KRAMER

USER MANUAL

VP-558
Presentation Switcher/Scaler

VP-558 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-558** 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-558** Presentation Switcher/Scaler
- ☑ 1 Power cord
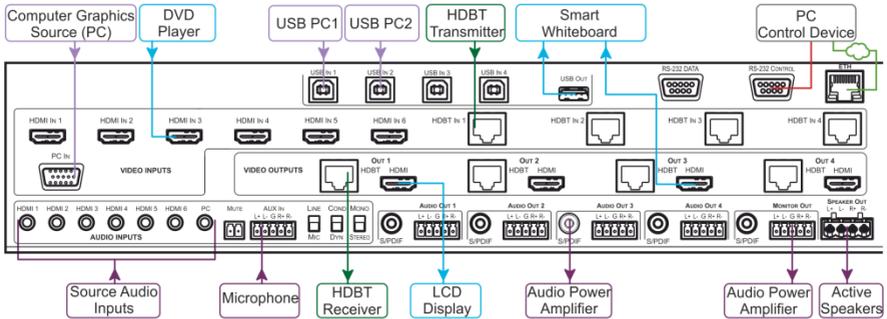- ☑ 1 Set of rack ears
- ☑ 4 Rubber feet
- ☑ 1 Quick start guide

Step 2: Install the VP-558

To rack mount the machine attach both ear brackets to the machine (by removing the three screws from each side of the machine and replacing those screws through the ear brackets) or place the machine on a table.
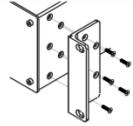
Step 3: Connect inputs and outputs

Always switch OFF the power on each device before connecting it to your **VP-558**.
For best results, we recommend that you always use Kramer high-performance cables to connect AV equipment to the **VP-558**.
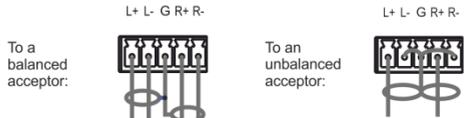

Computer Graphics Source (PC) | DVD Player | USB PC1 | USB PC2 | HDBT Transmitter | Smart Whiteboard | PC Control Device

Source Audio Inputs | Microphone | HDBT Receiver | LCD Display | Audio Power Amplifier | Audio Power Amplifier | Active Speakers

RJ-45 Pinout

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

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

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

Connect the audio output:

L+ L- G R+ R-

To a balanced acceptor:

To an unbalanced acceptor:

L+ L- G R+ R-

Connect the audio AUX IN input:

AUX IN
L+ L- G R+ R-

From a balanced source:

From an unbalanced source:

AUX IN
L+ L- G R+ R-
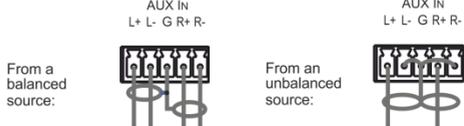
Step 4: Connect the power

Connect AC power to the rear of the **VP-558**, switch on its power and then switch on the power on each device.

Step 5: Set operation parameters via OSD menu

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

Menu Item	Function		
PICTURE:	Set the contrast, brightness, red, green and blue shades and offsets. Set the hue, saturation, sharpness, noise reduction. When PC is the selected input, finetune the image		
SIZE:	Select the size of the image	**OUTPUT HDCP:**	Select FOLLOW INPUT or FOLLOW OUTPUT to define whether the HDCP will follow the input or the output
RESOLUTION:	Select the resolution		
TIMING SHIFT:	Set to on		
AUTO SYNC OFF:	Turn the auto sync ON/OFF. When ON, this de-activates the output after a few minutes if no input is present		
AUDIO:	Adjust Output 1 audio parameters: Source, Embedded audio, embedded audio bypass, output volume, mute, delay, mic. mixer settings and audio EQ.		
NO SIGNAL COLOR:	Select a BLUE or BLACK window color if no signal is detected		
OSD:	Set the OSD parameters	**FACTORY:**	Reset the scaler parameters
AUDIO OUT:	Set the parameters of the MONITOR OUT and SPEAKER OUT parameters: source, embedded audio setup and bypass, output volume, mute, delay , MIC settings, and so on		
AUDIO SET:	Set the input volume and microphone settings		
USB:	Set the USB switcher parameters		
ETHER:	Set the Ethernet parameters		
MISC:	Set IR routing and HDCP input		
INFO:	Displays the VP-558 source and input resolutions, HDCP status, MIC settings and so on		

If you cannot see any images, verify that the display, TV, or projector is in good working order, is connected to the **VP-558**, and that the **VP-558** is selected as its source. If you still don't see an image, press and hold the RESET TO XGA/720P button for 3 seconds to reset the output to XGA or 720p resolution.

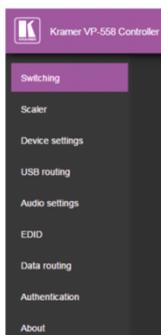# Step 6: Control peripheral devices via IR remote control

You can use a remote control transmitter (that is used for controlling a peripheral device, for example, a DVD player) to send commands (to the A/V equipment) from/to any of the transmitters /receivers connected to the HDBT
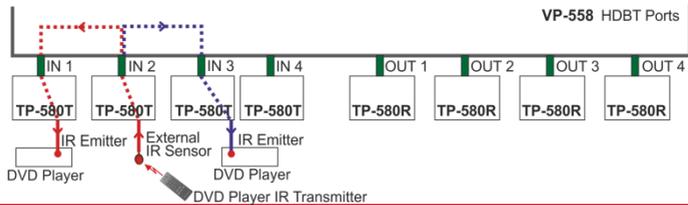
Step 7: Operate via the front panel buttons and via the:

Embedded Web Page | **RS-232 and Ethernet**

RS-232			
Baud Rate:	115,200	Stop Bits:	1
Data Bits:	8	Parity:	None
Command Format:			ASCII
Example (Route the video from the HDMI3 input to the HDMI1 output port):			#ROUTE 1,1,3<cr>
Ethernet			
To reset the IP settings to the factory reset values go to : Menu-> Factory-> RESET ALL->Change the option to YES and press Enter (to complete the reset process you need to turn the power off and then on again)			
IP Address:	192.168.1.39	TCP Port #:	5000
Subnet mask:	255.255.255.0	Default UDP Port #:	50000
Default gateway:	192.168.1.254	Maximum UDP/TCP Ports:	4
Full Factory Reset			
OSD	Go to : Menu-> Factory-> RESET-ALL/RESET SCALER>Change the option to YES and press Enter (to complete the reset process you need to turn the power off and then on again)		

Contents

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1 Introduction

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

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

Congratulations on purchasing your Kramer **VP-558** Presentation Switcher/Scaler. This product, which incorporates HDMI™ technology, is ideal for:

- Projection systems in conference rooms, boardrooms, hotels and churches

- Meeting rooms with video conferencing systems

- Applications with multiple format inputs having varying resolutions at different distances from the cabinet or rack

- Video and audio matrix routing

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

- Use Kramer high performance high resolution cables

Go to www.kramerav.com/downloads/VP-558 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 neighbouring electrical appliances that may adversely influence signal quality

- Position your Kramer **VP-558** 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-558** is a high-performance 11x4 presentation matrix switcher/scaler that can output four independent scaled images (analog, digital and embedded audio are supported) on both HDMI and HDBaseT outputs. The **VP-558** features 6 HDMI and 4 HDBaseT inputs as well as an analog VGA input and a 4x1 USB switcher. The **VP-558** includes a microphone input, independent stereo audio outputs, a MONITOR OUT output, an amplified speaker output, and supports audio DSP features.

The **VP-558** features:

- Pix-Perfect™ scaling technology - Kramer's precision pixel mapping and high quality scaling technology with 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.

- HDTV compatibility

- HDCP compliance - the HDCP (High Definition Content Protection) license agreement allows copy-protected data on the HDMI input to pass to HDCP compliant outputs

- Video inputs – six HDMI connectors, four HDBT on RJ-45 connectors and one VGA on a 15-pin HD connector

- Four independently scaled HDMI + HDBT outputs

- Output resolutions – 1080p/UXGA

- 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 front panel buttons

- Front-panel LCD for display of status

- Powerful audio features via DSP technology

- Input and output audio level adjustment

- Selectable microphone talkover or mix modes

- Analog and embedded audio support (inputs and outputs)

- Audio inputs - six analog HDMI audio and one analog PC audio on 3.5mm mini jacks each with individual level controls

- One auxiliary stereo balanced audio source or microphone (with Cond/Dyn and Mono/Stereo selections with 48V phantom voltage)

- Audio outputs – four balanced stereo audio on terminal blocks together with S/PDIF digital outputs on RCA connectors; one monitor out stereo balanced on terminal block connectors together with an S/PDIF digital output on an RCA connector

- Mirrored monitor out and Speaker out audio outputs with independent volume settings

- A built-in 2x10W into 4Ω power amplifier with speaker outputs on a 4-pin terminal block connector

- Multiple aspect ratio selections

- Selectable panel lock modes

- Built-in ProcAmp - color, hue, sharpness, noise, contrast and brightness

- 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-558**:

- 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-558** 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-558** 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 Defining the VP-558 Presentation Switcher/Scaler

This section defines the **VP-558**.
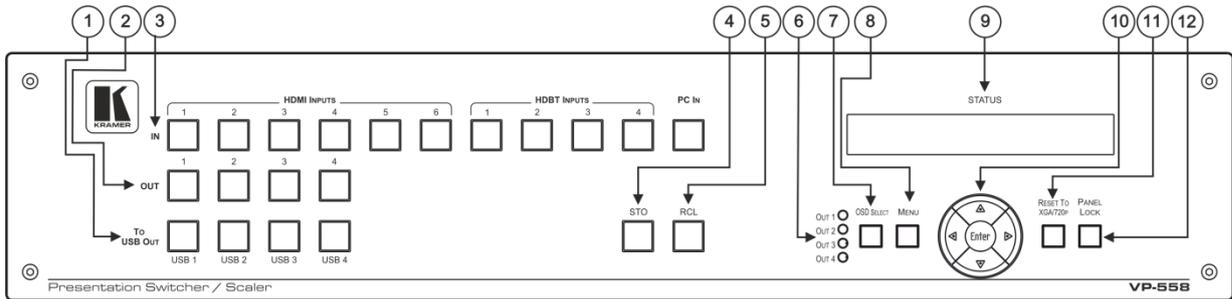
Figure 1: VP-558 Presentation Switcher/Scaler Front Panel

#	Feature		Function
1	TO USB OUT Buttons		Press a button to switch a USB input to the output (from USB 1 to USB 4)
2	OUT Buttons		Press a button to switch an input to up to 4 outputs
3	IN Buttons		Press a button to switch an input to the output (HDMI inputs from 1 to 6, HDBT inputs from 1 to 4, and one PC input)
4	STO Button		Press to store a configuration (see Section 6.1.1)
5	RCL Button		Press to recall a configuration (see Section 6.1.1)
6	OSD OUT LEDs		Indicate where the OSD is displayed
7	OSD SELECT Button		Press to select the output on which the OSD will be displayed (OUT 1, OUT 2, OUT 3 OR OUT 4)
8	MENU Button		Displays the OSD menu (see Section 6.2)
9	STATUS LCD Display		Displays the selected inputs switched to the outputs as well as front panel lock up indication
10	Navigation Buttons	◄	Press to decrease numerical values or select from several definitions When not within the OSD menu mode, press to reduce the output volume
		▲	Press to move up the menu list values (see Section 6.2)
		►	Press to increase numerical values or select from several definitions When not within the OSD menu mode, press to increase the output volume
		▼	Press to move down the menu list (see Section 6.2)
		ENTER	Press to accept changes and change the SETUP parameters (see Section 6.2)
11	RESET TO XGA/720p Button		Press to reset the video resolution of all scalers to XGA or 720p Press and hold for about 2 seconds to reset to toggle resetting to XGA/720p
12	PANEL LOCK Button		Press and hold for about 3 seconds to lock/unlock the front panel buttons
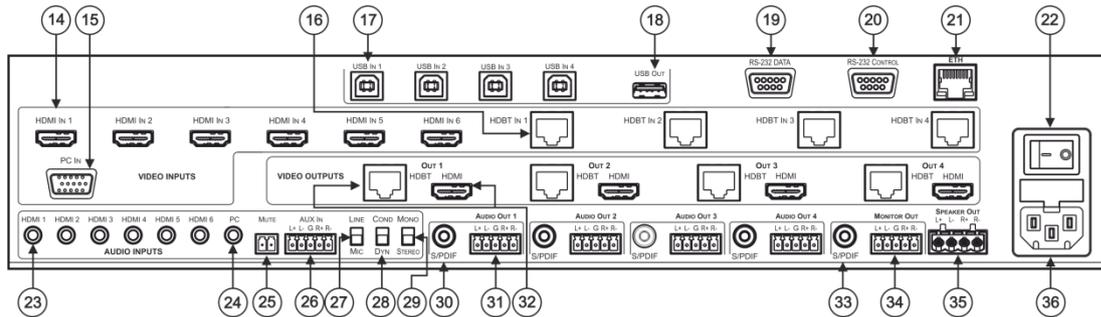
Figure 2: VP-558 Presentation Switcher/Scaler Rear Panel

#	Feature			Function
14	VIDEO INPUT Connectors	HDMI IN		Connect to the HDMI source (from 1 to 6)
15		PC IN 15-pin HD		Connect to the computer graphics source
16		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 4)
17	USB (B type) IN Connectors			Connect to a USB host (from 1 to 4)
18	USB OUT (A type) Connector			Connect to a USB client
19	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
20	RS-232 CONTROL 9-pin D-sub Port			Connect to the PC or the remote controller
21	ETH Connector			Connects to the PC or other Serial Controller through computer networking
22	POWER Switch			Switch for turning the unit ON or OFF
23	AUDIO INPUT Connectors	HDMI 3.5mm Mini Jack		Connect to the analog audio HDMI source (from 1 to 6)
24		PC 3.5mm Mini Jack		Connect to the analog audio computer graphics source
25		MUTE 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
26		AUX IN	Terminal Block Connector	Connect to an auxiliary stereo balanced audio source or microphone
27			LINE/MIC Selector	Select either a line or a microphone input
28			COND/DYN Selector	Select between a condenser and a dynamic type microphone

#	Feature		Function	
29			MONO/STEREO	Select between a stereo or mono input
30	AUDIO OUT (1 to 4)	S/PDIF RCA Connector	Connect to an S/PDIF digital audio acceptor (for example, active speakers or an audio power amplifier)	
31		Terminal Block Connectors	Connect to a stereo balanced audio acceptor (for example, active speakers or an audio power amplifier)	
32	VIDEO OUTPUT Connectors	OUT (1 to 4)	HDBT RJ-45	Connect to an HDBT Receiver (for example, the Kramer **TP-580Rxr**)
			HDMI	Connect to an HDMI acceptor
33	MONITOR OUT	S/PDIF RCA Connector	Connect to an S/PDIF digital audio acceptor (for example, active speakers or an audio power amplifier)	
34	Connectors	Terminal Block Connectors	Connect to a stereo balanced audio acceptor (for example, active speakers or an audio power amplifier)	
35	Speaker OUT Terminal Block Connector		Connect to a pair of loudspeakers	
36	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.
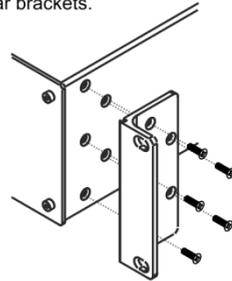
2. Place the ears of the machine against the rack rails, and insert the proper screws (not provided) through each of the four holes in the rack ears.

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-558

Always switch off the power to each device before connecting it to your **VP-558**. After connecting your **VP-558**, 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-558**, as illustrated in the example in Figure 3, do the following:

1. Connect an HDMI source (for example, a Blu-ray player) to the HDMI IN VIDEO INPUT connector (from 1 to 6).

   Alternatively, you can connect the DVI connector on the DVD player to the HDMI connector on the VP-558 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 IN 15-pin HD VIDEO INPUT connector.

3. Connect an HDBT IN transmitter (for example, **TP-580T**) to the RJ-45 TP IN connectors (from 1 to 3).

4. Connect the USB IN ports (from 1 to 4) (for example, a PC) and USB OUT port (for example, a smart whiteboard).

5. Connect the audio inputs (not shown in Figure 3) to the:

   - HDMI audio input 3.5mm mini jacks (from 1 to 6)

   - PC audio input on a 3.5mm mini jack

6. Connect an external audio source to the AUX IN 5-pin terminal block connector (not shown in Figure 3).

7. Connect OUT 1 to OUT 4:

   - OUT HDMI and/or HDBT output to an HDMI acceptor (for example an LCD display and a smart whiteboard) and/or an HDBT receiver (for example, the output of **TP-580R** connected to HDBT)

8. Connect the audio outputs:

- AUDIO OUT 1 to AUDIO OUT 4 – connect the S/PDIF RCA connector and/or the stereo balanced audio 5-pin terminal block connector to an acceptor (for example, active speakers or an audio power amplifier)

- MONITOR OUT – connect to an audio power amplifier or active speakers

- SPEAKER OUT terminal blocks – connect to a pair of loudspeakers, by connecting the left loudspeaker to the "L+" and the "L-" terminal block connectors, and the right loudspeaker to the "R+" and the "R-" terminal block connectors. **Do not Ground the loudspeakers.**

9. 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

10. Connect the MUTE 2-pin terminal block contact-closure remote-control pins to a switch to mute/unmute the audio output by momentarily pressing the switch.

11. Connect the ETHERNET port, see Section 6.6
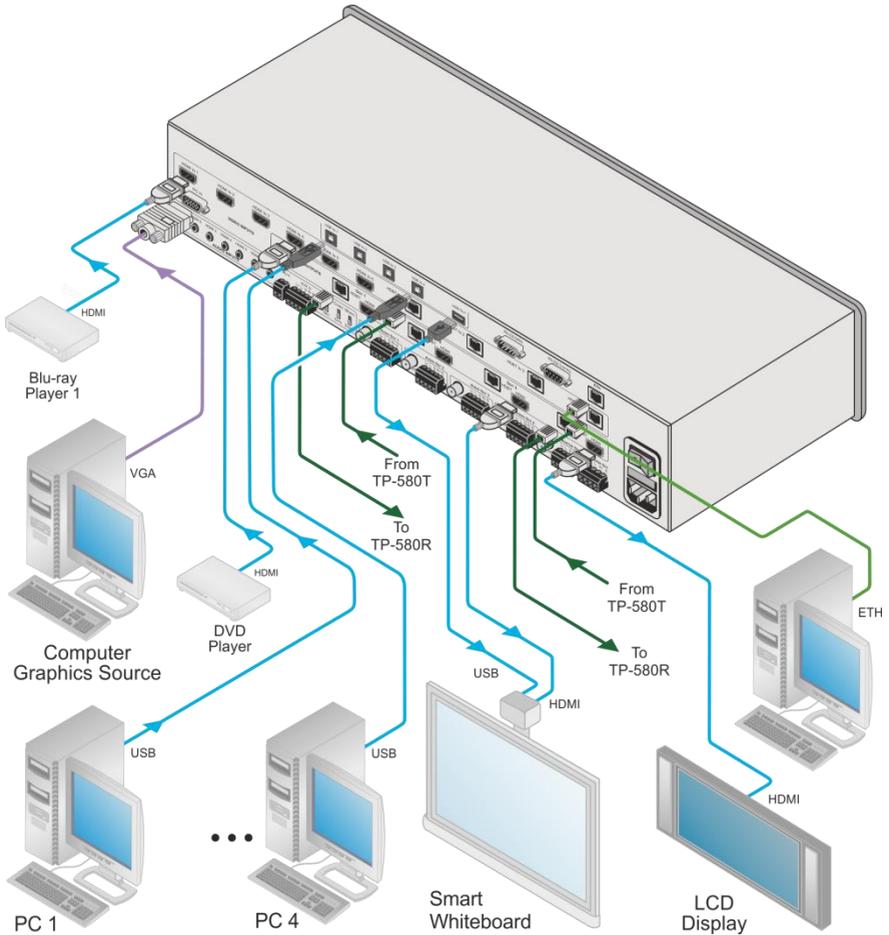
Figure 3: Connecting the VP-558 Presentation Switcher / Scaler

5.1 Connecting the Balanced Stereo Audio Input and Outputs

L+ L- G R+ R-
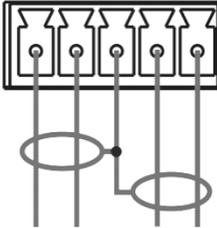
Figure 4: Balanced Stereo Audio Connection

L+ L- G R+ R-
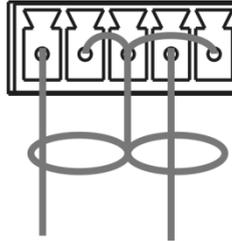
Figure 5: Unbalanced Stereo Audio Output Connection

AUX In
L+ L- G R+ R-
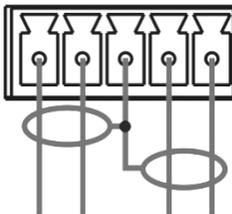
Figure 6: Balanced Stereo Audio Input Connection

AUX In
L+ L- G R+ R-
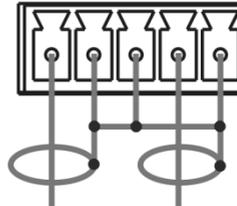
Figure 7: Unbalanced Stereo Audio Input Connection

6 Controlling the VP-558

The **VP-558** can be controlled via:

- The front panel buttons (see Section 6.1)

- The OSD menu (see Section 6.2, Section 6.3 and Section 6.4)

- RS-232 serial commands transmitted by a touch screen system, PC, or other serial controller (see Section 6.5)

- The ETHERNET (see Section 6.6)

6.1 Controlling via the Front Panel Buttons

The **VP-558** includes the following front panel buttons:

- Input selector buttons for selecting the required input: HDMI (1 to 6), HDBT (1 to 4), or PC IN

- Output selector buttons (1 to 4) for selecting the required output to which the input is routed

- Input selector buttons for selecting the required USB port (1 to 4)

- Store (STO) and recall (RCL) outputs (see Section 6.1.1)

- OSD SELECT buttons to select on which video output the menu and OSD is displayed

- MENU, ENTER, and up, down, left and right arrow buttons

- RESET TO XGA/720p and PANEL LOCK buttons

6.1.1 Storing and Recalling a Setup

You can store and recall the current setup by pressing the STO button. The STO button blinks once and the setup is stored. To recall the setup, simply press the RCL button once. The RCL button blinks once and the stored setup is recalled.

6.1.2 The Auto Setup Feature

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

You can also implement this feature every time the input is switched to VGA or when the input resolution changes, via the AUTO SETUP menu (see Section 6.3).

6.2 Using the OSD Menu

The control buttons let you control the **VP-558** via the OSD menu. Press the:

- OSD SELECT button to move through the outputs, until the led shows the output that you wish to use for controlling via the OSD

- 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.

Each OUTPUT OSD includes output specific features (such as selecting the source for the specific output, adjusting the image on the output, selecting the resolution and so on), OSD settings, factory reset and INFO. The OUTPUT 1 OSD has, in addition to the output-specific features, the audio monitor out (the AUDIO OUT menu, see Section 6.3.3) setup, microphone and inputs adjustment (the AUDIO SET menu, see Section 6.3.4), the USB setup menu (see Section 6.3.5) and Ethernet setup (see Section 6.3.6).

6.3 The OUTPUT 1 Menu

Mode	Function			
SOURCE	Select the source:			
	Source input	Appears as:	Source input	Appears as:
	HDMI 1	HDMI1	HDBT 1	HDBT1
	HDMI 2	HDMI2	HDBT 2	HDBT2
	HDMI 3	HDMI3	HDBT 3	HDBT3
	HDMI 4	HDMI4	HDBT 4	HDBT4
	HDMI 5	HDMI5	PC IN	PC
	HDMI 6	HDMI6		
PICTURE	**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** (NOISE REDUCTION): Select the noise reduction: OFF, LOW, MID and HIGH			
SIZE	Select the size of the display: FULL, OVER SCAN, FOLLOW IN, UNDER1, UNDER2, LETTERBOX, PAN SCAN, BEST FIT, (default, FULL) **UNDER1** refers to an underscan of 6%; **UNDER2** refers to an underscan of 9%			
RESOLUTION	Select the output resolution from the menu (default NATIVE):			
	Output resolution:	Appears as:	Output resolution:	Appears as:
	Native		1600x1200	1600x1200 60
	640x480	640x480 60	1920x1080	1920x1080 60
	800x600	800x600 60	1920x1200	1920x1200 60
	1024x768	1024x768 60	480p @60Hz	720x480P 60
	1280x768	1280x768 60	720p @60Hz	1280x720P 60
	1360x768	1360x768 60	1080i @60Hz	1920x1080I 60
	1280x720	1280x720 60	1080p @60Hz	1920x1080P 60
	1280x800	1280x800 60	576p @50Hz	720x576P 50
	1280x1024	1280x1024 60	720p @50Hz	1280x720P 50
	1440x900	1440x900 60	1080i @50Hz	1920x1080I 50
	1400x1050	1400x1050 60	1080p @50Hz	1920x1080P 50
	1680x1050	1680x1050 60		
	Native - Select Native to select the output resolution from the EDID of the connected HDMI monitor			
TIMING SHIFT	Set to ON (recommended): Implements a small shift on the horizontal sync to improve output picture stability. Set to OFF if the display shows an instability at the selected output resolution			
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			

Mode	Function
AUTO SYNC OFF	Turns off the output after a period of not detecting a valid video signal on the input(s) until a valid input is again detected or any keypad is pressed. Set to: Slow – to disable outputs after 2 minutes. Fast – to disable outputs after 10 seconds. Disable (default) – to leave outputs active at all times. 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

Mode		Function
AUDIO		Adjust audio parameters:
	SOURCE	Select the audio source: FOLLOW VIDEO, HDMI1, HDMI2, HDMI3, HDMI4, HDMI5, HDMI6, HDBT1, HDBT2, HDBT3, HDBT4, PC, AUX
	EMBEDDED AUDIO	Set the embedded audio behavior from HDMI AUDIO IN (1 to 6): **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
	EMBEDDED AUDIO BYPASS	Set to ON or OFF When ON, the **VP-558** passes the embedded audio signal directly to the output. This feature can be used when the embedded input audio format is not supported by **VP-558** (for example for Dolby or DTS formats), or when processing of the embedded input is not desired. Note that this function is irrelevant for the analog audio signals
	OUTPUT VOLUME	Set the OUTPUT VOLUME and set the HARDSTOP for the **HDMI** output, **LINE** and **SPDIF** outputs HARDSTOP limits the maximum output volume that the user can set
	MUTE	Set **HDMI**, **LINE** and **SPDIF** MUTE to ON or OFF
	DELAY	Select the audio delay time: OFF, 10ms to 80ms in 10ms steps or DYNAMIC. The DYNAMIC setting automatically selects the appropriate audio delay to compensate for the video pipeline delay in the scaler
	MIC MIXER SETTINGS	**MODE** - set the mode to OFF, MIXER or TALKOVER. When in **TALKOVER** mode, set the: **DEPTH** [%] – to determine the decrease of the audio level during microphone 1 takeover (press + to further decrease the talkover audio output level; press – to lessen the talkover output audio decrease level) **TRIGGER** [dB] – to determine the microphone 1 threshold level that triggers the audio output-level decrease. **ATTACK TIME** – to set the transition time of the audio level reduction after the signal rises above the threshold level **HOLD TIME** – to define the time period talkover remains active although the signal falls below the threshold level (for a short period of time)

Mode		Function
		RELEASE TIME – to define the transition time for the audio level to return from its reduced level to its normal level after the Hold Time period When in **MIXER** mode, Adjust the **MIC/LINE LEVEL**
	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 SETUP	When set to ON, auto adjusts the image (centers it correctly on the screen) every time the input is switched to VGA or when the input resolution changes
	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

6.3.1 The OSD Menu

Parameter		Function
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: **ON**: the information is shown permanently **OFF**: the information is not shown **INFO**: the information is shown for a few seconds
LOCK MODE	ALL	Lock all the front panel buttons
	MENU ONLY	Lock the MENU (and navigation) front panel buttons only
	ALL & SAVE	Lock all the front panel buttons. The lock status is saved when the **VP-558** is powered down
	MENU ONLY & SAVE	Lock the MENU (and navigation) front panel buttons only. The lock status is saved when the **VP-558** is powered down

6.3.2 The FACTORY Menu

Parameter	Function
RESET SCALER	Reset the scaler parameters
RESET ALL	A full Factory Reset that includes Ethernet reset as well (to complete the reset process you need to turn the power off and then on again)

6.3.3   The AUDIO OUT Menu

This table defines the OSD menu of the MONITOR OUT and SPEAKER OUT audio outputs (see items 33 to 35 in Figure 2).

Parameter	Function	
SOURCE	Select FOLLOW OUTPUT1, FOLLOW OUTPUT2, FOLLOW OUTPUT3, FOLLOW OUTPUT4, HDMI1, HDMI2, HDMI3, HDMI4, HDMI5, HDMI6, HDBT1, HDBT2, HDBT3, HDBT4, PC or AUX	
EMBEDDED AUDIO	HDMI AUDIO IN (1 to 6)	Select the HDMI 1 to HDMI 6 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
EMBEDDED AUDIO BYPASS	Set to ON or OFF When ON, the **VP-558** passes the embedded audio signal directly to the output. This feature can be used when the embedded input audio format is not supported by **VP-558** (for example for Dolby or DTS formats), or when processing of the embedded input is not desired. Note that this function is irrelevant for the analog audio signals	
OUTPUT VOLUME (see Figure 8)	Set the output volume and set the HARDSTOP for the **SPEAKER** output, **LINE** and **SPDIF** outputs HARDSTOP limits the maximum output volume that the user can set	
MUTE	Set **SPEAKER**, **LINE** and **SPDIF** MUTE to ON or OFF	
DELAY	Select the audio delay time: OFF, 10ms to 80ms in 10ms steps or DYNAMIC. The DYNAMIC setting automatically selects the appropriate audio delay to compensate for the video pipeline delay in the scaler	
MIC MIXER SETTINGS	**MODE** - set the mode to OFF, MIXER or TALKOVER. When in **TALKOVER** mode, set the: **DEPTH** [**%**] – to determine the decrease of the audio level during microphone 1 takeover (press + to further decrease the talkover audio output level; press – to lessen the talkover output audio decrease level) **TRIGGER** [dB] – to determine the microphone 1 threshold level that triggers the audio output-level decrease. **ATTACK TIME** – to set the transition time of the audio level reduction after the signal rises above the threshold level	

Parameter	Function
	HOLD TIME – to define the time period talkover remains active although the signal falls below the threshold level (for a short period of time) **RELEASE TIME** – to define the transition time for the audio level to return from its reduced level to its normal level after the Hold Time period When in **MIXER** mode, Adjust the **MIC/LINE LEVEL**
EQ SAME AS	OUTPUT 1, OUTPUT 2, OUTPUT 3, OUTPUT 4 or NONE (if NONE is selected, AUDIO EQ is enabled)
AUDIO EQ	Set the audio EQ values in 0.5dB steps for: BELOW 120Hz, CENTER 200Hz, CENTER 500Hz, CENTER 1200Hz, CENTER 3000Hz, CENTER 7500Hz and ABOVE 12000Hz

Figure 8 shows the output volume level (dB) vs. the OSD volume setting:
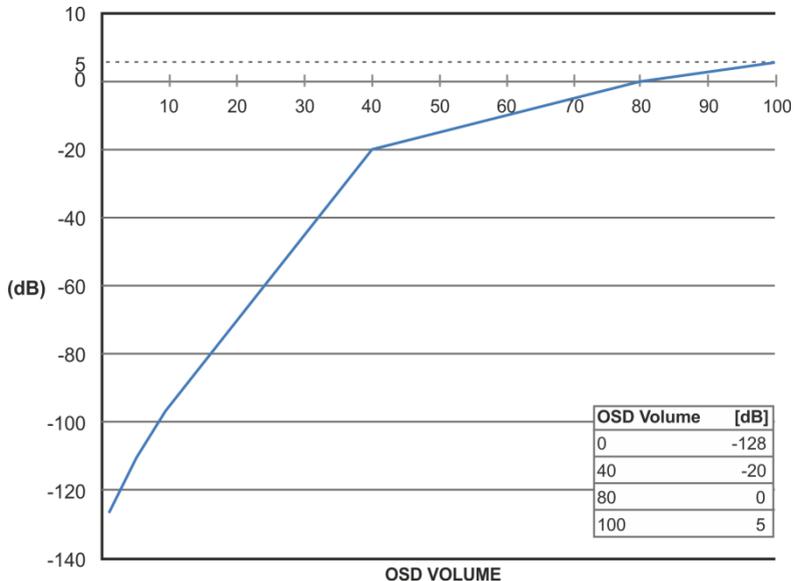
Figure 8: VP-558 Audio Volume Level (dB) vs. OSD Volume Values

6.3.4 The AUDIO SET Menu

Parameter	Function
MICROPHONE GAIN	Set the microphone gain
MICROPHONE DELAY	Set the microphone delay time: OFF, 10 to 80ms in 10ms steps
INPUT VOLUME	Set the volume for each input: HDMI1 (embedded), HDMI2 (embedded), HDMI3 (embedded), HDMI4 (embedded), HDMI5 (embedded), HDMI6 (embedded),

Parameter	Function
	HDBT1 (embedded), HDBT2 (embedded), HDBT3 (embedded), HDBT4 (embedded), HDMI1 (analog), HDMI2 (analog), HDMI3 (analog), HDMI4 (analog), HDMI5 (analog), HDMI6 (analog) and PC

6.3.5   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 (1 to 4) that will follow (HDMI123456 / HDBT1234 / PC). For example, if you want to set USB 3 to follow HDMI 3, select HDMI 3 and set to USB 3

6.3.6   The ETHER Menu

Parameter	Function
IP MODE	Set the IP mode to DHCP or STATIC IP
SET STATIC IP	STATIC IP ADDRESS; fill in if STATIC IP (above) is selected: IP ADDRESS, DEF. GATEWAY and SUBNET MASK
IP ADDRESS	Displays the IP address
UDP PORT	Set the port number
TCP PORT	Set the port number

6.3.7   The MISC Menu

Parameter	Function
IR ROUTING: 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). 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 29		
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, HDBT4, HDBT OUT1, HDBT OUT2, HDBT OUT3 or HDBT OUT4 (to set the IR route from one of the above ports to HDBT1)
HDBT2 (IR OUT)	Set to HDBT1, HDBT3, HDBT4, HDBT OUT1, HDBT OUT2, HDBT OUT3 or HDBT OUT4 (to set the IR route from one of the above ports to HDBT2)
HDBT3 (IR OUT)	Set to HDBT1, HDBT2, HDBT4, HDBT OUT1, HDBT OUT2, HDBT OUT3 or HDBT OUT4 (to set the IR route from one of the above ports to HDBT3)
HDBT4 (IR OUT)	Set to HDBT1, HDBT2, HDBT3, HDBT OUT1, HDBT OUT2, HDBT OUT3 or HDBT OUT4 (to set the IR route from one of the above ports to HDBT4)
HDBT OUT1 (IR OUT)	Set to HDBT1, HDBT2, HDBT3, HDBT4, HDBT OUT2, HDBT OUT3 or HDBT OUT4 (to set the IR route from any one of the above ports to HDBT OUT1)

Parameter	Function
HDBT OUT2 (IR OUT)	Set to HDBT1, HDBT2, HDBT3, HDBT4, HDBT OUT1, HDBT OUT3 or HDBT OUT4 (to set the IR route from any one of the above ports to HDBT OUT2)
HDBT OUT3 (IR OUT)	Set to HDBT1, HDBT2, HDBT3, HDBT4, HDBT OUT1, HDBT OUT2 or HDBT OUT4 (to set the IR route from any one of the above ports to HDBT OUT3)
HDBT OUT4 (IR OUT)	Set to HDBT1, HDBT2, HDBT3, HDBT4, HDBT OUT1, HDBT OUT2 or HDBT OUT3 (to set the IR route from any one of the above ports to HDBT OUT3)
HDCP INPUT	Select the HDCP option for each HDMI (from 1 to 6) and HDBT (from 1 to 4) 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)
ECHOING	Select ON or OFF When ON, there is feedback on the communication ports following front panel button actions and following commands sent from an Ethernet or RS-232 port.

6.3.8   The INFO Menu

The INFO menu displays the source and output resolutions, the HDCP status, the microphone settings, the phantom power, the stereo and mute control status, and the firmware version.

6.4   The Main Menu for Outputs 2, 3 and 4

Mode	Function			
OUTPUT2, OUTPUT3, OUTPUT4				
SOURCE	Select the source:			
	Source input	Appears as:	Source input	Appears as:
	HDMI 1	HDMI1	HDBT 1	HDBT1
	HDMI 2	HDMI2	HDBT 2	HDBT2
	HDMI 3	HDMI3	HDBT 3	HDBT3
	HDMI 4	HDMI4	HDBT 4	HDBT4
	HDMI 5	HDMI5	PC IN	PC
	HDMI 6	HDMI6		
PICTURE	**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 **NOISE REDUCTION**: Select the noise reduction: OFF, LOW, MIDDLE and HIGH			
SIZE	Select the size of the display: FULL, OVERS CAN, UNDER1, UNDER2, LETTER BOX, PANS CAN, BEST FIT, PIXEL TO PIXEL (default, FULL)			

Mode	Function
	OUTPUT2, OUTPUT3, OUTPUT4
	UNDER1 refers to an underscan of 6%; **UNDER2** refers to an underscan of 9%
RESOLUTION	Select the output resolution from the menu (default NATIVE):

Output resolution:	Appears as:	Output resolution:	Appears as:
Native		1600x1200	1600x1200 60
640x480	640x480 60	1920x1080	1920x1080 60
800x600	800x600 60	1920x1200	1920x1200 60
1024x768	1024x768 60	480p @60Hz	720x480P 60
1280x768	1280x768 60	720p @60Hz	1280x720P 60
1360x768	1360x768 60	1080i @60Hz	1920x1080I 60
1280x720	1280x720 60	1080p @60Hz	1920x1080P 60
1280x800	1280x800 60	576p @50Hz	720x576P 60
1280x1024	1280x1024 60	720p @50Hz	1280x720P 50
1440x900	1440x900 60	1080i @50Hz	1920x1080I 50
1400x1050	1400x1050 60	1080p @50Hz	1920x1080P 50
1680x1050	1680x1050 60		

	Native - Select Native to select the output resolution from the EDID of the connected HDMI monitor
TIMING SHIFT	Set to ON (recommended):
	Implements a small shift on the horizontal sync to improve output picture stability. Set to OFF if the display shows an instability at the selected output resolution
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
AUTO SYNC OFF	Turns off the output after a period of not detecting a valid video signal on the input(s) until a valid input is again detected or any keypad is pressed. Set to:
	Slow – to disable outputs after 2 minutes.
	Fast – to disable outputs after 10 seconds.
	Disable (default) – to leave outputs active at all times.
	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:

SOURCE	Select the audio source: FOLLOW VIDEO, HDMI1, HDMI2, HDMI3, HDMI4, HDMI5, HDMI6, HDBT1, HDBT2, HDBT3, HDBT4, PC, AUX
EMBEDDED AUDIO	Set the embedded audio behavior from HDMI AUDIO IN (1to 6):
	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)

Mode	Function
	OUTPUT2, OUTPUT3, OUTPUT4
	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
AUDIO (continued) — EMBEDDED AUDIO BYPASS	Set to ON or OFF When ON, the **VP-558** passes the embedded audio signal directly to the output. This feature can be used when the embedded input audio format is not supported by **VP-558** (for example for Dolby or DTS formats), or when processing of the embedded input is not desired. Note that this function is irrelevant for the analog audio signals
OUTPUT VOLUME	Set the OUTPUT VOLUME and set the HARDSTOP for the **HDMI** output, **LINE** and **SPDIF** outputs HARDSTOP limits the maximum output volume that the user can set
MUTE	Set **HDMI**, **LINE** and **SPDIF** MUTE to ON or OFF
DELAY	Select the audio delay time: OFF, 10ms to 80ms in 10ms steps or DYNAMIC. The DYNAMIC setting automatically selects the appropriate audio delay to compensate for the video pipeline delay in the scaler
MIC MIXER SETTINGS	**MODE** - set the mode to OFF, MIXER or TALKOVER. When in **TALKOVER** mode, set the: **DEPTH** [%] – to determine the decrease of the audio level during microphone 1 takeover (press + to further decrease the talkover audio output level; press – to lessen the talkover output audio decrease level) **TRIGGER** [dB] – to determine the microphone 1 threshold level that triggers the audio output-level decrease. **ATTACK TIME** – to set the transition time of the audio level reduction after the signal rises above the threshold level **HOLD TIME** – to define the time period talkover remains active although the signal falls below the threshold level (for a short period of time) **RELEASE TIME** – to define the transition time for the audio level to return from its reduced level to its normal level after the Hold Time period When in **MIXER** mode, Adjust the **MIC/LINE LEVEL**
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

Mode	Function	
OUTPUT2, OUTPUT3, OUTPUT4		
PC	AUTO SETUP	When set to ON, auto adjusts the image (centers it correctly on the screen) every time the input is switched to VGA or when the input resolution changes
	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
OSD		
H POSITION	Set the horizontal position of the OSD	
V POSITION	Set the vertical position of the OSD	
TIMER	Set the timeout period in 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: **ON**: the information is shown permanently **OFF**: the information is not shown **INFO**: the information is shown for a few seconds	
LOCK MODE	ALL	Lock all the front panel buttons
	MENU ONLY	Lock the MENU (and navigation) front panel buttons only
	ALL & SAVE	Lock all the front panel buttons. The lock status is saved when the **VP-558** is powered down
	MENU ONLY & SAVE	Lock the MENU (and navigation) front panel buttons only. The lock status is saved when the **VP-558** is powered down
FACTORY		
RESET SCALER	Reset the scaler parameters	
INFO		
	Shows the output and source details and the firmware version	

6.5 Connecting to the VP-558 via RS-232

The **VP-558** 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-558**

You can connect to the **VP-558** via an RS-232 connection using, for example, a PC. Note that a null-modem adapter/connection is not required.

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To connect to the **VP-558** 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.

6.6   Operating via the Ethernet

You can connect to the **VP-558** via Ethernet using either of the following methods:

- Directly to the PC using a crossover cable (see Section 6.6.1)
- Via a network hub, switch, or router, using a straight-through cable (see Section 6.6.2)

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.

6.6.1   Connecting the Ethernet Port Directly to a PC

You can connect the Ethernet port of the **VP-558** 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-558** with the factory configured default IP address.

After connecting the **VP-558** to the Ethernet port, configure your PC as follows:

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

2. Click **Change Adapter Settings**.

3. Highlight the network adapter you want to use to connect to the device and click **Change settings of this connection**.
   The Local Area Connection Properties window for the selected network adapter appears as shown in Figure 9.
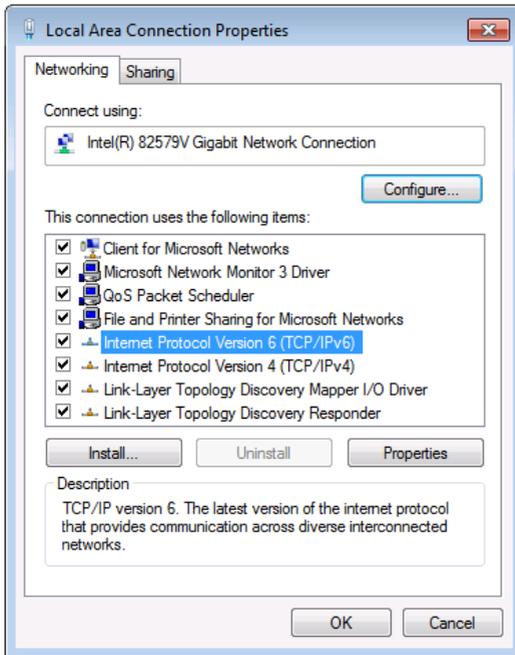
Figure 9: Local Area Connection Properties Window

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

5. Click **Properties**.
    The Internet Protocol Properties window relevant to your IT system appears as shown in Figure 10 or Figure 11.
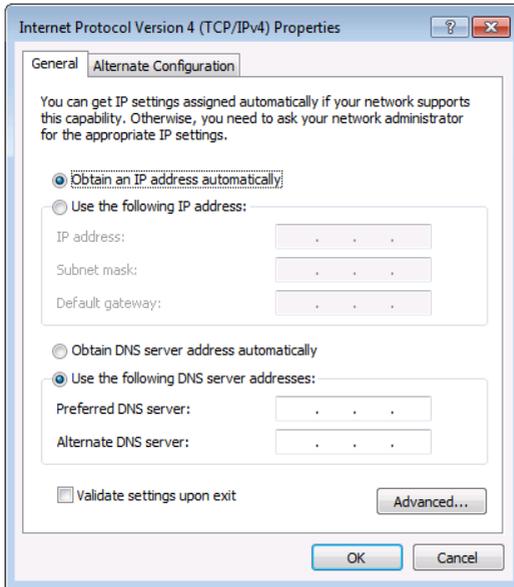
Figure 10: Internet Protocol Version 4 Properties Window
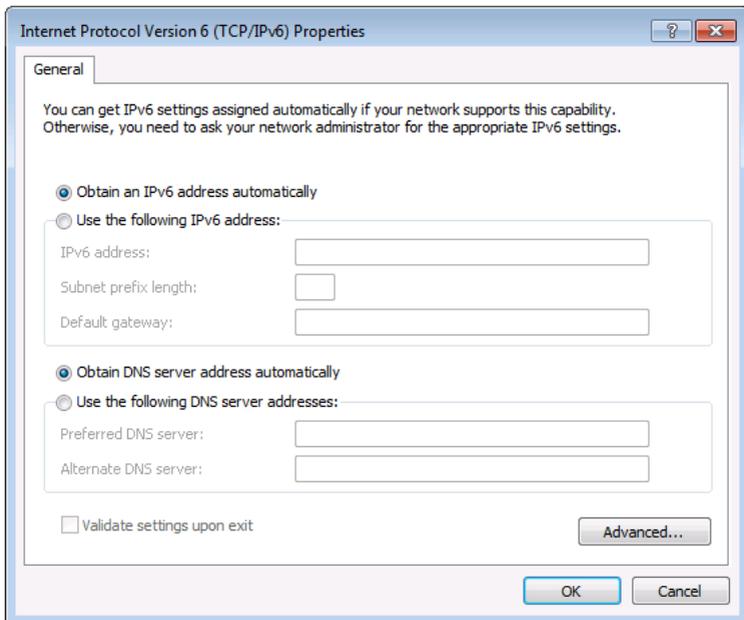
Figure 11: Internet Protocol Version 6 Properties Window

6. Select **Use the following IP Address** for static IP addressing and fill in the details as shown in <u>Figure 12</u>.

   For TCP/IPv4 you can use any IP address in the range 192.168.1.1 to 192.168.1.255 (excluding 192.168.1.39) that is provided by your IT department.
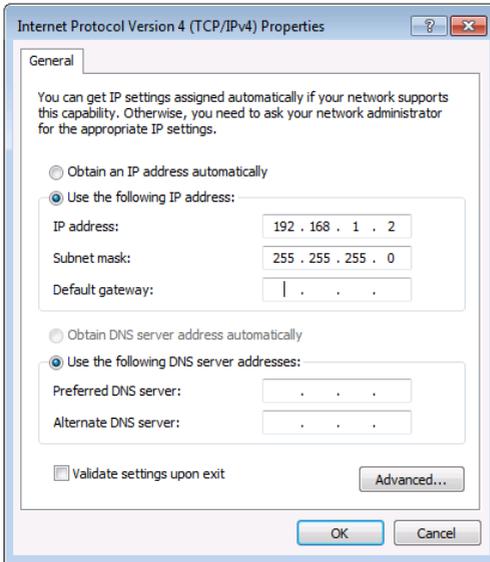
Figure 12: Internet Protocol Properties Window

7. Click **OK**.

8. Click **Close**.

6.6.2 Connecting the Ethernet Port via a Network Hub or Switch

You can connect the Ethernet port of the **VP-558** to the Ethernet port on a network hub or using a straight-through cable with RJ-45 connectors.

6.6.3 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 <u>Section 6.3.6</u>).

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7 Using the Embedded Web Pages

The **VP-558** 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 6.6
- Ensure that your browser is supported

The following operating systems and Web browsers are supported:

Operating Systems	Applicable Browser Versions and Higher
Windows 7 and higher	Chrome: 25 Internet Explorer: 9 Firefox 19
Mac (PC) Yosemite 10 and higher	Chrome: 51
iOS 8.0 and higher	Chrome: 47 Safari: N/A
Android OS 5.0 and higher	Chrome: 50

7.1 Browsing the VP-558 Web Pages

To browse the **VP-558** 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:
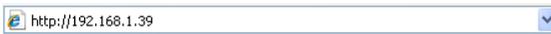
The Loading page appears.
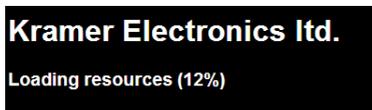
Figure 13: The Loading Page

Once loaded, enter your user name and password:
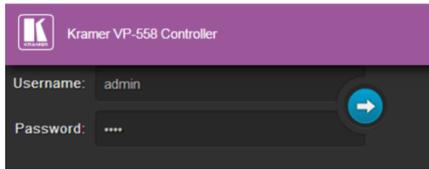
Figure 14: Enter Username and Password

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 15 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). Audio out shows the audio input that is routed to the line and monitor outputs. The Volume area lets you control the speaker, Line and S/PDIF output audio level.

The lower part of the screen lets you save the settings and upload a saved setting (see Section 7.11). The model name, FW version and IP number appear on the lower left side of the main page.
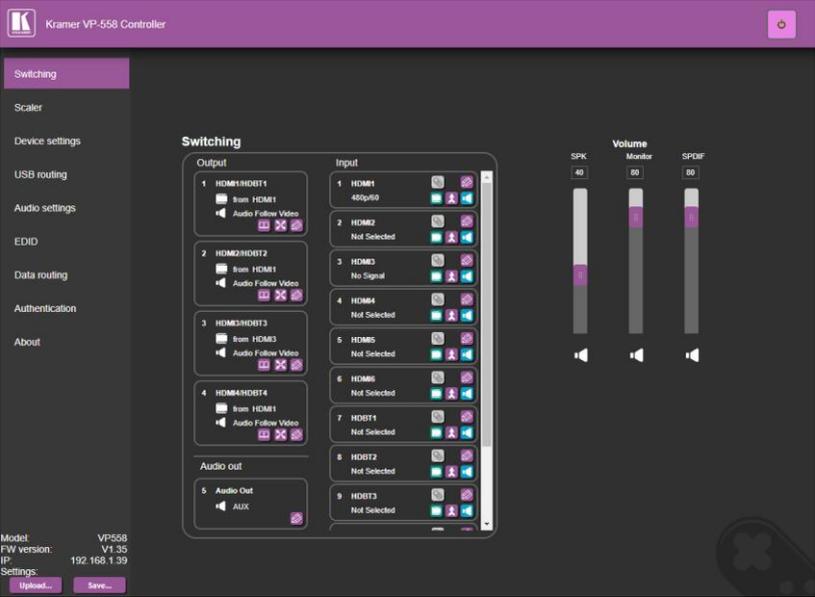
Figure 15: The Switching Page

Click the power icon on the top right-hand side to toggle between normal operation and standby mode. When in standby mode, the icon appears dim:

Figure 16: The VP-558 Standby Mode

defines icons used for the inputs and outputs.
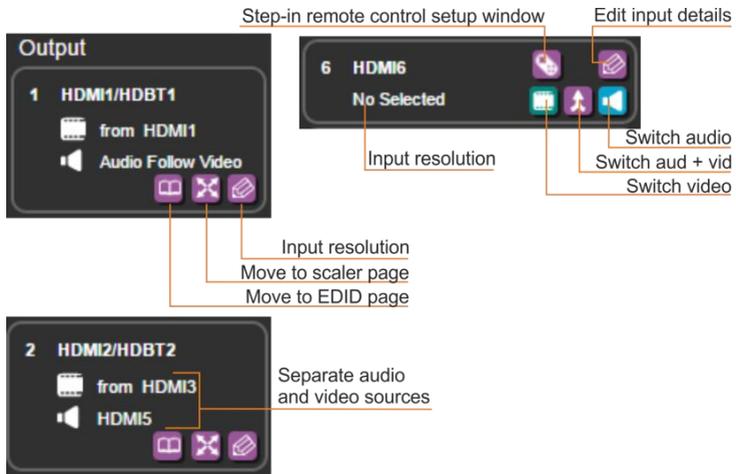
Figure 17: The Switching Page – Input and Output Icons

You can also edit the input and output button by clicking the edit icon. Note that the PC input does not have the Step-in icon.

To edit an output button, select that button and click the edit icon. The output edit window appears:
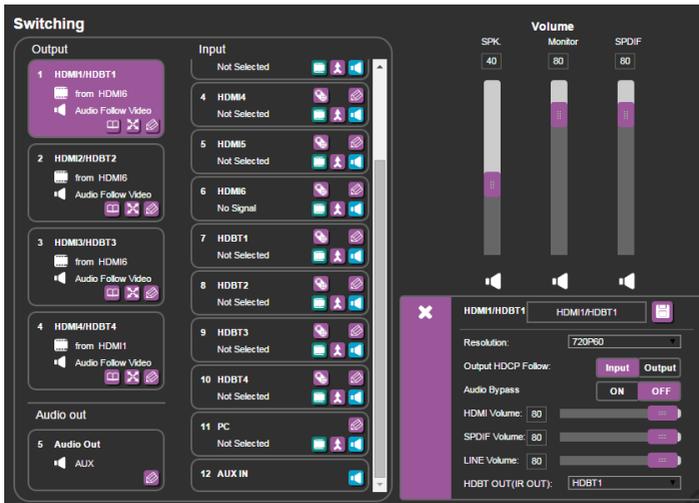
Figure 18: The Switching Page – Edit Output Buttons

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The HDMI1/HDBT output edit window lets you change the name of the output as it will appear on the Web page and save it, set the resolution, the HDCP settings, the Audio Bypass ON or OFF and set the output volume (HDMI, SPDIF and LINE volume) and the IR transmission route to the HDBT output (see Section 7.2.1):
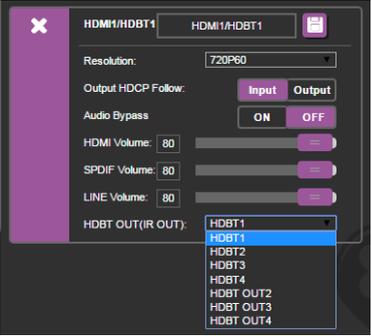
Figure 19: The Switching Page – Edit HDMI/HDBT Output

The Audio output edit window lets you change the output name and set the audio output bypass on or off (see Section 6.3.3).

Figure 20: The Switching Page –Edit Audio Output

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

Figure 21: 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 17) 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:
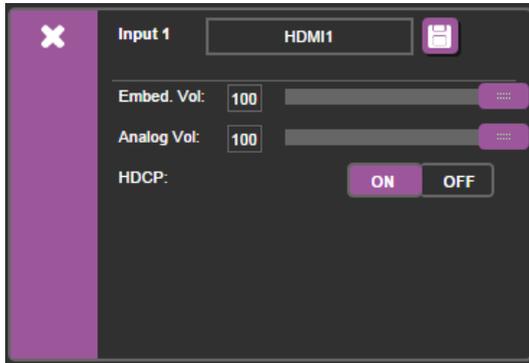
Figure 22: Switching Page – HDMI input Window

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):
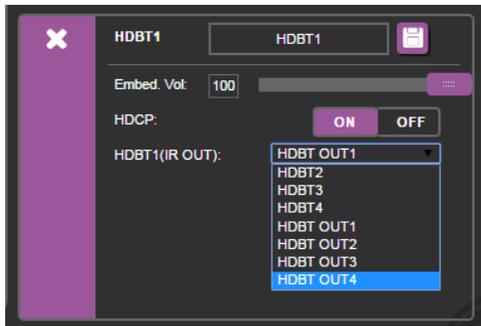
Figure 23: Switching Page – HDBT input Window

For HDBT inputs, when a Kramer **SID-X2N** unit is connected to an HDBT input, click the **SID-X2N** icon (see Figure 24) to open the **SID-X2N** setup window (see Figure 25).
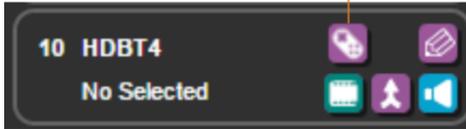
Figure 24: Switching Page – SID-X2N Setup Icon
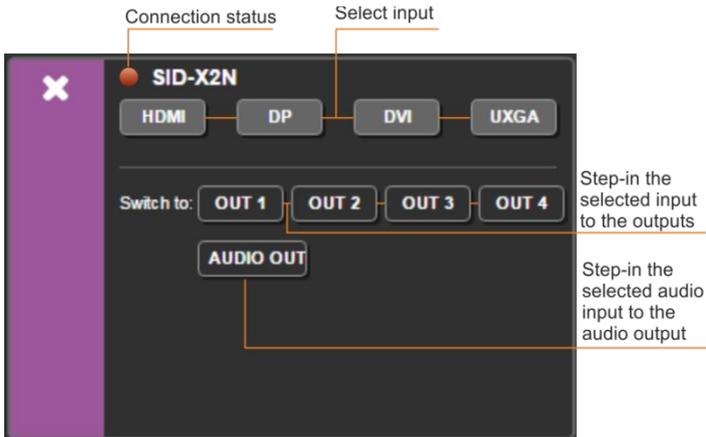
Figure 25: Switching Page – SID-X2N Setup Window

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.

For HDMI inputs, when a Kramer **SID-X3N** unit is connected to an HDMI input, click the **SID-X3N** icon (see Figure 24) to open the **SID-X3N** setup window (see Figure 25).
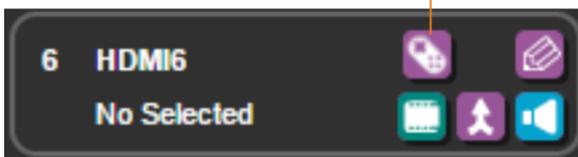
Figure 26: Switching Page – SID-X2N Setup Icon
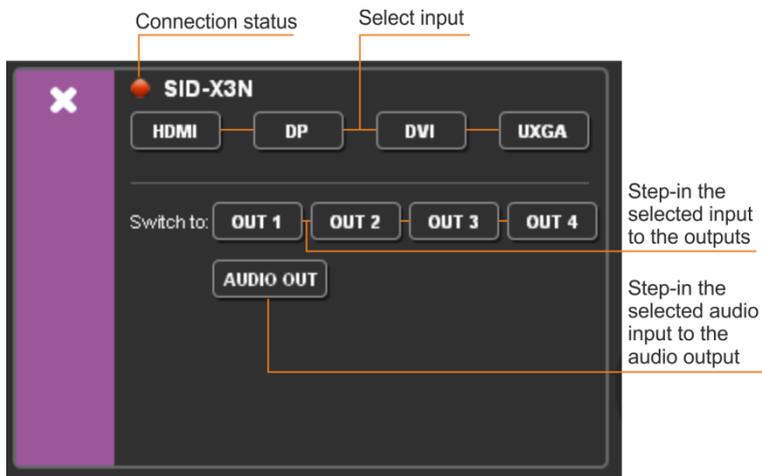
Figure 27: Switching Page – SID-X2N Setup Window

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.

Note that you need to use an HDMI cable with HEC (HDMI Ethernet Channel) support to control the **SID-X3N** via **VP-558**.

When connecting a PC input, you can rename the input and set the analog audio:
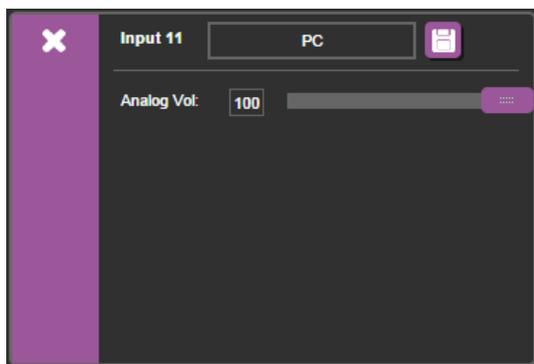
Figure 28: Switching Page – PC input Window

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

Figure 29 shows the IR signal route when setting HDBT IN 1 (IR OUT) to HDBT IN 2. In this example, an External IR Sensor is connected to the IR connector of the **TP-580T** (connected to HDBT IN 2) and an IR Emitter is connected between the **TP-580T** (connected to HDBT IN 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-558** and the IR Emitter to the DVD player, which responds to the command sent. At the same time you can also set HDBT IN 3 to HDBT IN 1, thus sending IR commands from HDBT IN 1 also to HDBT IN 3 (see blue line in Figure 29). This will work only if the devices are set appropriately.
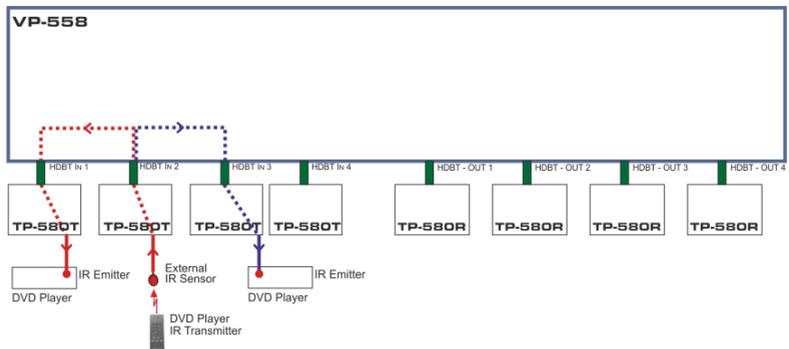
Figure 29: HDBT IR transmission Example

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 21:

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 HDMI 3 and the PC audio signal from INPUT 11, see the output 2 button in Figure 21):

1. Click an output button.
   The button changes color to purple.

2. Click the video icon 🖥 on the HDMI3 input.
   The output 2 button displays **from HDMI3** next to the video icon.

3. Click the audio icon 🔊 on the PC input.
   The Output 2 button displays **PC** next to the audio icon.

7.3 The Scaler Page

The Scaler page lets you set the output 1 to output 4 images and also, when PC IN is selected, set the PC mode for each output separately. Figure 30 shows the Scaler page for output 1.
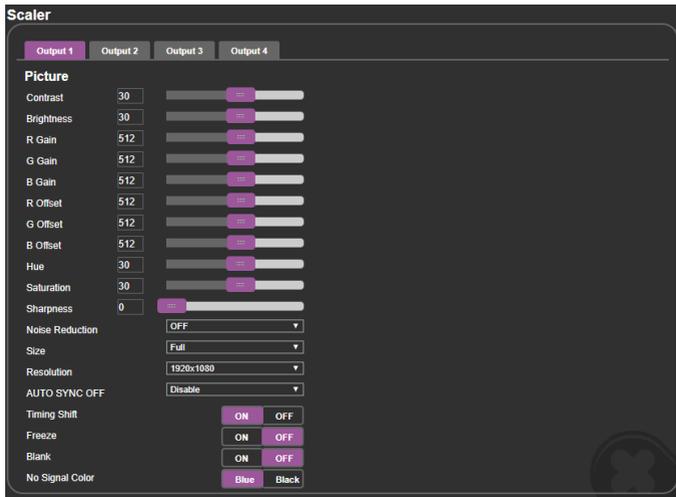
Figure 30: The Scaler Page – Output 1

When PC IN is connected, the PC mode is enabled:
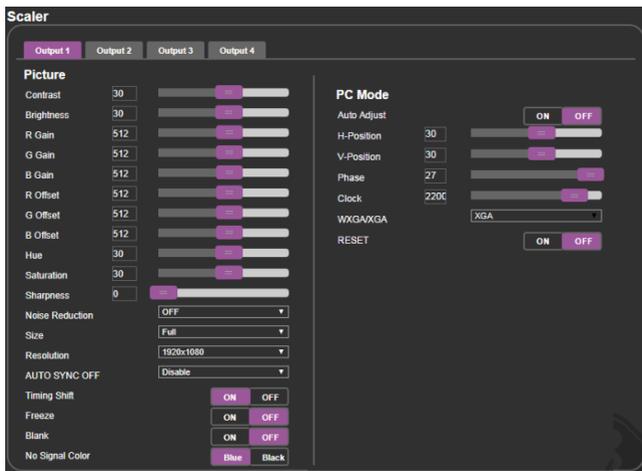
Figure 31: The Scaler Page – Output 1 for the PC IN Input

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shows the setup for output 3 (OUTPUT 2 and 4 are the same):
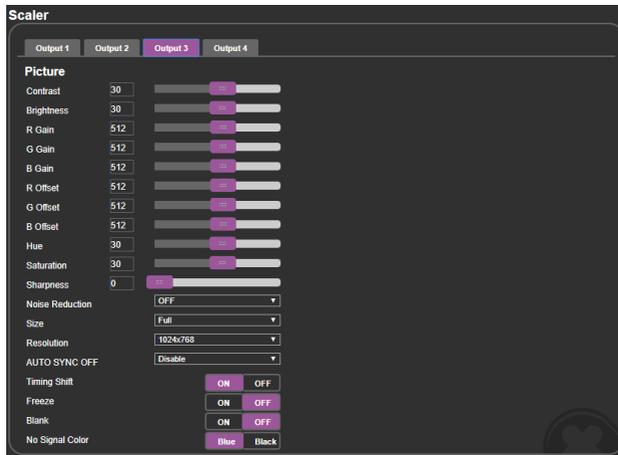
Figure 32: The Scaler Page – Output 3

7.4 The Device Settings Page

The Device Settings window (see) lets you upgrade the firmware and set the Ethernet parameters.
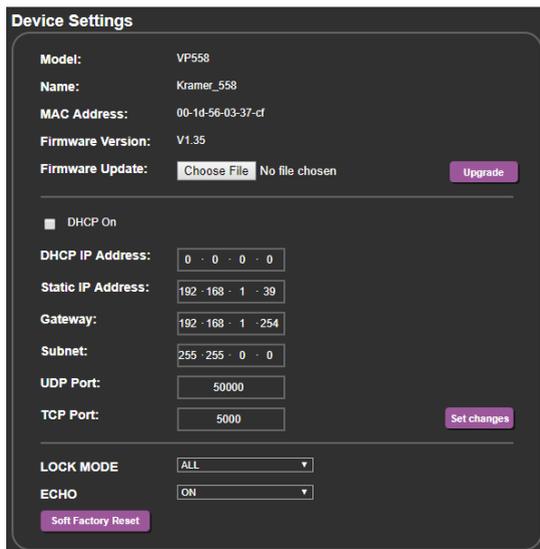
Figure 33: The Device Settings Page

Any change in the device settings requires confirmation, as illustrated in the example in Figure 34.

Figure 34: 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. Click the Choose File button in the Firmware upgrade line and choose a file.
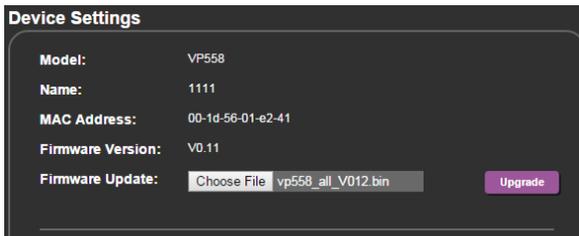
Figure 35: The Device Settings Page – Firmware Upgrade, Choosing a File

2 Click the Upgrade button.

The new firmware is uploaded:
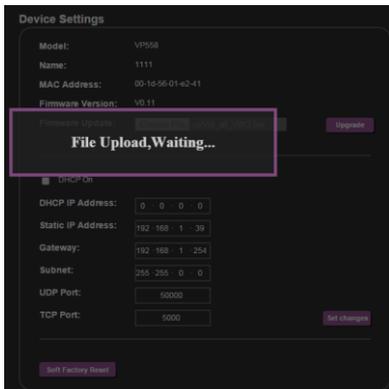
Figure 36: The Device Settings Page – Firmware Upgrade, Uploading the File

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3   After the file is uploaded, wait for the system to restart and update. During this time the front panel buttons flash.
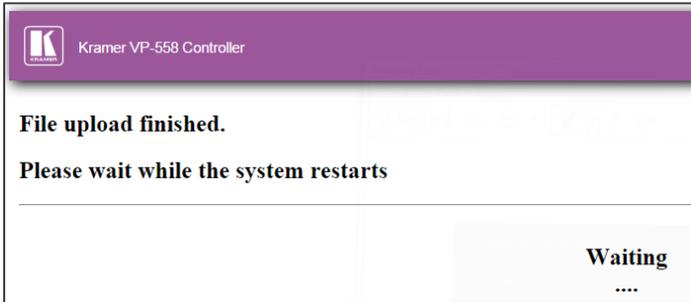
Figure 37: The Device Settings Page – Firmware Upgrade Process

4   Upon completion of the update click the OK button.
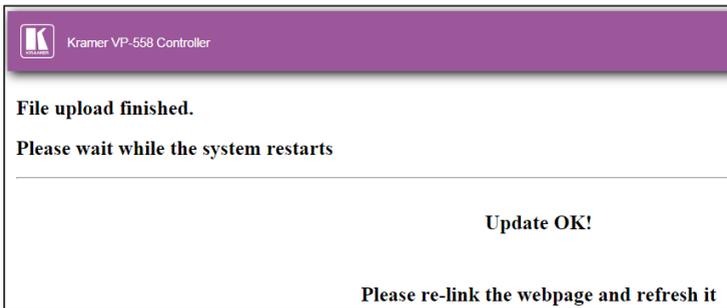
Figure 38: The Device Settings Page –Firmware Upgrade Complete

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

Figure 39: The Device Settings Page – New Firmware Updated

7.4.2   Lock Mode

To set the LOCK MODE:

1.   Open the LOCK MODE drop-down box.

2.   Select one of the available lock modes (see Section 6.3.1).
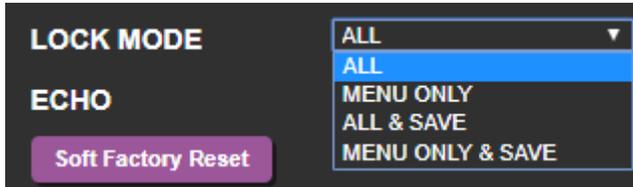
Figure 40: The Device Settings Page –Lock Mode

7.4.3   Echoing

To set the ECHO:

1.   Open the ECHO drop-down box.

2.   Set to ON or OFF (see Section 6.3.7).
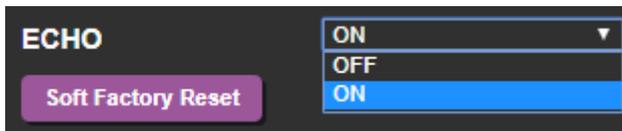
Figure 41: The Device Settings Page –Echo Mode

7.4.4   Soft Factory Reset

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

The page at 192.168.1.39 says:

All device parameters apart from the IP address of the device will be reset to their factory defaults.

Are you sure you wish to proceed?

OK   Cancel

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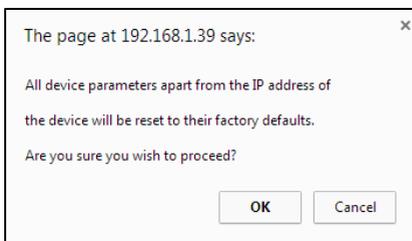
Figure 42: The Device Settings Page – Soft Factory Reset Message

Click OK to proceed.

7.5 The USB Routing Page
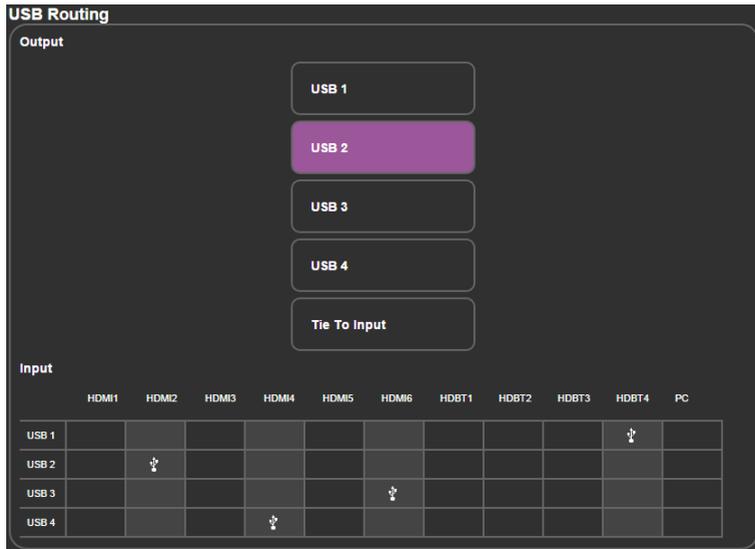
Figure 43: The USB Routing Page

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 43, 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 44 (if the Tie To INPUT button was selected) USB 1 is tied to HDBT 4, USB 2 is tied to HDMI 2 and so on.
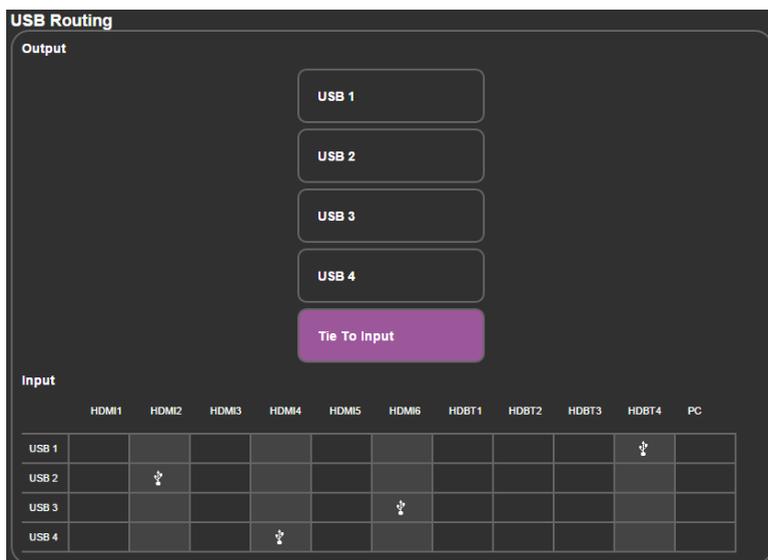
Figure 44: The USB Tied to a Selected Input

7.6 The Audio Settings Page

The audio settings page lets you define the audio parameters for the individual inputs, the individual outputs (1 to 4), the Mic Mixer parameters and the Monitor audio output parameters.

Quick audio switching lets you set the general audio output and the status of the individual audio outputs from Output 1 to Output 4 (Audio Follow Video, HDMI1, HDMI2 and so on).

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, but only physically on the rear panel.

The Input tab (see Figure 45) lets you set the volume individually for each input, including the embedded (e) and analog (a) audio HDMI signals.
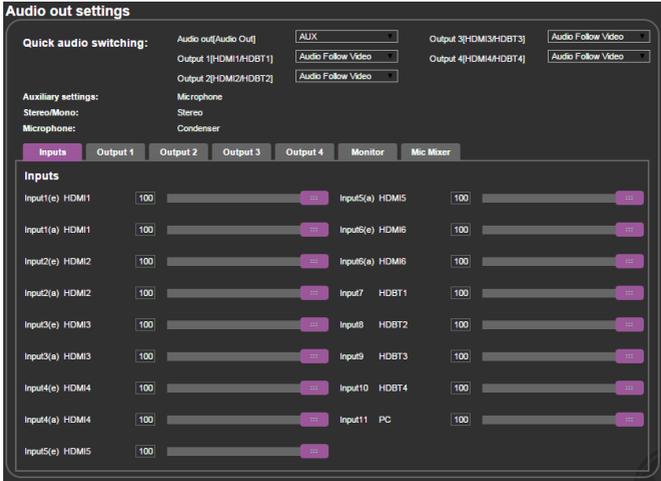
Figure 45: The Audio Settings Page – Inputs

Figure 46 shows the Output 1 (which is the same for outputs 2 to 4) equalizer settings, auxiliary, volume and hardstop (to limit the max volume level) settings. You can set the delay time, the audio bypass and the audio source to switch to the output (automatic, embedded or analog), see Section 6.3:
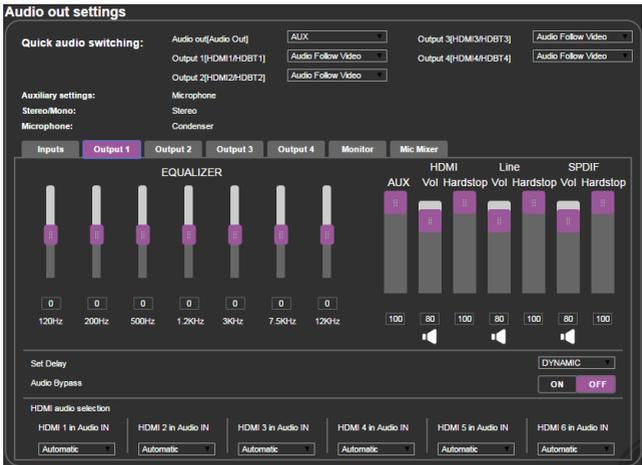
Figure 46: The Audio Settings Page – Output 1

[Figure 47](#) shows the Monitor output equalizer settings as well as the volume of the AUX volume level and the speaker, Monitor and S/PDIF hardstop and volume levels:

Figure 47: The Audio Settings Page – Monitor

The Mic Mixer tab ([Figure 48](#)) lets you set the microphone to the Mixer mode or the Talkover mode, or set it to OFF. Microphone gain and delays are set. For each output you can set the depth, attack trigger, hold and release times if the mode is set to Talkover and set the mix level (MIC/LINE) if set to mixer.
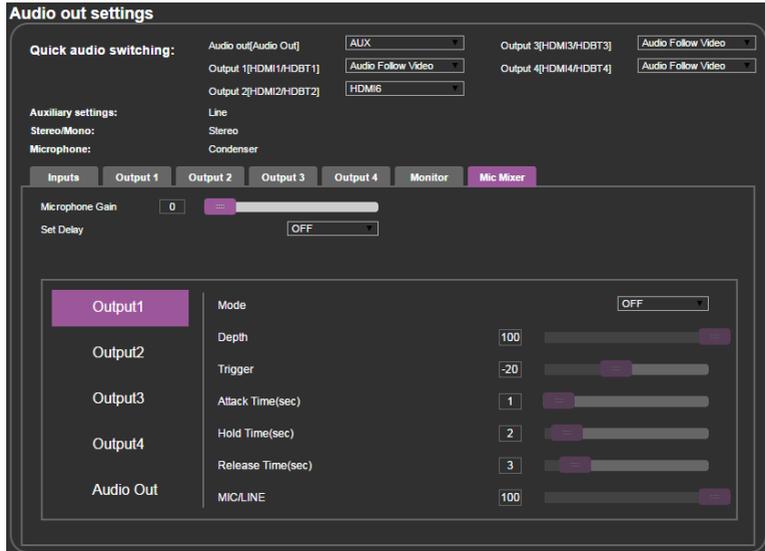
Figure 48: The Audio Settings Page – Mic Mixer

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.
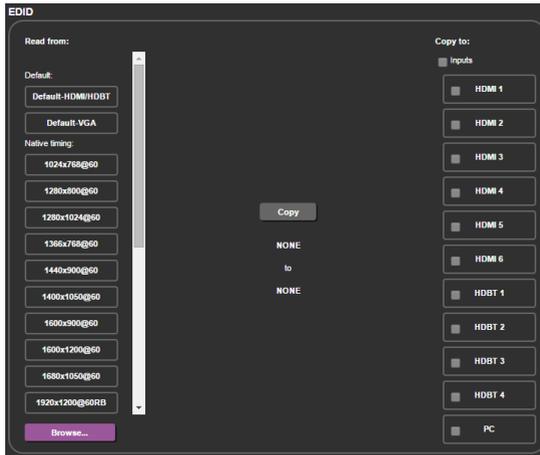
Figure 49: The EDID Page

Figure 50 shows how to select a resolution from the list and select one or more inputs. To copy, click the **Copy** button:
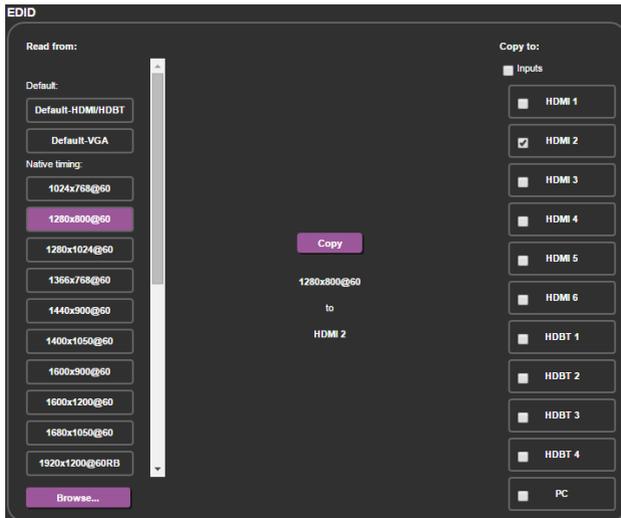
Figure 50: The EDID Page – Copying the Native Timing

[Figure 50](#) shows how to select one of the default resolutions from the list and select one or more inputs. To copy, click the **Copy** button:
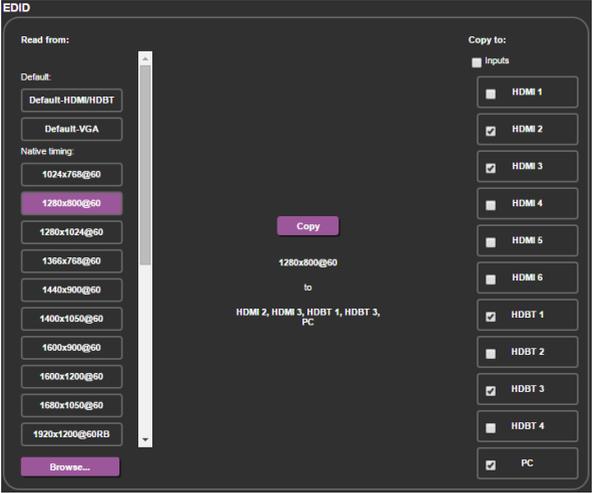
Figure 51: The EDID Page – Copying the Default

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:
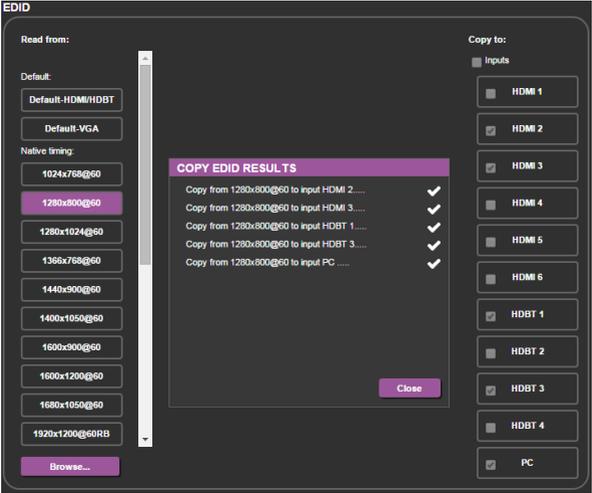
Figure 52: The EDID Page –The Copy EDID Results

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/SID-X3N).

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-General, you can transmit data from a controller connected via the connected SID-X2N/SID-X3N to the HDBaseT/HDMI input to which it is connected (see <u>Figure 53</u> for example)

<u>Figure 53</u> shows the Routing tab.

Data Routing
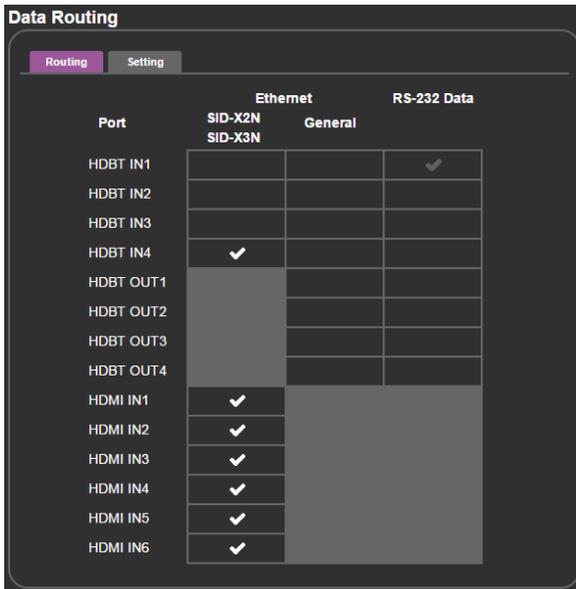
Port	Ethernet SID-X2N SID-X3N	Ethernet General	RS-232 Data
HDBT IN1			✔
HDBT IN2			
HDBT IN3			
HDBT IN4	✔		
HDBT OUT1			
HDBT OUT2			
HDBT OUT3			
HDBT OUT4			
HDMI IN1	✔		
HDMI IN2	✔		
HDMI IN3	✔		
HDMI IN4	✔		
HDMI IN5	✔		
HDMI IN6	✔		

Figure 53: The Data Routing Page –The Routing Tab

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shows the Setting tab.
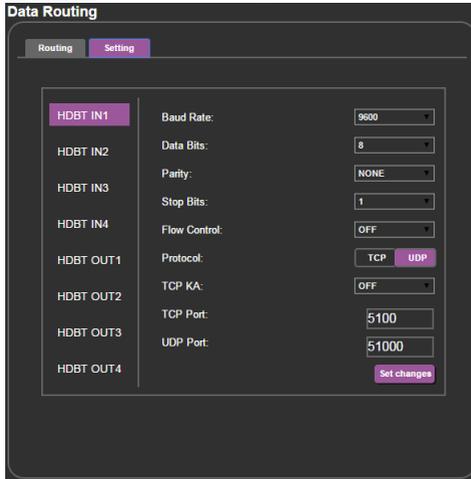
Figure 54: The Data Routing Page – The Setting Tab

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

- **Protocol**: TCP or UDP

- **TCP KA** (keep alive): on or off

- **TCP Port**: type the port number

- **UDP Port**: type the port number

If you check SID-X2N//SID-X3N, data passes between the **VP-558** and SID-X2N/SID-X3N.
If you check RS-232, data passes between the RS-232 Data port and **VP-558**. Note that you can check RS-232 and SID-X2N/SID-X3N 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 55 shows the Authentication page:
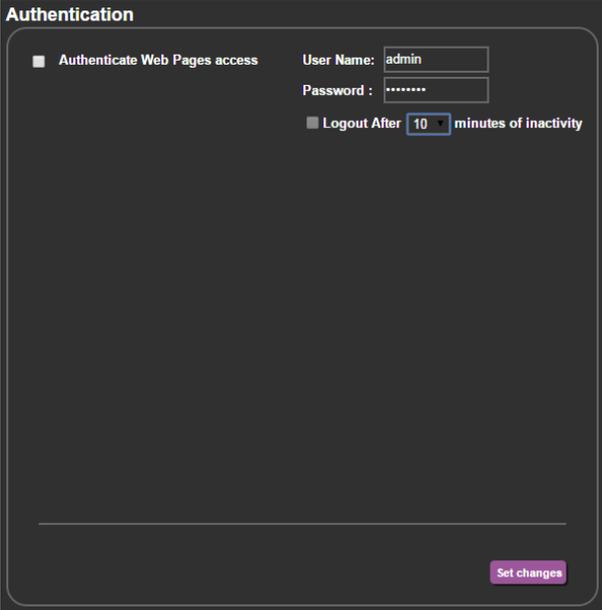
Figure 55: The Authentication Page

7.10 The About Page

The **VP-558** About page lets you view the Web page version and Kramer Electronics Ltd details.

Figure 56: The About Page

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7.11 Save or Upload a Configuration

The **VP-558** Web page lets you upload a saved configuration or save a configuration. To do so, click the Upload (see Figure 57) and Save buttons, respectively, which are located at the lower part of the menu list.

> The configuration is automatically saved to the Downloads folder and uploaded from it as well.

When saving a configuration, the file automatically saves it to the Downloads folder.
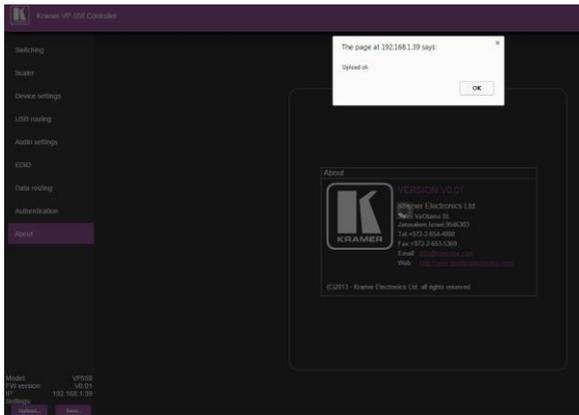
Figure 57: Loading a Configuration

8 Technical Specifications

INPUTS:	6 HDMI on HDMI connectors 1 VGA on a 15-pin HD connector 4 HDBT on RJ-45 connectors 4 USB ports 6 unbalanced analog audio on 3.5mm mini jacks for HDMI 1 unbalanced analog audio on a 3.5mm mini jack for PC 1 Aux in/Mic in balanced stereo audio on a 5-pin terminal block connector
OUTPUTS:	4 HDBT on RJ-45 connectors 4 HDMI on HDMI connectors 1 USB port 4 audio out balanced stereo on 5-pin terminal block connectors 4 audio out S/PDIF on RCA connectors Monitor out balanced stereo on a 5-pin terminal block connector Monitor out S/PDIF on an RCA connector 1 stereo speaker output, 2x10W into 4Ω, on a 4−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:	HDMI 1, HDMI 2, HDMI 3, HDMI 4, HDMI 5, HDMI 6, HDBT 1, HDBT 2, HDBT 3, HDBT 4, PC, USB 1, USB 2, USB 3, USB 4 input selector buttons; menu, enter, menu arrows, reset to XGA/720p, OSD SELECT, 2 RS-232, Ethernet, line/mic selector switch, cond/dyn (48V) selector switch, mono/stereo selector switch, REM for muting audio
POWER CONSUMPTION:	100-240V AC, 75VA 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 14.4" x 2U (W, D, H) rack mountable
WEIGHT:	5kg (11lbs) approx.
INCLUDED ACCESSORIES:	Power cord, rack ears
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:	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 1,1,3<cr>
Ethernet	
To reset the IP settings to the factory reset values go to: Menu-> Factory-> RESET ALL->Change the option to YES and press Enter (to complete the reset process you need to turn the power off and then on again)	
IP Address:	192.168.1.39
Subnet mask:	255.255.255.0
Default gateway:	192.168.1.254
TCP Port #:	5000
Default UDP Port #:	50000
Maximum UDP/TCP Ports:	4
Full Factory Reset	
OSD	Go to: Menu-> Factory-> RESET-ALL/RESET SCALER>Change the option to YES and press Enter (to complete the reset process you need to turn the power off and then on again)

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

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9 The VP-558 RS-232 Communication Protocol

The **VP-558** 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 alphanumeric ASCII characters ('0'-'9','A'-'Z','a'-'z' and some special characters for specific commands). Parameters are separated by commas.

Message string

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

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

Message starting character

'#' – For host command/query

'~' – For machine response

Device address (Optional, for K-NET)

K-NET Device ID followed by '@'

Query sign

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

Message closing character

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

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

Command chain separator character

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

Spaces between parameters or command terms are ignored.

9.1.4 Entering Commands

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

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

9.1.5 Command Forms

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

9.1.6 Command Chaining

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

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

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

9.1.7 Maximum String Length

64 characters

9.2 Kramer Protocol 3000 – Command List

Command	Short Form	Description
#		Protocol handshaking
#HELP		List of commands
#BUILD-DATE?		Read device build date
#FACTORY		Reset to factory default configuration
#MODEL?		Read device model
#PROT-VER?		Read device protocol version
#SN?		Get device serial number
#PRST-STO		Store current connections, volumes and modes in preset
#PRST-RCL		Recall saved preset list
#INFO-PRST?		Get maximum preset count
#PRST-LST		Get saved preset list
#RESET		Reset device
#VERSION?		Read device firmware version
#NAME		Set the name
#NAME?		Display the name
#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 Static/DHCP mode
#NET-DHCP?	NTDH?	Get Static/DHCP mode
#PROG-ACTION		Set step-in button action bitmap
#CPEDID		Copy output EDID to input
#LDEDID		Write EDID data from external application to device inputs
#GEDID		Display the EDID numbers and contents
#GEDID?		Display EDID number
#SIGNAL?		Get input signal lock status
#DISPLAY?		Get the output status
#LOCK-FP	LCK	Lock front panel
#LOCK-FP?	LCK?	Display the key lock status
#HDCP-MOD		Set HDCP
#HDCP-MOD?		Display the HDCP status
#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)
#VID-RES		Set output resolution
#VID-RES?		Get input/output resolution

Command	Short Form	Description
#VMUTE		Set video blank
#VMUTE?		Enable / disable video on output
#VFRZ		Set video freeze
#VFRZ?		Display video 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		Run PC auto
#SCLR-AUDIO-DELAY		Set audio delay
#SCLR-AUDIO-DELAY?		Display the audio delay value
#EQ-LVL		Set EQ
#EQ-LVL?		Display EQ
#MIC-GAIN		Set Mic volume
#MIC-GAIN?		Display Mic volume
#TLK		Set audio talkover mode status
#TLK?		Get audio talkover mode status
#ECHO		Set echoing
#ECHO?		Get echoing
#DPSW-STATUS?		Display switch status
#ETH-PORT UDP		Set UDP port
#ETH-PORT? UDP		Display UDP port
#ETH-PORT TCP		Set TCP port
#ETH-PORT? TCP		Display TCP port
#HDCP-STAT?		Display HDCP status
#VOLUME		Set global volume (+1 or -1)
#STANDBY		Set Standby mode
#STANDBY?		Get Standby mode status
#SHOW-OSD		Set the OSD of selected channel

9.3 Kramer Protocol 3000 – Detailed Commands

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

9.3.1 Port Number Key

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

Audio input	#
HDMI 1 embedded	1:1
HDMI 1 analog	1:2
HDMI 2 embedded	2:1
HDMI 2 analog	2:2
HDMI 3 embedded	3:1
HDMI 3 analog	3:2
HDMI 4 embedded	4:1
HDMI 4 analog	4:2
HDMI 5 embedded	5:1
HDMI 5 analog	5:2
HDMI 6 embedded	6:1
HDMI 6 analog	6:2
HDBT1	7
HDBT2	8
HDBT3	9
HDBT4	10
PC	11

Audio Output	#
Speaker out	0:0
Audio out line	0:1
Audio out SPDIF	0:2
Output1 HDMI	1:0
Output1 line	1:1
Output1 SPDIF	1:2
Output2 HDMI	2:0
Output2 line	2:1
Output2 SPDIF	2:2
Output3 HDMI	3:0
Output3 line	3:1
Output3 SPDIF	3:2
Output4 HDMI	4:0
Output4 line	4:1
Output4 SPDIF	4:2

Video Output	#
HDMI 1	1
HDBT 1	2
HDMI 2	3
HDBT 2	4
HDMI 3	5
HDBT 3	6
HDMI 4	7
HDBT 4	8

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

9.3.2   The Input Resolutions Key

#	Resolution	#	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   The Output Resolutions Key

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

9.3.4   ROUTE Command Options Key

Description	P1: Value + Definition	P2: Value + Definition	P3: Value + Definition
Set/display video source	Value=1	Value=1~4	Value=1~11
	Video	1:Output1 2:Output2 3:Output3 4:Output4	1: HDMI1 2: HDMI2 3: HDMI3 4: HDMI4 5: HDMI5 6: HDMI6 7: HDBT1 8: HDBT2 9: HDBT3 10: HDBT4 11: PC
SID-X2N mode – set video source (set SID-X2N source at the same time)	Value=1	Value=0~5	Value=(7~10):(1~4)

	Video	0: no change
		(same VP-558
		video source)
		1: Output1
		2: Output2
		3: Output3
		4: Output4
		5: All outputs (1~4)
			7:1: HDBT1
			      (SID-X2N: select HDMI)
			7:2: HDBT1
			      (SID-X2N: select DP)
			7:3: HDBT1
			      (SID-X2N: select DVI)
			7:4: HDBT1
			      (SID-X2N: select PC)
			8:1: HDBT2
			      (SID-X2N select HDMI)
			8:2: HDBT2
			      (SID-X2N select DP)
			8:3: HDBT2
			      (SID-X2N: select DVI)
			8:4: HDBT2
			      (SID-X2N: select PC)
			9:1: HDBT3
			      (SID-X2N: select HDMI)
			9:2: HDBT3
			      (SID-X2N: select DP)
			9:3: HDBT3
			      (SID-X2N: select DVI)
			9:4: HDBT3
			      ((SID-X2N: select PC)
			10:1: HDBT4
			      (SID-X2N: select HDMI)
			10:2: HDBT4
			      (SID-X2N: select DP)
			10:3: HDBT4
			      (SID-X2N: select DVI)
			10:4: HDBT4
			      (SID-X2N: select PC)

SID-X3N mode – set video source (set SID-X3N source at the same time)	Value=1	Value=0~5	Value=(1~6):(1~4)

	Video	0:no change
		(same VP-558
		video source)
		1:Output1
		2:Output2
		3:Output3
		4:Output4
		5: All outputs (1~4)
			1:1: HDMI1
			      (SID-X3N: select HDMI)
			1:2: HDMI1
			      (SID-X3N: select DP)
			1:3: HDMI1
			      (SID-X3N: select DVI)
			1:4: HDMI1
			      (SID-X3N: select PC)
			2:1: HDMI2
			      (SID-X3N: select HDMI)
			2:2: HDMI2
			      (SID-X3N: select DP)
			2:3: HDMI2

Description	P1: Value + Definition	P2: Value + Definition	P3: Value + Definition

			(SID-X3N: select DVI)
			2:4: HDMI2
			    (SID-X3N: select PC)
			3:1: HDMI3
			    (SID-X3N: select HDMI)
			3:2: HDMI3
			    (SID-X3N: select DP)
			3:3: HDMI3
			    (SID-X3N: select DVI)
			3:4: HDMI3
			    (SID-X3N: select PC)
			4:1: HDMI4
			    (SID-X3N: select HDMI)
			4:2: HDMI4
			    (SID-X3N: select DP)
			4:3: HDMI4
			    (SID-X3N: select DVI)
			4:4: HDMI4
			    (SID-X3N: select PC)
			5:1: HDMI5
			    (SID-X3N: select HDMI)
			5:2:HDMI5
			    (SID-X3N: select DP)
			5:3: HDMI5
			    (SID-X3N: select DVI)
			5:4: HDMI5
			    (SID-X3N: select PC)
			6:1: HDMI6
			    (SID-X3N: select HDMI)
			6:2: HDMI6
			    (SID-X3N: select DP)
			6:3: HDMI6
			    (SID-X3N: select DVI)
			6:4: HDMI6
			    (SID-X3N: select PC)

Set/display audio source	Value=2	Value=0~4	Value=1~16
	Audio	0: Audio Out	1: HDMI1 2: HDMI2 3: HDMI3 4: HDMI4 5: HDMI5 6: HDMI6 7: HDBT1 8: HDBT2 9: HDBT3 10: HDBT4 11: PC 12: AUX 13: Audio follows OUTPUT1 14: Audio follows OUTPUT2 15: Audio follows OUTPUT3 16: Audio follows OUTPUT4
		0: Audio Out 1: Output1 2: Output2 3: Output3 4: Output4	1: HDMI1 2: HDMI2 3: HDMI3 4: HDMI4 5: HDMI5 6: HDMI6 7: HDBT1 8: HDBT2 9: HDBT3 10: HDBT4

Description	P1: Value + Definition	P2: Value + Definition	P3: Value + Definition	
			11: PC 12: AUX	
Set/display audio source: embedded or analog	Value=2	Value=0~4	Value=(1~6):(1~2)	
	Audio	0:Audio Out 1:Output1 2:Output2 3:Output3 4:Output4	1:1: HDMI1 Embedded 1:2: HDMI1 Analog 2:1: HDMI2 Embedded 2:2: HDMI2 Analog 3:1: HDMI3 Embedded 3:2: HDMI3 Analog 4:1: HDMI4 Embedded 4:2: HDMI4 Analog 5:1: HDMI5 Embedded 5:2: HDMI5 Analog 6:1: HDMI6 Embedded 6:2: HDMI6 Analog	
Set/display 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=1~10/12~15	
	Serial data	0: none	1: HDMI1 2: HDMI2 3: HDMI3 4: HDMI4 5: HDMI5 6: HDMI6 7: HDBT1 8: HDBT2 9: HDBT3 10: HDBT4 12: HDBT Out1 13: HDBT Out2 14: HDBT Out3 15: HDBT Out4	
Set serial data	Value=4	Value=1	Value=7~10/12~15	
	Serial data	1:Eth_Gen	7: HDBT1 8: HDBT2 9: HDBT3 10: HDBT4	12: HDBT Out1 13: HDBT Out2 14: HDBT Out3 15: HDBT Out4
Set serial data	Value=4	Value=2	Value=7~10/12~15	
	Serial data	2:RS-232	7: HDBT1 8: HDBT2 9: HDBT3 10: HDBT4	12: HDBT Out1 13: HDBT Out2 14: HDBT Out3 15: HDBT Out4
Set serial data	Value=4	Value=3	Value=1~10	
	Serial data	3: SID-X2N/ SID-X3N	1: HDMI1 2: HDMI2 3: HDMI3 4: HDMI4 5: HDMI5	6: HDMI6 7: HDBT1 8: HDBT2 9: HDBT3 10: HDBT4
Set video + audio source	Value=12	Value=1~4	Value=1~11	
	Video+audio	1: Output1 2: Output2 3: Output3 4: Output4	1: HDMI1 2: HDMI2 3: HDMI3 4: HDMI4 5: HDMI5 6: HDMI6	7: HDBT1 8: HDBT2 9: HDBT3 10: HDBT4 11: PC

Description	P1: Value + Definition	P2: Value + Definition	P3: Value + Definition	
Set video + audio source – set embedded or analog	Value=12 Video+audio	Value=1~4 1: Output1 2: Output2 3: Output3 4: Output4	Value=(1~6):(1~2) 1:1: HDMI1 Embedded 1:2: HDMI1 Analog 2:1: HDMI2 Embedded 2:2: HDMI2 Analog 3:1: HDMI3 Embedded 3:2: HDMI3 Analog 4:1: HDMI4 Embedded 4:2: HDMI4 Analog 5:1: HDMI5 Embedded 5:2: HDMI5 Analog 6:1: HDMI6 Embedded 6:2: HDMI6 Analog	
Set video source – set USB to "tie to input	Value=13 Video+USB	Value=1 Output1	Value=1~11 1: HDMI1 2: HDMI2 3: HDMI3 4: HDMI4 5: HDMI5 6: HDMI6	7: HDBT1 8: HDBT2 9: HDBT3 10: HDBT4 11: PC
Set video+audio source – set USB to "tie to input"	Value=123 video+audio+USB	Value=1 Output1	Value=1~11 1: HDMI1 2: HDMI2 3: HDMI3 4: HDMI4 5: HDMI5 6: HDMI6	7: HDBT1 8: HDBT2 9: HDBT3 10: HDBT4 11: PC
Set video+audio source set Embedded or Analog also set USB to "tie to input" also.	Value=123 video+audio+USB	Value=1 Output1	Value=(1~6):(1~2) 1:1: HDMI1 Embedded 1:2: HDMI1 Analog 2:1: HDMI2 Embedded 2:2: HDMI2 Analog 3:1: HDMI3 Embedded 3:2: HDMI3 Analog 4:1: HDMI4 Embedded 4:2: HDMI4 Analog 5:1: HDMI5 Embedded 5:2: HDMI5 Analog 6:1:HDMI6 Embedded 6:2:HDMI6 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**`SP`command_name`CR`	
Response			
1. Multi-line: ~`nn`@**Device available protocol 3000 commands :** `CR LF` command,`SP`command… `CR LF` **To get help for command use: HELP (COMMAND_NAME)** `CR LF` 2. Multi-line: ~`nn`@**HELP**`SP`command`:``CR LF` description`CR LF`**USAGE:** usage `CR LF`			

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

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

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

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

Command - **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 - **PRST-STO**		Command Type - System	
Command Name		**Permission**	**Transparency**
Set:	**PRST-STO**	End User	Public
Get:	**-**	-	-
Description		**Syntax**	
Set:	Store current connections, volumes and modes in preset	#**PRST-STO**[SP]*preset*[CR]	
Get:	-	-	
Response			
~[nn]@**PRST-STO**[SP] *preset*[CR LF]			
Parameters			
preset - preset number=1			
Notes			
In most units, video and audio presets with the same number are stored and recalled together by commands #PRST-STO and #PRST-RCL			

Command - **PRST-RCL**		Command Type - System	
Command Name		**Permission**	**Transparency**
Set:	**PRST-RCL**	End User	Public
Get:	**-**	-	-
Description		**Syntax**	
Set:	Recall saved preset list	#**PRST-RCL**[SP]*preset*[CR]	
Get:	-	-	
Response			
~[nn]@**PRST-RCL**[SP]*preset*[CR LF]			
Parameters			
preset - preset number=1			
Notes			
In most units, video and audio presets with the same number are stored and recalled together by commands #PRST-STO and #PRST-RCL			

Command - **INFO-PRST**		Command Type - System	
Command Name		**Permission**	**Transparency**
Set:	**-**	-	-
Get:	**INFO-PRST**	End User	Public
Description		**Syntax**	
Set:	-	-	
Get:	Get maximum preset count	#**INFO-PRST**[CR]	
Response			
~[nn]@**INFO-PRST**[SP]VID[SP]*preset_video_count*, AUD[SP]*preset_audio_count*[CR LF]			
Parameters			
preset_video_count - maximum number of video presets in the unit *preset_audio_count* - maximum number of audio presets in the unit			
Notes			
In most units, video and audio presets with the same number are stored and recalled together by commands #PRST-STO and #PRST-RCL			

Command - **PRST-LST?**		Command Type - System	
Command Name		**Permission**	**Transparency**
Set:	**-**	-	-
Get:	**PRST-LST?**	End User	Public
Description		**Syntax**	
Set:	-	-	
Get:	Get saved preset list	#**PRST-LST?**[CR]	
Response			
~[nn]@**PRST-LST**[SP]*preset,preset, …* [CR LF]			
Parameters			
preset - preset number			
Notes			
In most units, video and audio presets with the same number are stored and recalled together by commands #PRST-STO and #PRST-RCL			

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 –**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 - **NAME**		Command Type - System (Ethernet)	
Command Name		**Permission**	**Transparency**
Set:	**NAME**	Administrator	Public
Get:	**NAME?**	End User	Public
Description		**Syntax**	
Set:	Set machine (DNS) name	#**NAME**[SP]machine_name[CR]	
Get:	Get machine (DNS) name	#**NAME?**[CR]	
Response			
Set: ~[nn]@**NAME**[SP]machine_name[CR LF]			
Get: ~[nn]@**NAME?**[SP]machine_name[CR LF]			
Parameters			
machine_name - String of up to 14 alpha-numeric chars (can include hyphen, not at the beginning or end)			
Notes			
The machine name is not the same as the model name. The machine name is used to identify a specific machine or a network in use (with DNS feature on)			

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 gate number)=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] *ip_address* [CR LF]			
Parameters			
P1 (valid mask number)=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 – **PROG-ACTION**		Command Type – Communication	
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* – 1~10: see Video Input, Section 9.3.1 *button_id* - 1 *actions_bitmap* – 0x00=ALL OFF, 0x01=OUT1, 0x02=OUT2, 0x04=OUT3, 0x08=OUT4, 0x10=AUDIO OUT			
Notes			
Programs matrix action as a response for external event (programmable button pressed) When outputs are chosen simultaneously, for example, OUT1+OUT2+OUT3, then 0x07 should be as parameter. (0x01+0x02+0x04=0x07)			

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) – see Section 9.3.1, Video Output P3 (destination type) – 0=input P4 (bitmap representing destination IDs) – 1=HDMI1; 2=HDMI2; 4=HDMI3; 8=HDMI4; 16=HDMI5; 32=HDMI6; 64=HDBT1; 128=HDBT2; 256=HDBT3; 512=HDMI4 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			
If different inputs are chosen, for example, HDMI1+HDMI6+HDBT1, then 61 should be set as parameter (1+32+64=97=0x61)			

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 9.3.6)

dest_bitmask	size	dest_bitmask	size
0x01=HDMI1	256	0x40=HDBT1	256
0x02=HDMI2	256	0x80=HDBT2	256
0x04=HDMI3	256	0x100=HDBT3	256
0x08=HDMI4	256	0x200=HDBT4	256
0x10=HDMI5	256	0x01=PC	128
0x20=HDMI6	256		

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.

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Command - **GEDID**		Command Type - EDID Handling	
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, P3[CR]	
Get:	Get EDID support on certain input/output	#**GEDID?**[SP]P1, P2[CR]	
Response			
Set: Multi-line response: ~[nn]@**GEDID**[SP]P1,P2[CR LF] EDID_data[CR LF] Get: ~[nn]@**GEDID**[SP]P1,P2,P3 [CR LF] ~[nn]@**GEDID**[SP]P1, P2[SP]**OK** [CR LF]			
Parameters			
P1 – 0=Input, 1=Output P2– If P1=0, Video Input = (1~11) see Section 9.3.1; if P1=1, Video Output=(1~8) see Section 9.3.1 P3 (EDID number) – 0/128/256			
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 – **SIGNAL**		Command Type - System	
Command Name		**Permission**	**Transparency**
Set:	-	-	-
Get	**SIGNAL?**	End User	Public
Description		**Syntax**	
Set:	-	-	
Get:	Display if there is an input	#**SIGNAL?** [SP]P1[CR]	
Response			
~ [nn]@**SIGNAL** [SP] P1,P2 [CR LF]			
Parameters			
P1 (Input number)– (1~10) see Section 9.3.1, P2 – 0=not valid; 1=valid			
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:	Display the output	**#DISPLAY?** `SP` P1 `CR`	
Response			
~ `nn` @**DISPLAY** `SP` P1,P2 `CR LF`			
Parameters			
P1 (Output number) – see Section 9.3.1, Video Output P2 – 0=not valid; 1=valid; 2=valid and EDID OK			
Response triggers			
After execution, response is sent to the com port from which the Get was received Response is sent after every change in output HPD status ON to OFF Response is sent after every change in output HPD status OFF to ON and ALL parameters (new EDID, etc.) are stable and valid			

Command – **LOCK-FP**		Command Type – System	
Command Name		**Permission**	**Transparency**
Set:	**LOCK-FP**	End User	-
Get:	**LOCK-FP?**	End User	-
Description		**Syntax**	
Set:	Lock front panel	**#LOCK-FP** `SP` P1 `CR`	
Get:	Get front panel lock state	**#LOCK-FP?** `CR`	
Response			
`nn` @**LOCK-FP** `SP` P1 `SP` **OK** `CR LF`			
Parameters			
P1 (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) – if P1=0 – see Section 9.3.1, Video input (except for 11=PC); if P1=1 – 1=Output1, 2=Output2, 3=Output3, 4=Output4 P3 (Status) – if P1=0 – 0=Off, 1=On; if P1=1 – 2=Follow In, 3=Follow Out			
Response triggers			
Response is sent to the com port from which the Set (before execution) / Get command was received Response is sent to all com ports after execution if HDCP-MOD was set any other external control device (button press, device menu and similar) or genlock status changed			
Notes			
Set HDCP working mode **on device input**: HDCP supported – HDCP_ON [default] HDCP not supported – HDCP OFF HDCP support changes following detected sink – MIRROR OUTPUT			

Command – **VID-RES**		Command Type - Video	
Command Name		**Permission**	**Transparency**
Set:	**VID-RES**	End User	Public
Get	**VID-RES?**	End User	Public
Description		**Syntax**	
Set:	Set video resolution	#**VID-RES** `SP` P1,P2,P3,P4 `CR`	
Get:	Get video resolution	#**VID-RES?** `SP` P1,P2,P3 `CR`	
Response			
~ `nn`@**VID-RES** `SP` P1,P2,P3,P4 `CR LF`			
Parameters			
P1 – 0=Input; 1=Output P2 – 1=Output1, 2=Output2, 3=Output3, 4=Output4 P3 – 0 P4 - video resolutions see Section 9.3.2 and Section 9.3.3			
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=Output1, 2=Output2, 3=Output3, 4=Output4 P2 (Off/On) – 0=Off; 1=On			

Command - **VFRZ**		Command Type - Multiviewer	
Command Name		**Permission**	**Transparency**
Set:	**VFRZ**	End User	Public
Get	**VFRZ?**	End User	Public
Description		**Syntax**	
Set:	Set freeze on selected output	#**VFRZ** `SP` *P1,P2* `CR`	
Get:	Get output freeze status	#**VFRZ?** `SP` *P1* `CR`	
Response			
~ `nn` @**VFRZ** `SP` *P1, P2* `CR LF`			
Parameters			
P1 (output number) – 1=Output1, 2=Output2, 3=Output3, 4=Output4 P2 (Off/On) – 0=Off; 1=On			
Response Triggers			
After execution, response is sent to the com port from which the Set/Get was received After execution, response is sent to all com ports if VFRZ was set by any other external control device (button press, device menu and similar)			

Command – **AUD-LVL**		Command Type – Audio	
Command Name		**Permission**	**Transparency**
Set:	**AUD-LVL**	End User	-
Get:	**AUD-LVL?**	End User	-
Description		**Syntax**	
Set:	Set audio level in specific amplifier stage	#**AUD-LVL** `SP` P1,P2,P3 `CR`	
Get:	Get audio level in specific amplifier stage	#**AUD-LVL?** `SP` P1,P2 `CR`	
Response			
~`nn`@**AUD-LVL** `SP` P1,P2 `CR LF`			
Parameters			
P1 (Input/Output)– 0=Input; 1=Output P2 (Input/Output number valid according to the selected Input/Output according to P1) – audio inputs=(1:1~11); audio inputs=(0:0~4:2); (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] P1,P2 [CR LF]			
Parameters			
P1 (Output number) – 0=Audio out; 1=Output1; 2=Output2; 3=Output3; 4=Output4 P2 (Off/On)– 0=Off; 1=On			

Command – **Mixing Level**		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=Output1; 2=Output2; 3=Output3; 4=Output4 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 – audio outputs=(0:0~4:2); (see Section 9.3.1) 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 – **SCLR-AS**		Command Type – Multiviewer/Scaler	
Command Name		**Permission**	**Transparency**
Set:	**SCLR-AS**	End User	Public
Get:	**SCLR-AS?**	End User	Public
Description		**Syntax**	
Set:	Set auto-sync features	# **SCLR-AS** `SP` *P1,P2* `CR`	
Get:	Get auto-sync features	# **SCLR-AS?** `SP` *P1* `CR`	
Response			
Set / Get: ~ `nn` @ **SCLR-AS** `SP` *P1,P2….* `CR LF`			
Parameters			
P1 (Output number) –1=Output1; 2=Output2; 3=Output3; 4=Output4 P2 – 0=off; 1=on			
Response triggers			
The auto-sync feature determines whether the outputs are turned off when no video is detected on the selected input			
Notes			
Sets the auto sync features for the selected scaler			

Command – **Image Proportions**		Command Type – [Video]	
Command Name		**Permission**	**Transparency**
Set:	**IMAGE-PROP**	End User	Public
Get:	**IMAGE-PROP?**	End User	Public
Description		**Syntax**	
Set:	Set the image size	# **IMAGE-PROP** `SP` P1 `CR`	
Get:	Get the image size	# **IMAGE-PROP?** `SP` P1,…,P6 `CR`	
Response			
Set / Get: ~ `nn` @ **IMAGE-PROP** `SP` *P1,P2….* `CR LF`			
Parameters			
P1 (Output number) – 1=Output1; 2=Output2; 3=Output3; 4=Output4 P2 (Status) – 0=Over Scan; 1=Full; 2=Best Fit; 3=PanScan; 3=Letter Box; 5=Under 2; 6=Under 1; 7=Follow In			
Response triggers			
Response is sent to the com port from which the **Set** (before execution) **/ Get** command was received After execution, response is sent to all com ports if CMD-NAME was set any other external control device (button press, device menu and similar) or genlock status was changed			
Notes			
Sets the image properties of the selected scaler			

Command – **PC Auto Sync**		Command Type – [Video]	
Command Name		**Permission**	**Transparency**
Set:	**SCLR-PCAUTO**	End User	Public
Get:		End User	Public
Description		**Syntax**	
Set:	Set 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 (Output number) – 1=Output1; 2=Output2; 3=Output3; 4=Output4 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=Output1; 2=Output2; 3=Output3; 4=Output4 P2 (Level selection) – 0=Off; 1 to8=10ms to80ms in 10ms steps; 9=Dynamic			
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 – **Equalization Level**		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=Output1; 2=Output2; 3=Output3; 4=Output4 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 (1=0.5dB increase)			
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 – **Microphone Gain**		Command Type – [Audio]	
Command Name		**Permission**	**Transparency**
Set:	**MIC-GAIN**	End User	Public
Get:	**MIC-GAIN?**	End User	Public
Description		**Syntax**	
Set:	Set the microphone gain	# **MIC-GAIN** `SP` P1,P2 `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) – 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 – **TLK**		Command Type – [Audio]	
Command Name		**Permission**	**Transparency**
Set:	**TLK**	End User	Public
Get:	**TLK?**	End User	Public
Description		**Syntax**	
Set:	Set audio talkover mode status	#**TLK**`SP`P1,P2 `CR`	
Get:	Get audio talkover mode status	# **TLK?** `SP` P1 `CR`	
Response			
Set / Get: ~ `nn` @ **TLK**`SP` *P1,P2* `CR` `LF`			
Parameters			
P1 (channel) – 1 P2 (talkover_mode) – 0 (Off), 1 (Mixer), 2 (talkover), 3 (Mic)			

Command – **ECHO**		Command Type – [Audio]	
Command Name		**Permission**	**Transparency**
Set:	**ECHO**	End User	Public
Get:	**ECHO?**	End User	Public
Description		**Syntax**	
Set:	Set echoing status	#**ECHO** `SP` P1 `CR`	
Get:	Get echoing status	#**ECHO?** `SP CR`	
Response			
Set / Get: ~ `nn` @**ECHO** `SP` *P1* `CR LF`			
Parameters			
P1 (echo) – 0 (Off), 1 (On)			

Command – **DIP switch 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 (DIP-switches) – 0=MIC; 1=phantom power; 2=stereo 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** ꜱᴘ *portType, ETHPort* ᴄʀ	
Get:	Get Ethernet port protocol	#**ETH-PORT?** ꜱᴘ *portType* ᴄʀ	
Response			
~nn @ **ETH-PORT** ꜱᴘ *portType, ETHPort* ᴄʀ ʟꜰ			
Parameters			
portType - TCP/UDP *ETHPort* – TCP=5000-5099; UDP=50000-50999			

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?** ꜱᴘ *P1,P2,P3* ᴄʀ	
Response			
Set / Get: ~ nn @ **HDCP-STAT** ꜱᴘ *P1,P2,P3* ᴄʀ ʟꜰ			
Parameters			
P1 (Input/Output) – 0=Input; 1=Output P2 – if P1=0 – see Section 9.3.1, Video input (except for 11=PC); if P1=1 – 1=Output1, 2=Output2, 3=Output3, 4=Output4 P3 (Status) –0=Off, 1=On			
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 – **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; 1= 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			

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 – **SHOW-OSD**		Command Type – Multiviewer/Scaler	
Command Name		**Permission**	**Transparency**
Set:	**SHOW-OSD**	End User	Public
Get:	**SHOW-OSD?**	End User	Public
Description		**Syntax**	
Set:	Set the OSD of selected channel	# **SHOW-OSD** SP *id,switch* CR	
Get:	Get the OSD of selected channel	# **SHOW-OSD?** SP CR	
Response			
~ nn @**SHOW-OSD** SP *id,switch* CR LF			
Parameters			
id – channel number 1=output 1, 2=output 2, 3=output 3, 4=output 4 *switch* - On/Off – 0=off, 1=on, 2=info			
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 SHOW-OSD was set any other external control device (button press, device menu and similar) or genlock status was changed			

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

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