~[nn]@**RESET**[SP]**OK**[CR LF]			
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 – **NAME-RST**		Command Type - System (Ethernet)	
Command Name		**Permission**	**Transparency**
Set:	**NAME-RST**	Administrator	Public
Get:	**-**	-	-
Description		**Syntax**	
Set:	Reset machine (DNS) name to factory default	#**NAME-RST**[CR]	
Get :	-	-	
Response			
~[nn]@**NAME-RST**[SP]**OK**[CR LF]			
Notes			
Factory default of machine (DNS) name is “KRAMER_” + 4 last digits of device serial number			

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

Command – **NET-MAC?**		Command Type – Communication	
Command Name		**Permission**	**Transparency**
Set:	**-**	-	-
Get:	**NET-MAC?**	End User	-

Description		Syntax
Set:		
Get :	Get MAC address	#NET-MAC?CR
Response		
~nn@**NET-MAC**SP*mac_address*CR LF		
Parameters		
mac_address – Unique MAC address. Format: XX-XX-XX-XX-XX-XX where X is hex digit.		

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

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

Command – **NET-MASK**		Command Type – Communication	
Command Name		**Permission**	**Transparency**
Set:	**NET-MASK**	Administrator	-

Get:	**NET-MASK?**	End User	-
Description		**Syntax**	
Set:	Set device subnet mask	#**NET-MASK**[SP] *net_mask* [CR]	
Get :	Get device subnet mask	**#NET-MASK?**[CR]	
Response			
Set: ~[nn]@**NET-MASK**[SP] P1 [SP]**OK**[CR LF]			
Get: ~[nn]@**NET-MASK**[SP] *net_mask* [CR LF]			
Parameters			
P1 (valid IP address)=xxx.xxx.xxx.xxx			
Response triggers			
The subnet mask limits the Ethernet connection within the local network. For proper settings consult your network administrator.			

Command – **NET-DHCP**		Command Type – Communication	
Command Name		**Permission**	**Transparency**
Set:	**NET-DHCP**	Administrator	-
Get:	**NET-DHCP?**	End User	-
Description		**Syntax**	
Set:	Set DHCP mode	#**NET-DHCP**[SP] P1 [CR]	
Get :	Get DHCP mode	#NET-DHCP?[CR]	
Response			
Set: ~[nn]@ **NET-DHCP**[SP] P1 [SP]**OK**[CR LF]			
Get: ~[nn]@ **NET-DHCP**[SP] *mode*[CR LF]			
Parameters			
P1 (Off/On)– 0=off; 1=on 0 – Do not use DHCP. Use the IP set by the factory or using the IP set command. 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. To connect with a randomly assigned IP by DHCP, specify the device DNS name (if available) using the command “NAME”. You can also get an assigned IP by direct connection to USB or RS-232 protocol port if available. For proper settings consult your network administrator.			

Command - **CPEDID**		Command Type - System	
Command Name		**Permission**	**Transparency**
Set:	**CPEDID**	End User	Public

Get:	-	-	-
Description		**Syntax**	
Set:	Copy EDID data from the output to the input EEPROM	#**CPEDID**SP*P1, P2, P3, P4*CR	
Get:	-	-	
Response			
~nn@**CPEDID**SP *P1, P2, P3, P4*CR LF			
Parameters			
P1 (source type) – 1=output P2 (source ID) – 0=HDMI1; 1=HDBT1; 2=HDMI2 P3 (destination type) – 0=input P4 (bitmap representing destination IDs) – 0=HDMI1; 1=HDMI2; 2=HDMI3; 3=HDBT1; 4=HDBT2; 5=HDBT3 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) Example: bitmap 0x0013 means inputs 1,2 and 5 are loaded with the new EDID			

Command - LDEDID		Command Type - EDID Handling	
Command Name		**Permission**	**Transparency**
Set:	**LDEDID**	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: #**LDEDID**SP*dst_type, dest_bitmask, size, safe_mode*CR

Response 1: ~nn@**LDEDID**SP*dst_type, dest_bitmask, size, safe_mode*SP**READY**CR LF or

~nn@**LDEDID**SP**ERRnn**CR LF

Step 2: If **ready** was received, send EDID_DATA

Response 2: ~nn@**LDEDID**SP*dst_type, dest_bitmask, size, safe_mode*SP**OK**CR LF or

~nn@**LDEDID**SP**ERRnn**CR LF

Parameters

dst_type - EDID destination type – input=0
dest_bitmask – (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
size - EDID data size (see table below)
safe_mode - 0 - Device accepts the EDID as is without trying to adjust
EDID_DATA - data in protocol packets (see Section 0)

dest_bitmask	*size*	*dest_bitmask*	*size*
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 **Set** (before execution)

Notes

When the unit receives the **LDEDID** command it replies with **READY** and enters the special EDID packet wait mode. In this mode the unit can receive only packets and not regular protocol commands.
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 ~nn@**LDEDID**SP**ERR01**CR LF 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 - **GEDID**		Command Type - System	
Command Name		**Permission**	**Transparency**
Set:	**GEDID**	Administrator	Public
Get:	**GEDID?**	End User	Public
Description		**Syntax**	
Set:	Set EDID data from device	#**GEDID**[SP]*P1, P2* [CR]	
Get:	Get EDID support on certain input/output	#**GEDID?**[SP]*P1, P2* [CR]	

Response

Set:
Multi-line response:

~nn@**GEDID**[SP]*P1,P2,size*[CR LF]

EDID_data[CR LF]

~nn@**GEDID**[SP]*P1,P2*[SP]**OK**[CR LF]

Get:

~nn@**GEDID**[SP]*P1,|P2,size*[CR LF]

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 Section 9.3.1)
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[CR LF] is received

Command – **ROUTE**		Command Type –	
Command Name		**Permission**	**Transparency**
Set:	**ROUTE**	End User	-
Get:	**ROUTE?**	End User	-
Description		**Syntax**	
Set:	Set layer routing	# ROUTE [SP] P1,P2,P3 [CR]	
Get :	Get layer routing	# ROUTE**?** [SP] P1,P2 [CR]	

Response

~ nn@ **ROUTE** [SP] P1,P2,P3 [CR LF]

Parameters

P1 (Layer number) – 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 Section 9.3.1

Notes

This command replaces all other routing commands.

Command – **SIGNAL**		Command Type - System	
Command Name		**Permission**	**Transparency**
Set :	-	-	-
Get	**SIGNAL?**	End User	Public
Description		**Syntax**	
Set:	-	-	
Get:	Get input signal lock status	#**SIGNAL?** SP P1 CR	
Response			
~ nn@**SIGNAL** SP P1,P2 CR LF			
Parameters			
P1 (Input number)– 0: HDMI1; 1: HDMI2; 2: HDMI3; 3: HDBT1; 4: HDBT2; 5: HDBT3 P2 – 0=Off; 1=On			
Response triggers			
• After execution, response is sent to the com port from which the **Get** was received • Response is sent after every change in input signal status **ON to OFF**, or **OFF to ON**			

Command – **DISPLAY?**		Command Type - System	
Command Name		**Permission**	**Transparency**
Set :	-	-	-
Get	**DISPLAY?**	End User	Public
Description		**Syntax**	
Set:	-	-	
Get:	Get output HPD status	#**DISPLAY?** SP P1 CR	
Response			
~ nn@**DISPLAY** SP P1,P2 CR LF			
Parameters			
P1 (Output number) – 0=HDMI1; 1=HDBT1; 2=HDMI2 P2 – 0=Off; 1=On			
Response triggers			
• After execution, response is sent to the com port from which the **Get** was received • Response is sent after every change in output HPD status **ON to OFF** • Response is sent after every change in output HPD status **OFF to ON** and ALL parameters (new EDID, etc.) are stable and valid			

Command – **LOCK-FP**		Command Type – System	
Command Name		**Permission**	**Transparency**
Set:	**LOCK-FP**	End User	-
Get:	**LOCK-FP?**	End User	-
Description		**Syntax**	
Set:	Lock front panel	#**LOCK-FP**SP P1CR	
Get :	Get front panel lock state	#**LOCK-FP?**CR	
Response			
nn@**LOCK-FP**SP P1SP **OK**CR LF			
Parameters			
P1 (Off/On)– 0=Off; 1=On			

Command – **HDCP-MOD**		Command Type – System	
Command Name		**Permission**	**Transparency**
Set:	**HDCP-MOD**	Administrator	Public
Get:	**HDCP-MOD?**	End User	Public
Description		**Syntax**	
Set:	Set HDCP mode	#**HDCP-MOD** SP P1,P2,P3 CR	
Get :	Get HDCP mode	#**HDCP-MOD?** SP P1,P2 CR	
Response			
Set / Get : ~ nn@**HDCP-MOD** SP *P1,P2,P3* CR LF			
Parameters			
P1 (Input/Output) – 0=Input; 1=Output P2 (Scaler number) – 1=Scaler1; 2=Scaler2 P3 (Status) – 0=Off; 1=On; 2=Follow In, 3=Follow Out			
Response triggers			
• Response is sent to the com port from which the **Set** (before execution) **/ Get** command was received • Response is sent to all com ports after execution if HDCP-MOD was set any other external control device (button press, device menu and similar) or genlock status changed			
Notes			
Set HDCP working mode **on device input** : HDCP supported – HDCP_ON [default] HDCP not supported – HDCP OFF HDCP support changes following detected sink – MIRROR OUTPUT			

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

Command – **VID-RES**		Command Type - Video	
Command Name		**Permission**	**Transparency**
Set :	**VID-RES**	End User	Public
Get	**VID-RES?**	End User	Public
Description		**Syntax**	
Set:	Set video resolution	#**VID-RES**SPP1,P2,P3,P4 CR	
Get:	Get video resolution	#**VID-RES?**SP P1,P2,P3CR	
Response			
~ nn@**VID-RES**SP P1,P2,P3,P4 CR LF			
Parameters			
P1 – 0=Input; 1=Output P2 – 1=Scaler1; 2=Scaler2 P3 – 0=Off; 1=On P4 - video resolutions; see Section 9.3.2 for the input resolutions key and Section 9.3.3 for the output resolutions key			
Response triggers			
• After execution, response is sent to the com port from which the **Set /Get** was received • After execution, response is sent to all com ports if **VID-RES** was set by any other external control device (button press, device menu and similar)			
Notes			
1. "Set" command is only applicable for **stage=Output** 2. "Set" command with *is_native*=ON sets native resolution on selected output (resolution index sent = 0). Device sends as answer actual VIC ID of native resolution 3. "Get" command with *is_native*=ON returns native resolution VIC, with *is_native*=OFF returns current resolution			

Command – **VMUTE**		Command Type – Video	
Command Name		**Permission**	**Transparency**
Set:	**VMUTE**	End User	-
Get:	**VMUTE?**	End User	-
Description		**Syntax**	
Set:	Set enable/ disable video on output	# **VMUTE** SP P1,P2 CR	
Get :	Get video on output status	# VMUTE? SP P1 CR	
Response			
Set / Get : ~ nn@ **VMUTE** SP P1,P2 CR LF			
Parameters			
P1 (Scaler number) – 1=Scaler1; 2=Scaler2 P2 (flag) – 0=disable video and sync on output; 1=enable video on output; 2=blank video			

Command – **VFRZ**		Command Type – Video	
Command Name		**Permission**	**Transparency**
Set:	**VFRZ**	End User	Public
Get:	**VFRZ?**	End User	Public
Description		**Syntax**	
Set:	Set freeze on selected output	#**VFRZ** SP P1,P2 CR	
Get :	Get output freeze status	#**VFRZ?** SP P1 CR	
Response			
~ nn @**VFRZ** SP P1,P2 CR LF			
Parameters			
P1 (Scaler number) – 1=Scaler1; 2=Scaler2 P2 (Off/On) – 0=Off; 1=On			

Command – **AUD-LVL**		Command Type – Audio	
Command Name		**Permission**	**Transparency**
Set:	**AUD-LVL**	End User	-
Get:	**AUD-LVL?**	End User	-
Description		**Syntax**	
Set:	Set audio level in specific amplifier stage	#**AUD-LVL** SP P1,P2,P3 CR	
Get :	Get audio level in specific amplifier stage	#**AUD-LVL?** SP P1,P2 CR	
Response			
~nn@**AUD-LVL** SP P1,P2 CR LF			
Parameters			
P1 (Input/Output)– 0=Input; 1=Output P2 (Input/Output number valid according to the selected Input/Output according to P1) – audio inputs=(0~11); audio outputs=(0~3) (– see Section 9.3.1) P3 – 0~100			

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

Command – **MIX-LVL**		Command Type –[Audio]	
Command Name		**Permission**	**Transparency**
Set:	**MIX-LVL**	End User	Public
Get:	**MIX-LVL?**	End User	Public
Description		**Syntax**	
Set:	Set the mixing level of the selected output	# **MIX-LVL**SP P1,P2 CR	
Get :	Get the mixing level of the selected output	# **MIX-LVL?**SP P1 CR	
Response			
Set / Get : ~ nn@ **MIX-LVL**SP *P1,P2* CR LF			
Parameters			
P1 (Output number)– 0=Audio out; 1=Scaler 1; 2=Scaler2 P2 (Level) – 0 to 100			
Response triggers			
• Response is sent to the com port from which the **Set** (before execution) **/ Get** command was received • After execution, response is sent to all com ports if CMD-NAME was set any other external control device (button press, device menu and similar) or genlock status was changed			
Notes			
Sets the mixing level between the audio of the selected video In and the selected AUX audio channel			

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

Command – **SCALER AS?**		Command Type – [Audio]	
Command Name		**Permission**	**Transparency**
Set:	**SCLR-AS**	End User	Public
Get:	**SCLR-AS?**	End User	Public
Description		**Syntax**	
Set:	Set the	# **SCLR-AS** SP P1,P2 CR	
Get :	Get the	# **SCLR-AS?** SP P1 CR	
Response			
Set / Get : ~ nn @ **SCLR-AS** SP *P1,P2….* CR LF			
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 After execution, response is sent to all com ports if CMD-NAME was set any other external control device (button press, device menu and similar) or genlock status was changed			
Notes			
Sets the Auto Sync features for the selected Scaler			

Command – **IMAGE-PROP**		Command Type – [Video]	
Command Name		**Permission**	**Transparency**
Set:	**IMAGE-PROP**	End User	Public
Get:	**IMAGE-PROP?**	End User	Public
Description		**Syntax**	
Set:	Set the image size	# **IMAGE-PROP** SP P1 CR	
Get :	Get the image size	# **IMAGE-PROP?** SP P1,…,P6 CR	
Response			
Set / Get : ~ nn@ **IMAGE-PROP** SP *P1,P2….* CR LF			
Parameters			
P1 (Scaler number) –1=Scaler 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 **Set** (before execution) **/ Get** command was received After execution, response is sent to all com ports if CMD-NAME was set any other external control device (button press, device menu and similar) or genlock status was changed			
Notes			
Sets the image properties of the selected scaler			

Command – **SCLR-PC AUTO**		Command Type – [Video]	
Command Name		**Permission**	**Transparency**
Set:	**SCLR-PCAUTO**	End User	Public
Get:		End User	Public
Description		**Syntax**	
Set:	Set PC auto sync of scaler	# **SCLR-PCAUTO** SP P1,P2 CR	
Get :			
Response			
Set / Get : ~ nn@ **SCLR-PCAUTO** SP *P1,P2….* CR LF			
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 After execution, response is sent to all com ports if CMD-NAME was set any other external control device (button press, device menu and similar) or genlock status was changed			
Notes			
Sets the PC Auto sync of the selected scaler			

Command – **SCALER-AUDIO-DELAY**		Command Type – [Audio]	
Command Name		**Permission**	**Transparency**
Set:	**SCLR-AUDIO-DELAY**	End User	Public
Get:	**SCLR-AUDIO-DELAY?**	End User	Public
Description		**Syntax**	
Set:	Set the scaler audio delay	# **SCLR-AUDIO-DELAY** SP P1,P2 CR	
Get :	Get the scaler audio delay	# **SCLR-AUDIO-DELAY?** SP P1 CR	
Response			
Set / Get : ~ nn@ **SCLR-AUDIO-DELAY** SP *P1,P2* CR LF			
Parameters			
P1 (Audio output number) – 0=Audio out; 1=Scaler 1; 2=Scaler2 P2 (Level selection) – 0=Off; 1 to 8=10ms to 80ms in 10ms steps; 9=Auto			
Response triggers			
Response is sent to the com port from which the Set (before execution) / Get command was received After execution, response is sent to all com ports if CMD-NAME was set any other external control device (button press, device menu and similar) or genlock status was changed			
Notes			
Sets the audio delay for the selected audio output			

Command – **EQ-LVL**		Command Type – [Audio]	
Command Name		**Permission**	**Transparency**
Set:	**EQ-LVL**	End User	Public
Get:	**EQ-LVL?**	End User	Public
Description		**Syntax**	
Set:	Set the equalization level	# **EQ-LVL** SP P1,P2,P3 CR	
Get :	Get the equalization level	# **EQ-LVL?** SP P1,P2 CR	
Response			
Set / Get : ~ nn@ **EQ-LVL** SP *P1,P2,P3* CR LF			
Parameters			
P1 (Audio output number) – 0=Audio out; 1=Scaler 1; 2=Scaler2 P2 (frequency number) – 0=120; 1=200; 3=500; 4=1200; 5=3000; 6=7500; 8=12000 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 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 – **SHOW-OSD**		Command Type – [Video]	
Command Name		**Permission**	**Transparency**
Set:	**SHOW-OSD**	End User	Public
Get:	**SHOW-OSD?**	End User	Public
Description		**Syntax**	
Set:	Set the OSD display	# **SHOW-OSD** SP P1 CR	
Get :	Get the OSD display	# **SHOW-OSD?** SP CR	
Response			
Set / Get : ~ nn@ **SHOW-OSD** SP *P1* CR 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 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 – **MIC-GAIN**		Command Type – [Audio]	
Command Name		**Permission**	**Transparency**
Set:	**MIC-GAIN**	End User	Public
Get:	**MIC-GAIN?**	End User	Public
Description		**Syntax**	
Set:	Set the microphone gain	# **MIC-GAIN** SP P1,P2 CR	
Get :	Get the microphone gain	# **MIC-GAIN?** SP P1 CR	
Response			
Set / Get : ~ nn@ **MIC-GAIN** SP *P1,P2* CR LF			
Parameters			
P1 (Input number, for VP-553 always 0) = 0 P2 (level) – 0 to 100			
Response Triggers			
Response is sent to the com port from which the Set (before execution) / Get command was received After execution, response is sent to all com ports if CMD-NAME was set any other external control device (button press, device menu and similar) or genlock status was changed			
Notes			
Sets the Microphone input audio gain			

Command – **DPSW-STATUS**		Command Type – [Machine]	
Command Name		**Permission**	**Transparency**
Set:		End User	Public
Get:	**DPSW-STATUS?**	End User	Public
Description		**Syntax**	
Set:			
Get :	Get the DIP-switch status	# **DPSW-STATUS?** SP P1 CR	
Response			
Get : ~ nn@ **DPSW-STATUS** SP *P2* CR LF			
Parameters			
P1 –0=SW 0;… 2=SW2 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 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 – **ETH-PORT**		Command Type - Communication	
Command Name		**Permission**	**Transparency**
Set :	**ETH-PORT**	Administrator	Public
Get	**ETH-PORT?**	End User	Public
Description		**Syntax**	
Set:	Set Ethernet port protocol	#**ETH-PORT** SP *portType, ETHPort* CR	
Get:	Get Ethernet port protocol	#**ETH-PORT?** SP *portType* CR	
Response			
~nn@ **ETH-PORT** SP *portType, ETHPort* CR LF			
Parameters			
portType - UDP *ETHPort* –UDP=50000-50999			

Command – **STANDBY**		Command Type - Audio	
Command Name		**Permission**	**Transparency**
Set :	**STANDBY**	End User	Public
Get	**STANDBY?**	End User	Public
Description		**Syntax**	
Set:	Set Standby mode	# **STANDBY** SP *on_off* CR	
Get:	Get Standby mode status	# **STANDBY?** CR	
Response			
~nn@**STANDBY** SP *value* CR LF			
Parameters			
on_off – 0=Off; 1=On			

Command – **VOLUME**		Command Type - Audio	
Command Name		**Permission**	**Transparency**
Set :	**VOLUME**	End User	-
Get			-
Description		**Syntax**	
Set:	Set global output audio level	#**VOLUME** SP P1 CR	
Get:			
Response			
~~nn@**VOLUME** SP P1 SP OK CR LF			
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? to set / get audio level in specific amplifier stage			

9.3.6 Packet Protocol Structure

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

9.3.6.1 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.

9.3.6.2 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

CRC example:

Data = “123456789”

Result => 0x31C3

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

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

What is Not Covered

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

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How Long Does this Coverage Last

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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.

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

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

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

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We welcome your questions, comments, and feedback.
Web site: www.kramereav.com
E-mail: info@kramerel.com

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

P/N: 2900-300326 Rev: 6