KRAMER

USER MANUAL

MODEL:

WP-20

Wall Plate

P/N: 2900-300386 Rev 3

Scan for full manual

WP-20 Quick Start Guide

This guide helps you install and use your **WP-20** for the first time.

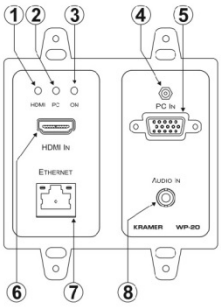
Go to **www.kramerav.com/downloads/WP-20** to download the latest user manual and check if firmware upgrades are available.

Step 1: Check what's in the box

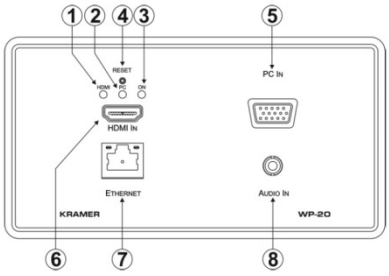
- **WP-20** Wall plate
- 1 Power supply (12V DC)
- 1 Quick start guide

Step 2: Get to know your WP-20

US Version

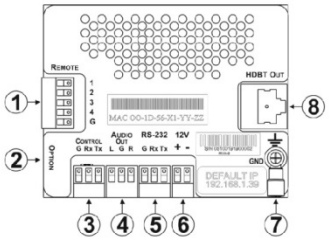


EU / UK Version

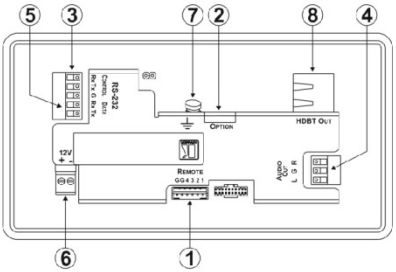


#	Feature	Function
1	*HDMI* LED	When HDMI is selected: Lights orange when external audio is selected. Lights green when embedded audio is selected. LED is off when HDMI is not selected.
2	*PC* Graphics LED	When PC input is selected: Lights orange when external audio is selected. Lights green when there is no audio. LED is off when the PC input is not selected
3	*ON* LED	The LED indicates the following: Lights green – power is provided by a power adapter. Lights orange – power is provided by PoE.
4	*RESET* Button	Short press to reset the device. Long press (5 seconds) to reset the device to factory default parameters.
5	*PC IN* Input Connector	Connect to the PC graphics source (for example, a laptop).
6	*HDMI IN* Input Connector	Connect to an HDMI source (for example, a Blu-ray disk player).
7	*ETHERNET* RJ-45 Connector	Connect to the Ethernet LAN.
8	*AUDIO IN* 3.5mm Mini Jack	Connect to the unbalanced, stereo audio source (for example, the audio output of the laptop).

US Version



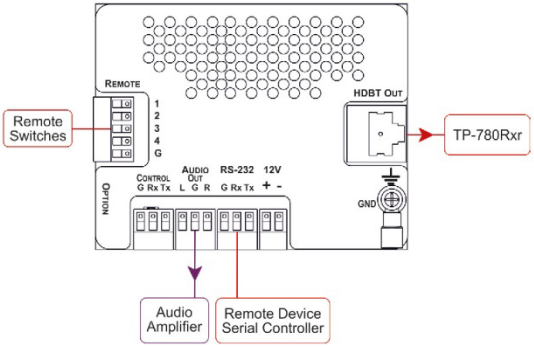
EU / UK Version



#	Feature	Function
1	*REMOTE* 5-pin Terminal Block	Connect to the remote, contact-closure switches for remote control (see Step 8).
2	*OPTION* 4-way DIP-switch	Switches for setting the device behavior (see Step 4).
3	*CONTROL* 3-pin Terminal Block	Connect to the serial controller to control the **WP-20** (for example, a PC).
4	*AUDIO OUT* 3-pin Terminal Block	Connect to the unbalanced, stereo audio acceptor (for example, amplified speakers).
5	*RS-232* 3-pin Terminal Block	Connect to the PC to transfer data via RS-232 (for example, a serial controller for a remote device).
6	*12V* DC Connector	Connect to the included power supply. Not needed on the **WP-20** if there is a PoE provider over HDBaseT.
7	*GND* Terminal	Connect to the common ground (optional).
8	*HDBT OUT* RJ-45 TP Connector	Connect to a compatible HDBT TP switcher or receiver (for example, the TP-780Rxr).

Step 3: Connect the inputs

Always switch OFF the power on each device before connecting it to your **WP-20**.
For best results, we recommend that you always use Kramer high-performance cables to connect AV equipment to the **WP-20**.



RJ-45 Pinout:
For the Ethernet connector, see the wiring diagram below.

PIN 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

Step 4: Set the DIP switches

Video Switching Selection

DIP-switch 1	DIP-switch 2	Video Input Selection
Off	Off	Automatic – Last connected. Where more than one source is connected, the last source has priority.
Off	On	Automatic – Priority selection. HDMI 1 → PC IN.
On	Off	Manual
On	On	Manual

Audio Switching Selection

DIP-switch 3	DIP-switch 4	Audio Input Selection
Off	Off	Automatic – Priority selection. Embedded HDMI → analog Audio In.
Off	On	Automatic – Priority selection. Analog Audio In → embedded HDMI.
On	Off	Embedded HDMI
On	On	Analog Audio In

Step 5: Connect the power

If the device is not powered via HDBT PoE, connect the 12V power supply to the **WP-20** and plug the power supply into the mains power.

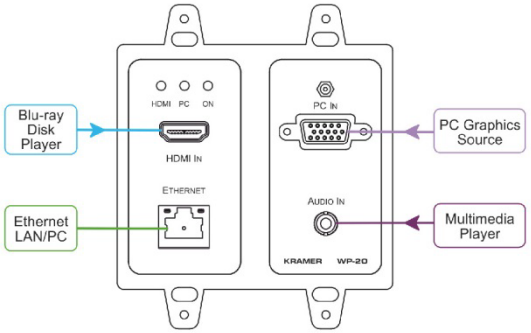
Safety Instructions

Caution: There are no operator serviceable parts inside the unit.
Warning: Use only the Kramer Electronics power adapter that is provided with the unit.
Warning: Disconnect the power and unplug the unit from the wall before installing.
See www.KramerAV.com for updated safety information.

Step 6: Install the WP-20

Mount the device in a suitable wall box. We recommend opening all holes in the walls of the box to assist in cooling the **WP-20**.

Step 7: Connect the outputs



Step 8: Operate the WP-20 via:

Protocol 3000

Default IP Parameters

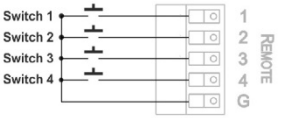
Parameter	Values	Default
Device Name	Any alphanumeric string up to 14 chars (can include hyphen, but not at the beginning or end)	KRAMER_
DHCP	ON/OFF	OFF
IP Address	Any valid IP address	192.168.1.39
Mask	Any valid network mask	255.255.0.0
Gateway	Any valid gateway address	192.168.0.1
TCP Port	0 to 65535	5000
UDP Port	0 to 65535	50000

Default Logon Credentials

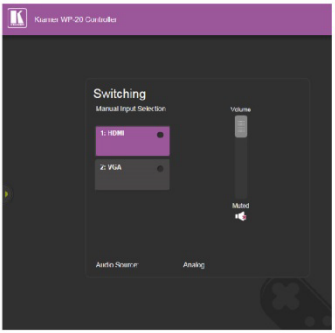
Parameter	Values
Name	Admin
Password	Admin

Remote contact-closure switches

#	Feature	Function
1	Input selection / VGA phase shift switch	Short press – Input toggle Long press – Adjusts the VGA phase shift
2	Step-in switch	Activates the step-in function if relevant
3	Analog audio output volume increase control	Short press – Increases the volume one step Long press – Increases the volume from 0% to 100% in 10 seconds
4	Analog audio output volume decrease control	Short press – Decreases the volume one step Long press – Decreases the volume from 100% to 0% in 10 seconds
G	Ground	Connect to the common side of the switches



Web Pages



Contents

Figures

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 **WP-20** Wall Plate. This product, which incorporates HDMI™ technology, is ideal for:

- Display systems requiring simple, automatic input selection
- Multimedia and presentation source selection
- Video distribution in hotel rooms and schools

Note: All references in this manual to the **WP-20** in this manual also apply to the **WP-20E** European versions.

2 Getting Started

We recommend that you:

- Unpack the equipment carefully and save the original box and packaging materials for possible future shipment
- Review the contents of this user manual

Go to www.kramerav.com/downloads/WP-20 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 **WP-20** 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 DC

Caution: There are no operator serviceable parts inside the unit

Warning: Use only the Kramer Electronics power supply that is provided with the unit

Warning: Disconnect the power and unplug the unit from the wall before installing

2.3 Shielded Twisted Pair/Unshielded Twisted Pair

Kramer engineers have developed special twisted pair cables to best match our digital twisted pair products; the Kramer **BC-HDKat6a** (CAT 6 23 AWG) HDBaseT certified, and the Kramer **BC-DGKat7a23** (CAT 7a 23 AWG) cables. These specially built cables significantly outperform regular CAT 6 and CAT 7a cables.

2.4 Recycling Kramer Products

The Waste Electrical and Electronic Equipment (WEEE) Directive 2002/96/EC aims to reduce the amount of WEEE sent for disposal to landfill or incineration by requiring it to be collected and recycled. To comply with the WEEE Directive, Kramer Electronics has made arrangements with the European Advanced Recycling Network (EARN) and will cover any costs of treatment, recycling and recovery of waste Kramer Electronics branded equipment on arrival at the EARN facility. For details of Kramer's recycling arrangements in your particular country go to our recycling pages at *http://www.kramerav.com/support/recycling/*.

3 Overview

WP−20 is a 4K UHD, HDBaseT active wall plate auto switcher for HDMI, VGA and analog audio signals that supports resolutions up to 4K@60Hz (4:2:0) UHD. The device has EDID management, various control options and audio embedding. The unit is a fully−featured auto−switcher with the installation convenience and operational simplicity of a wall plate. **WP−20** is easy to configure, can be powered remotely over Ethernet (PoE) and is designed for any size room.

WP-20 accepts an HDMI and PC graphics video input, an Ethernet signal, serial data, and an unbalanced stereo audio input (which is embedded into the output signal), and transmits the signal via HDBaseT (Twisted Pair) cable to a compatible receiver (for example, the **TP-780Rxr**). **WP-20** is a PoE (Power over Ethernet) receiver and can be powered by a compatible PoE provider, (for example, **PSE-1**).

WP-20 supports a range of up to 130m (430ft) at normal mode (2K), up to 100m (330ft) at normal mode (4K @60Hz (4:2:0)); up to 180m (590ft) extended mode (1080p @60Hz @24bpp) when using **BC-UNIKAT** cables.

For optimum range and performance, use the recommended Kramer cables available at www.kramerav.com/product/WP-20. Note that the transmission range depends on the signal resolution, graphics card and display used. The distance using non-Kramer CAT 5, CAT 6, and CAT 7 cables may not reach these ranges.

In particular **WP-20** features:

- Support for 4K UHD, (data rate of up to 10.2Gbps)
- Automatic input selection based on priority selection or last connected input
- Manual input selection
- Automatic live input detection based on video clock presence
- Automatic analog audio detection and embedding

- Power over Ethernet (PoE) which passes electrical power along with data over Ethernet cabling. This allows a single cable to provide both data connection and electrical power to compatible devices
- Control via Kramer Protocol 3000 and embedded Web pages over a LAN
- HDTV support
- HDMI with Deep Color, x.v.Color™ and 3D
- HDCP compliancy—works with sources that support HDCP repeater mode
- I-EDIDPro™ Kramer Intelligent EDID Processing™ – Intelligent EDID handling & processing algorithm ensures Plug and Play operation for HDMI systems
- A lockable EDID
- Remote control via contact-closure switches
- Equalization and re-clocking of the data
- Support for digital audio formats
- Availability in US and European versions

3.1 About HDBaseT™ Technology

HDBaseT™ is an advanced, all-in-one connectivity technology (supported by the HDBaseT Alliance). It is particularly suitable in the ProAV – and also the home – environment as a digital networking alternative, where it enables you to replace numerous cables and connectors by a single LAN cable used to transmit, for example, uncompressed, full high-definition video, audio, IR, as well as various control signals.

The products described in this user manual are HDBaseT certified.

4 Defining the WP-20 Wall Plate

Figure 1 and Figure 2 define the front panels of the **WP-20** and the **WP-20E**.

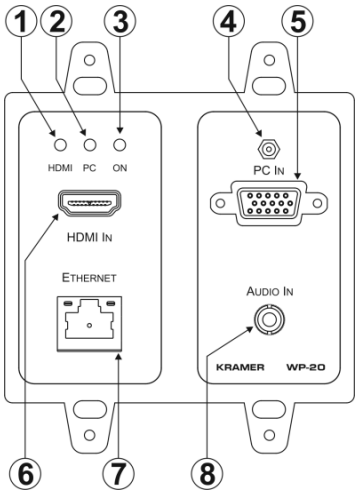


Figure 1: WP-20 Wall Plate Front Panel

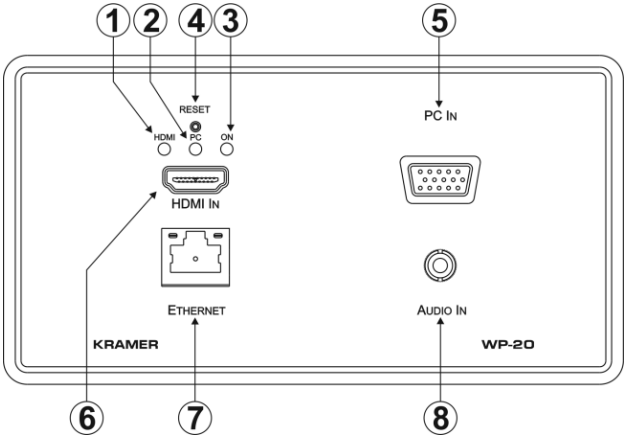


Figure 2: WP-20E Wall Plate Front Panel

#	Feature	Function
1	*HDMI* LED	When HDMI is selected: • Lights orange when external audio is selected • Lights green when embedded audio is selected • When HDMI is not selected the LED does not light
2	*PC* Graphics LED	When PC input is selected: • Lights orange when external audio is selected. • Lights green when there is no audio • When the PC input is not selected the LED does not light
3	*ON* LED	The LED indicates the following: • Lights green—power is provided by a power adapter • Lights orange—power is provided by PoE
4	Reset Button	Short press to reset the device, long press (5 seconds) to reset the device to factory default parameters
5	*PC IN* Input Connector	Connect to the PC graphics source, (for example, a laptop)
6	*HDMI IN* Input Connector	Connect to an HDMI source, (for example, a Blu-ray disk player)
7	*ETHERNET* RJ-45 Connector	Connect to the Ethernet LAN
8	*AUDIO IN* 3.5mm Mini Jack	Connect to the unbalanced, stereo audio source, (for example, the audio output of the laptop)

Figure 3 and Figure 4 define the rear panels of the **WP-20** and **WP-20E**.

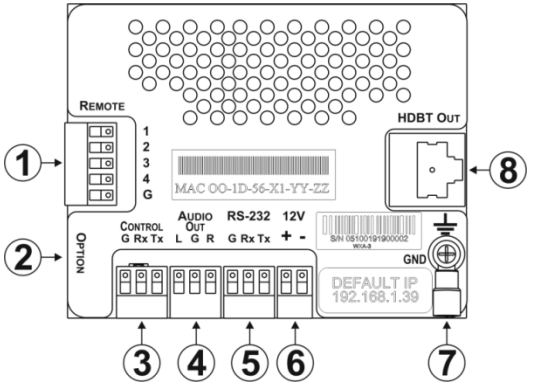


Figure 3: WP-20 Wall Plate Rear Panel

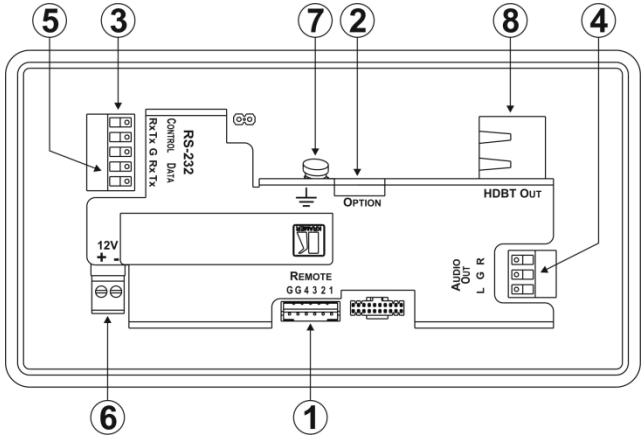


Figure 4: WP-20E Wall Plate Rear Panel

Figure 5: WP-20 Wall Plate Rear Panel

#	Feature	Function
1	*REMOTE* 5-pin Terminal Block	Connect to the remote, contact-closure switches for remote control, (see Section 5.1)
2	*OPTION* 4-way DIP-switch	Switches for setting the device behavior, (see Section 8.1)
3	*CONTROL* 3-pin Terminal Block	Connect to the serial controller to control the WP-20, (for example, a PC)
4	*AUDIO OUT* 3-pin Terminal Block	Connect to the unbalanced, stereo audio acceptor, (for example, amplified speakers)
5	*RS-232* 3-pin Terminal Block	Connect to the PC to transfer data via RS-232, (for example, a serial controller for a remote device)
6	*12V* DC Connector	Connect to the supplied power adapter. Not needed on the WP-20 if there is a PoE provider over HDBaseT
7	Earth Terminal	Connect to the common ground (optional)
8	*HDBT OUT* RJ-45 TP Connector	Connect to a compatible HDBT TP switcher or receiver (for example, the TP-780Rxr)

5 Connecting the WP-20

Always switch off the power to each device before connecting it to your **WP-20**. After connecting your **WP-20**, connect its power and then switch on the power to each device.

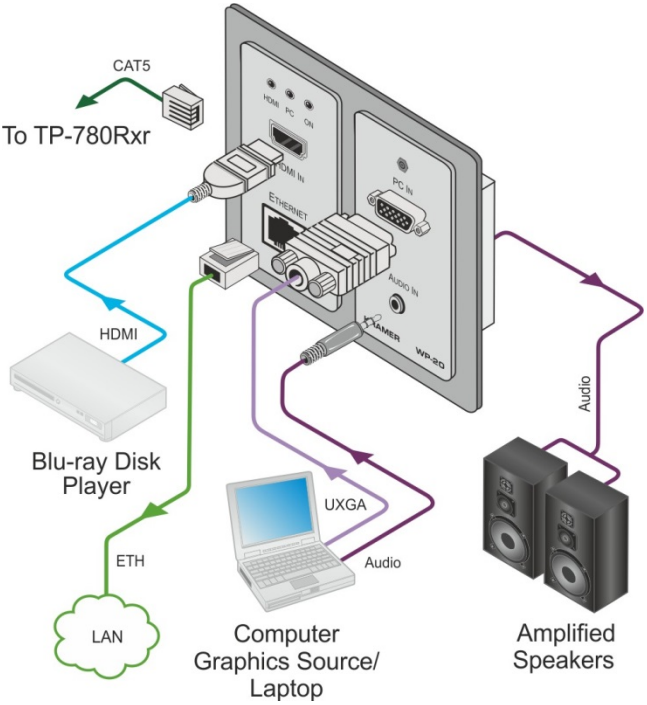


Figure 6: Connecting the WP-20 Wall Plate

Note: When the receiver in use does not support Ethernet, you can replace the left hand side faceplate with an optional part (**WP-20-BLNK(W)** P/N 68-80305099 or **WP-20-BLNK(B)** P/N 68-80305199) that does not have a cutout for the RJ-45 Ethernet connector.

To connect the WP-20, as illustrated in the example in Figure 6:

1. Connect an HDMI source, (for example, a Blu-ray disk player) to the HDMI input.

1. Connect a PC graphics source, (for example, a laptop) to the PC In input.

2. Connect an unbalanced stereo audio source, (for example, the audio output from the laptop) to the AUDIO IN 3.5mm mini jack.

3. Connect the Ethernet RJ-45 connector on the front panel to the LAN.

4. Connect the HDBT OUT RJ-45 connector on the rear panel of the **WP-20** to an HDBT-compatible receiver (for example, the **TP-780Rxr**).

5. Connect the AUDIO OUT 3-pin terminal block on the rear panel of the **WP-20** to the unbalanced, stereo audio acceptor, (for example, a power amplifier with speakers).

6. Connect the REMOTE, 5-way terminal block to momentary, contact-closure switches, (see Section 5.1).

7. If the device is not connected to a PoE provider, connect the power adapter to the **WP-20** and to the mains power, (not shown in Figure 6).

Note: All LED supplies include a current limiting resistor and are designed to work with any standard LED.

5.1 Connecting the Remote Control Switches

You can connect remote, momentary-contact contact-closure switches to the terminal block on the rear panel of the **WP-20** to control various functions of the device.

Figure 7 illustrates the connections from the terminal block to the contact-closure switches.

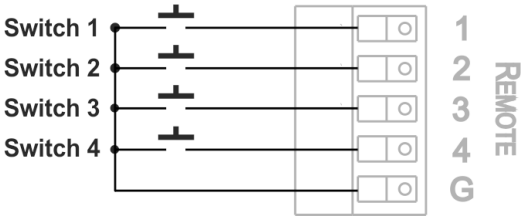


Figure 7: Remote Switches Terminal Block

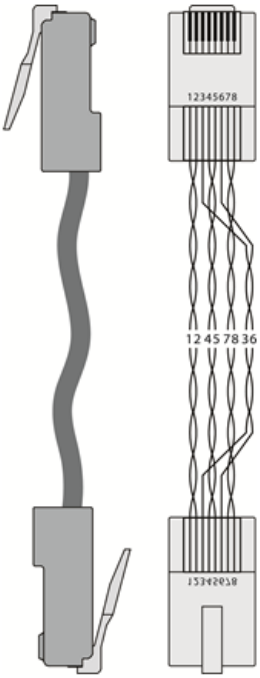
#	Feature	Function
1	Input selection/VGA phase shift switch	Short press—Input toggle Long press—Adjusts the VGA phase shift, (see Section 6.4)
2	Step-in switch	Activates the step-in function if relevant
3	Analog audio output volume increase control, (see Section 7.4)	Short press—Increases the volume one step Long press—Increases the volume from 0% to 100% in 10 seconds
4	Analog audio output volume decrease control, (see Section 7.4)	Short press—Decreases the volume one step Long press—Decreases the volume from 100% to 0% in 10 seconds
G	Ground	Connect to the common side of the switches

5.2 Wiring the RJ-45 Connectors

This section defines the TP pinout, using a straight pin-to-pin cable with RJ-45 connectors.

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

Figure 5: TP PINOUT



6 Principles of Operation

The **WP-20** selects video and audio inputs based on the rules described below.

6.1 Input Selection

The video mode selection is set by the DIP-switches (see Section 8.1) to either of the following modes:

- Manual
- Auto—Last connected or priority mode

In manual mode you select an input using, either the remote input selection switches, the Web-page interface, or P3000 commands, and switching occurs whether or not there is a live signal present on the input.

In auto mode, the switching selection is performed based on either last connected or priority input.

In last connected mode the **WP-20** selects the input based on which input was connected last. If the signal on this input is subsequently lost for any reason, the input with a live signal and which was also the last connected is selected automatically.

In priority mode, when the input sync signal is lost for any reason, the input with a live signal and next in priority is selected automatically. This priority is configurable; the default setting is HDMI > PC.

Note: In both last connected and priority modes, manually selecting an input using the remote input selection switches overrides the last-connected automatic selection.

6.2 Signal Loss and Unplugged Cable Timeouts

In both last connected and priority modes, when the input signal sync is lost (but the cable is not removed) there is a default delay (ten seconds for video, not applicable to the PC input, and five seconds for analog audio) before another input is automatically selected. When an input cable is removed, there is a delay before automatic switching takes place.

Both timeouts are configurable, (see Section 8.1).

Note: Analog audio is not output when there is no display connected. If a display is connected, analog audio is output even in the absence of a video signal.

6.3 Audio Signal Control

The Option DIP-switches 3 and 4 (see Section 8.1) control the manner in which audio is handled.

The following table describes which audio signal is embedded in the output.

Selected Video Input	HDMI Embedded Audio Detected	Analog Audio Detected	DIP-switch 3	DIP-switch 4	Audio on HDBT Output
VGA	N/A	Yes	N/A	N/A	Analog audio
VGA	N/A	No	N/A	N/A	No audio
HDMI	N/A	N/A	Manual	Embedded	Embedded audio
HDMI	N/A	N/A	Manual	Analog	Analog audio
HDMI	Yes	No	Auto	N/A	Embedded audio
HDMI	Yes	Yes	Auto	Embedded	Embedded audio
HDMI	Yes	Yes	Auto	Analog	Analog audio
HDMI	No	Yes	Auto	N/A	Analog audio
HDMI	No	No	Auto	N/A	No audio

When there is an audio signal but no video signal, the output is a black video screen in conjunction with the analog audio signal.

Note: The default timeout for audio switching when the input signal is lost is five seconds. This can be changed using either P3000 commands or the Web pages.

6.4 VGA Phase Shift

To optimize phase on the input VGA signal, the VGA sampling phase can be shifted using the following methods:

- A long press on the PC IN select button on the front panel.
  Each long press steps the phase shift up one step, starting from 0 and going to 31. When set to 31, another long press steps the shift to 0
- A remote, contact-closure switch connected to pins 1 and G of the Remote terminal block.
  Each long press steps the phase shift up one step, starting from 0 and going to 31. When set to 31, another long press steps the shift to 0
- Using the Web pages, (see Section 9)
- Protocol 3000 commands over Ethernet or RS-232 (see Section 12)

7 Operating the WP-20

Powering up the **WP-20** recalls the last settings from the non-volatile memory, (that is, the configuration of the device when it was powered down).

7.1 Selecting an Input Manually

Any of the following methods can be used to select an input:

- Protocol 3000 command, (see Section 12)
- Remote contact-closure switch, (see Section 5.1)
- Web pages, (see Section 9)

7.2 Locking the EDID

To prevent the stored EDID (either default or read from a device) from being overwritten, you can lock the current EDID by either sending a Protocol 3000 command or by using the Web pages.

Note: Do not power up the display before locking the EDID.

7.3 Resetting the WP-20

To perform a soft reset of the WP-20:

- Briefly press the Reset button.
  The device resets

To reset the WP-20 to factory default parameters:

- Press and hold the Reset button for five seconds.
  The device is reset to factory default parameters

7.4 Analog Audio Output Volume Control

The analog audio output volume can be controlled using remote, contact-closure switches connected to pins 3 and 4 of the Remote terminal block, (see Section 5.1). For volume control using the Web pages, see Section 9 and for using P3000 commands to control the volume see Section 12.3.5.

The volume is adjustable from -83dB to +24dB in steps of 0.5dB.

8 Configuring the WP-20

8.1 Setting the Configuration DIP-switch

The 4-way dip-switch provides the ability to configure a number of device functions. A switch that is down is on; a switch that is up is off.

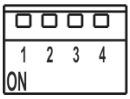


Figure 8: The Configuration DIP-switch

Note: After changing a dip-switch you must power cycle the device to implement the change.

Video Switching Selection

DIP-switch 1	DIP-switch 2	Video Input Selection
Off	Off	Automatic—Last connected. Where more than one source is connected the last one connected has priority
Off	On	Automatic—Priority selection. HDMI 1 → PC IN
On	Off	Manual
On	On	Manual

Audio Switching Selection

DIP-switch 3	DIP-switch 4	Audio Input Selection
Off	Off	Automatic—Priority selection. Embedded HDMI → analog Audio In
Off	On	Automatic—Priority selection. Analog Audio In → embedded HDMI
On	Off	Embedded HDMI
On	On	Analog Audio In

8.2 Video Switching Timeouts

When the **WP-20** is configured for auto switching, the timeouts, before a new input is automatically selected, can be changed as shown in the table below. (For the delay settings on the Web page, see Section 9.4.)

Timeout	Minimum Timeout	Default Timeout
Delay switching upon signal loss (signal off, 5V power on)	5 seconds	10 seconds
Delay switching upon cable unplug (signal off, power off)	0 seconds	0 seconds
Delay 5V power off upon signal loss (delay must be greater than "Delay switching upon signal loss")	5 seconds	900 seconds

Note: For audio auto-switching, the default timeout is 5 seconds, configurable by P3K commands.

9 Operating the WP-20 Remotely Using the Embedded Web Pages

The **WP-20** 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:

- Ensure that your browser is supported (see Section 10)
- Ensure that JavaScript is enabled

Note: The syntax of writing numbers with a prefix of zero is parsed as an octal number. For example, "0123" represents the decimal number 83.

Note: The Web pages work with a minimum resolution of 1024 x 768.

9.1 Browsing the WP-20 Web Pages

Note: In the event that a Web page does not update correctly, clear your Web browser's cache by pressing CTRL+F5.

To browse the WP-20 Web pages:

1. Open your Internet browser.
2. Type the IP number of the device (see Section 10) in the Address bar of your browser.

Note: If authentication is enabled, the following window appears (Figure 9) and you must enter the valid username and password to access the Web pages. For default authentication details, see Section 10.

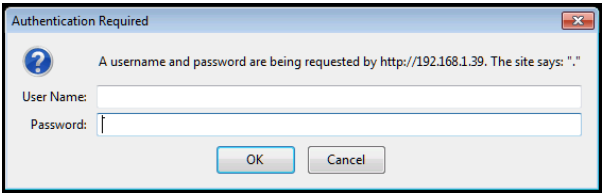


Figure 9: Entering Logon Credentials

Following a successful logon, the screen shown in Figure 10 is displayed.

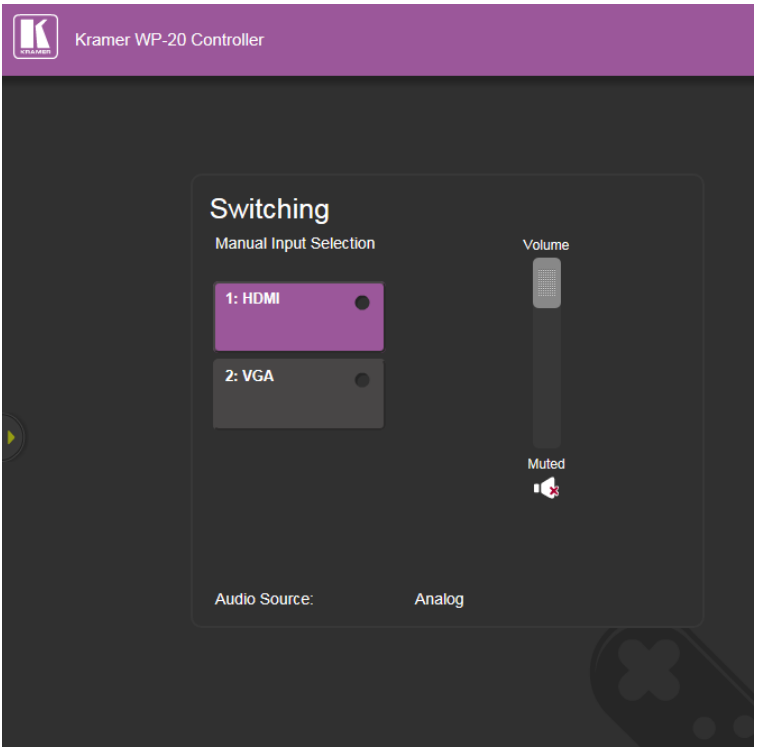


Figure 10: The Default Page

Item	Description
Switching Details	Displays the current video and audio switching status and the current audio volume
Left Hand Side Panel Hide/Reveal Button	Click to reveal the left hand side page panel

- Click the Reveal button to open the left-hand side page panel.
  The Switching page appears as shown in Figure 11.

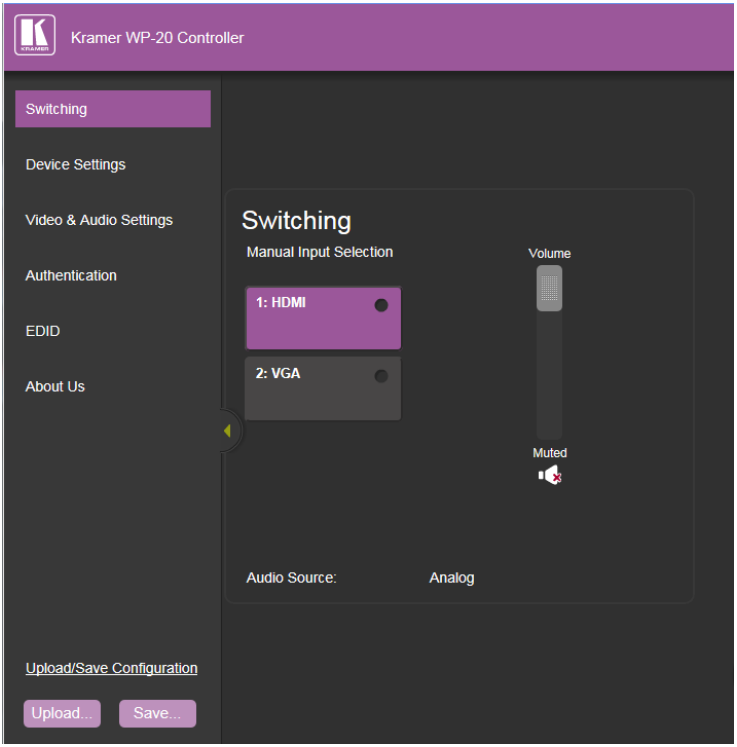


Figure 11: The Main Switching Page

The sections of the main switching page are described in the following table.

Item	Description
Page Selection Panel	Click one of the buttons to select a page
Video Input Switching Selection	Click one of the buttons to select a video input
Page Selection Panel Hide/Reveal Button	Click the arrow to open or close the page selection panel
Audio Source Indication	Indicates the source of the audio that is currently on the output
Upload/Save Configuration Section	Click one of the buttons to save or retrieve a configuration, (see Section 9.1.1)
Audio Volume Control	Use the slider to control the audio volume
Mute Button	Press to mute the volume. Press again to unmute the volume

Note: When saving the configuration using Internet Explorer 11 press CTRL+S.

There are six Web pages described in the following sections:

- Switching (see Section 9.2)
- Device Settings (see Section 9.3)
- Video and Audio Settings (see Section 9.4)
- Authentication (see Section 9.6)
- EDID (see Section 9.7)
- About Us (see Section 9.8)

9.1.1 The Upload/Save Configuration Facility

The Upload/Save Configuration facility (see item 4 in Figure 11) lets you retrieve and save a configuration.

To upload a configuration:

1. Click the Upload button.
   The File Upload browser window appears.

2. Browse to the required file and press Open.
   The configuration is retrieved and the success message is displayed.

To save the current configuration:

1. Click the Save button.
   The Save Configuration success message is displayed.

2. Do either of the following:
   - Click Download to either open the file or save it to the required location
     —OR—
   - Click OK to complete the procedure

9.2 The Switching Page

The Switching page lets you select a video input manually and adjust the audio volume.

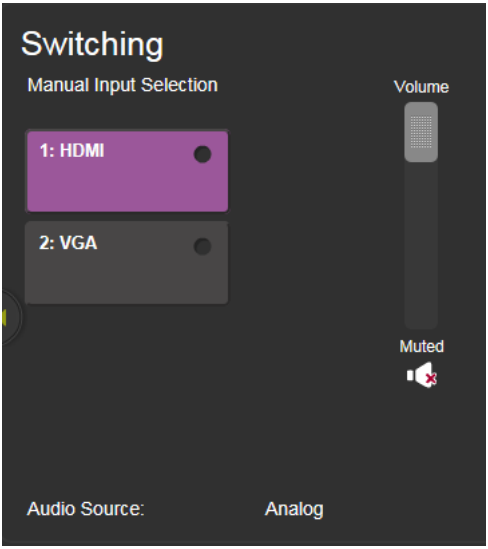


Figure 12: The Switching Page

Item	Description
Live Signal Indicator	Indicates whether or not there is a live signal on either of the inputs
HDMI Button	Click to select the HDMI input
VGA Button	Click to select the VGA input
Audio source Indicator	Indicates the source of the audio that is transmitted on the output
Volume Slider	Click and slide up and down to increase or decrease the audio output volume
Mute Button	Click to mute or unmute the output audio

9.3 The Device Settings Page

The Device Settings page lets you:

- View some of the device characteristics, (for example, model and Web version)
- Edit IP settings, (for example, name and IP address)
- Upgrade the firmware (for future use). To upgrade the device firmware, use K-Upload, downloadable from the Kramer Web site.
- Reset the device to factory default settings

Note: After making any change to the parameters on the Device Settings page, you must power cycle the device to activate the changes.

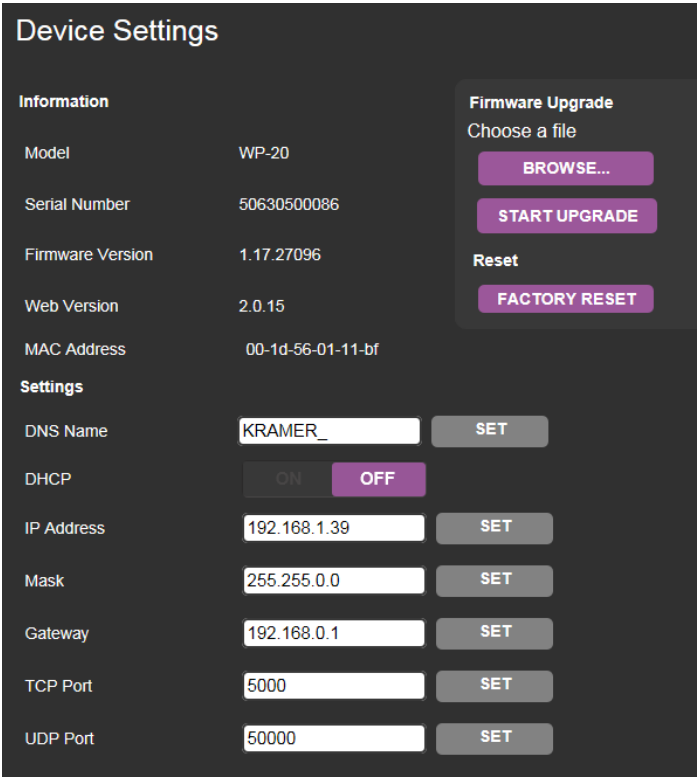


Figure 13: The Device Settings Page

Item		Description
Information Section		Displays information regarding the device, (for example, model, serial number, and MAC address)
DNS Name		The DNS name of the device. To set a new name, enter the new alphanumeric name and click Set. (For restrictions regarding the name, see Section 10.2)
DHCP Buttons		Click ON to turn DHCP on; click OFF to turn DHCP off
IP Address		The IP address of the device. To set a new IP address, enter the new IP address and click Set
Mask		The network mask of the device. To set a new mask, enter the new mask address and click Set
Gateway		The network gateway for the device. To set a new network gateway, enter the new gateway address and click Set
TCP Port		The TCP port number of the device. To set a new TCP port number, enter the new port number or use the spin controls and click Set
UDP Port		The UDP port number of the device. To set a new UDP port number, enter the new port number or use the spin controls and click Set
Firmware upgrade Section	BROWSE button	Click to open a window to browse to the new firmware file (for future use)
	START UPGRADE button	Click to start the upgrade process following the selection of the new firmware file (for future use)
Factory Reset Button		Click to reset the device to factory default parameters. After the success message is displayed, power cycle the device
Set Button		Click to store a changed parameter. Note: If you do not click the Set button, the new parameter is not stored

To reset the WP-20 to factory default parameters:

1. Click the Factory reset button.

   The confirmation message is displayed.

2. Click OK to continue or Cancel to exit the procedure.

3. Click OK.

   The progress message is displayed.

   On completion, the success message is displayed.

4. Click OK.

9.5 Video and Audio Settings Page

The Video and Audio Settings page lets you modify the video, audio and timeout parameters.

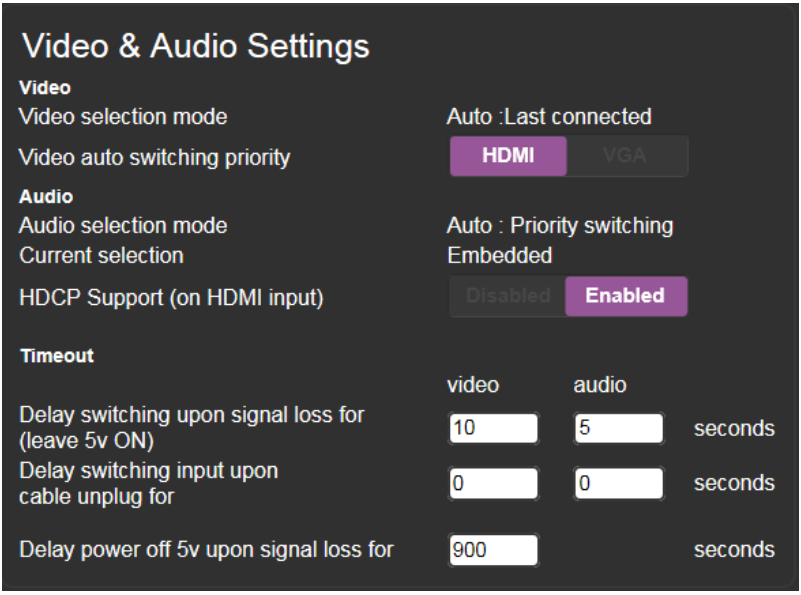


Figure 14: The Video and Audio Settings Page

Item		Description
Video Section	Video selection mode Indicator	Indicates the current video selection mode; manual, auto, or auto last connected
	Video auto switching priority Buttons	Click either the HDMI or VGA buttons to select the priority selection when in auto mode
Audio Section	Audio selection mode Indicator	Indicates the current audio selection; manual, auto, or auto last connected
	Current selection Audio Indicator	Indicates the current audio selection
	HDCP Support (on HDMI input) Buttons	Not supported—HDCP encrypted content is not passed. Follow output—HDCP support is dictated by the display

Item		Description
Timeout Section	Delay switching upon signal loss for (leave 5V on) Box	Sets the delay for video (0 to 900 seconds) and audio (0 to 900 seconds) before switching (in auto mode) because of a signal loss on the currently selected input
	Delay switching input upon cable unplug for Box	Sets the delay for video (0 to 900 seconds) and audio (0 to 900 seconds) before switching (in auto mode) because the currently selected input cable is unplugged
	Delay power off 5V upon signal loss for Box	Sets the delay for turning off the 5V output (0 to 60,000 seconds) because of a signal loss on the currently selected input

Note: When enabling or disabling HDCP, disconnect and reconnect the HDMI cable between the source and the **WP-20**.

9.6 The Authentication Page

The Authentication page lets you assign or change logon authentication details.

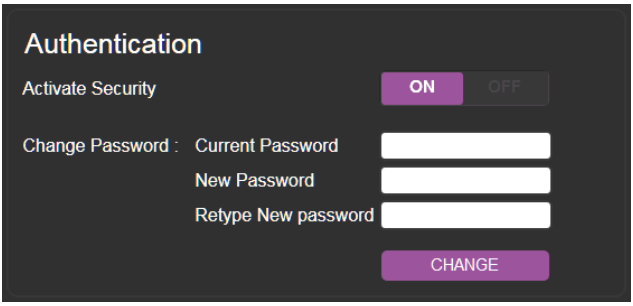


Figure 15: The Authentication Page

Item		Description
Activate Security Button		Click to enable/disable security settings. When enabled, the valid username and password must be provided to allow Web page access
Change Password: Section	Current Password box	Enter the current password
	New Password box	Enter the new password, (up to 15 printable ASCII characters)
	Retype New Password box	Retype the new password
	CHANGE button	Click CHANGE to save the new authentication details

Note: If the Authentication page is left open for more than five minutes additional windows may open. After entering your logon credentials, close the other windows.

9.7 The EDID Page

The EDID page lets you copy EDID data to either or both of the inputs from any of the following sources:

- Output
- Input
- Default EDID
- EDID data file

From this page you can also lock the EDID on each input independently.

Note: Do not power up the display before locking the EDID.

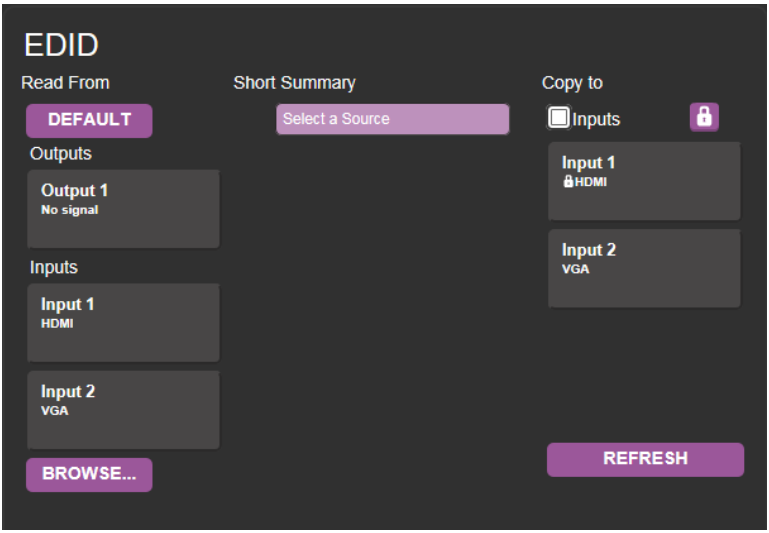


Figure 16: The EDID Page

Note: The display is not updated automatically when the status of an EDID changes on the device caused by outputs being exchanged. Click Refresh to update the display, (see item 12 in the following table).

Item		Description
Read from Section	DEFAULT EDID button	Click to read the default EDID
	Output 1 button	Click to read the EDID from output 1
	Input 1 button	Click to read the EDID from input 1 (HDMI)
	Input 2 button	Click to read the EDID from input 2 (VGA)
	BROWSE button	Click to open the file browser to select an EDID file on your computer
Short Summary Information Section		Displays the current election of EDID source, destination, video resolution, audio availability, and status
Copy to Section	Inputs selection box	Check to select both inputs
	Lock button	Locks the EDID on the currently selected input
	Input 1 button	Click to select input 1 as the destination (HDMI)
	Input 2 button	Click to select input 2 as the destination (VGA)
COPY Button		Click to copy the EDID from the selected source to the selected destination
Refresh Button		Click to refresh the display

To copy EDID data from a source to one or both inputs:

1. Click one of the source buttons from which to read the EDID (default, output, input, or EDID file).
   The button changes color and the EDID summary information reflects the selection and EDID data.

2. Click one of the destination inputs, or select both inputs by checking the Inputs check-box.
   All selected input buttons change color and the EDID summary information reflects the selection and EDID data.

3. Click the Copy button.
   The EDID data is copied to the selected input(s) and the “EDID was copied” success message is displayed.

4. Click OK.

9.8 The About Us Page

The **WP-20** About Us page displays the Web page version and Kramer Electronics Ltd company details.

Figure 17: The About Us Page

10 Technical Specifications

INPUTS:	Video:	1 HDMI on an HDMI connector 1 VGA on a 15-pin HD (F) connector
	Audio:	1 Unbalanced stereo audio on a 3.5mm mini jack
OUTPUTS:	1 HDBaseT on an RJ-45 connector 1 Unbalanced stereo audio on a 3.5mm mini jack	
PORTS:	1 RS-232 3-pin terminal block 1 Ethernet on an RJ-45 connector	
CONTROLS:	Remote switches for input switching and volume control, reset switch	
STANDARDS:	HDMI with Deep Color, x.v.Color™ and 3D HDCP—works with sources that support HDCP repeater mode HDBT certified	
MAXIMUM ANALOG AUDIO LEVEL:	3.1V p-p	
THD:	0.013%	
SNR:	–70dB	
SUPPORTED WEB BROWSERS:	Windows 7 and higher: • Internet Explorer (32/64 bit) version 11 • Firefox version 30 • Chrome version 35 MAC: • Chrome version 35 • Firefox version 27 • Safari version 7	
MAXIMUM TRANSMISSION DISTANCE:	180m (590ft) up to 1080p @60Hz @24bpp in extended mode 130m (430ft) up to 1080p @60Hz @36bpp in normal mode 100m (330ft) up to 4K @60Hz (4:2:0) in normal mode	
POWER CONSUMPTION:	12V DC, 850mA	
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	
COOLING:	Convection	
ENCLOSURE TYPE:	Aluminum	
DIMENSIONS:	2 Gang USA 11.6 cm x 5.1cm x 11.4cm (4.57” x 2.01” x 4.49”) W, D, H 2 Gang EU 15.1cm x 4.7cm x 8.6cm (5.94” x 1.85” x 3.39”) W, D, H	
WEIGHT:	0.23kg (0.51lbs) approx.	
SHIPPING WEIGHT:	0.51kg (1.12lbs) approx.	
ENVIRONMENTAL REGULATORY COMPLIANCE:	Complies with appropriate requirements of RoHs and WEEE	
VIBRATION:	ISTA 1A in carton (International Safe Transit Association)	

COMPLIANCE STANDARDS:	CE
INCLUDED ACCESSORIES:	Power adapter
OPTIONS:	Faceplates: WP-20-BLNK(W) P/N 68-80305099 WP-20-BLNK(B) P/N 68-80305199
WARRANTY:	7 years parts and labor

10.1 Default IP Parameters

Parameter	Values	Default
Device Name	Any alphanumeric string up to 14 chars (can include hyphen, but not at the beginning or end)	KRAMER_
DHCP	ON/OFF	OFF
IP Address	Any valid IP address	192.168.1.39
Mask	Any valid network mask	255.255.0.0
Gateway	Any valid gateway address	192.168.0.1
TCP Port	0 to 65535	5000
UDP Port	0 to 65535	50000

10.2 Default Logon Credentials

Parameter	Values
Name	Admin
Password	Admin

10.3 Supported HDMI Resolutions

Resolution	Refresh Rate (Hz)
640x480p	85Hz; 75Hz; 72Hz; 60Hz; 59.95Hz
720x480p	60Hz
720x480i	30Hz
720x576p	50Hz
800x600p	85Hz; 75Hz; 72Hz; 60Hz
848x480p	60Hz
852x480p	60Hz
1024x768p	85Hz; 75Hz; 70Hz; 60Hz
1152x864p	75Hz
1280x768p	60Hz
1280x800p	60Hz
1280x960	60Hz
1280x1024p	75Hz; 60Hz

Resolution	Refresh Rate (Hz)
1360x768p	60Hz
1366x768	60Hz; 50Hz
1400x1050p	60Hz
1440x900p	60Hz
1600x900p	60Hz
1600x1200p	60Hz
1680x1050p	60Hz
1920x1080p	50Hz; 60Hz; 30Hz; 24Hz;
1920x1080i	50Hz; 60Hz;
3840x2160	30Hz
4096x2160	30Hz

10.4 Supported VGA Resolutions

Resolution	Refresh Rate
640x480p	60Hz
720x480p	60Hz
800x600p	60Hz
848x480p	60Hz
1024x768p	60Hz
1152x864	75Hz
1280x720p	60Hz; 50Hz
1280x768	60Hz
1280x800	60Hz
1280x960p	60Hz
1280x1024p	60Hz
1360x768	60Hz;
1366x768	60Hz; 50Hz
1400x1050	60Hz
1440x900	60Hz
1920x1080p	60Hz
1920x1200	60Hz; 50Hz

11 Default EDID

Each input on the **WP-20** is loaded with a factory default EDID.

11.1 HDMI

```
Monitor
  Model name..... WP-20
  Manufacturer..... KMR
  Plug and Play ID..... KMR1200
  Serial number..... n/a
  Manufacture date..... 2015, ISO week 255
  Filter driver..... None
  ------------------------
  EDID revision..... 1.3
  Input signal type..... Digital
  Color bit depth..... Undefined
  Display type..... RGB color
  Screen size..... 520 x 320 mm (24.0 in)
  Power management..... Standby, Suspend, Active off/sleep
  Extension blocs..... 1 (CEA-EXT)
  ------------------------
  DDC/CI..... Not supported

Color characteristics
  Default color space..... Non-sRGB
  Display gamma..... 2.20
  Red chromaticity..... Rx 0.674 - Ry 0.319
  Green chromaticity..... Gx 0.188 - Gy 0.706
  Blue chromaticity..... Bx 0.148 - By 0.064
  White point (default).... Wx 0.313 - Wy 0.329
  Additional descriptors... None

Timing characteristics
  Horizontal scan range.... 30-83kHz
  Vertical scan range..... 56-76Hz
  Video bandwidth..... 170MHz
  CVT standard..... Not supported
  GTF standard..... Not supported
  Additional descriptors... None
  Preferred timing..... Yes
  Native/preferred timing.. 1280x720p at 60Hz (16:10)
    Modeline..... "1280x720" 74.250 1280 1390 1430 1650 720 725 730 750 +hsync +vsync
  Detailed timing #1..... 1920x1080p at 60Hz (16:10)
    Modeline..... "1920x1080" 148.500 1920 2008 2052 2200 1080 1084 1089 1125 +hsync +vsync

Standard timings supported
    720 x  400p at  70Hz - IBM VGA
    720 x  400p at  88Hz - IBM XGA2
    640 x  480p at  60Hz - IBM VGA
    640 x  480p at  67Hz - Apple Mac II
    640 x  480p at  72Hz - VESA
    640 x  480p at  75Hz - VESA
    800 x  600p at  56Hz - VESA
    800 x  600p at  60Hz - VESA
    800 x  600p at  72Hz - VESA
    800 x  600p at  75Hz - VESA
    832 x  624p at  75Hz - Apple Mac II
   1024 x  768i at  87Hz - IBM
   1024 x  768p at  60Hz - VESA
   1024 x  768p at  70Hz - VESA
   1024 x  768p at  75Hz - VESA
   1280 x 1024p at  75Hz - VESA
   1152 x  870p at  75Hz - Apple Mac II
   1280 x 1024p at  75Hz - VESA STD
   1280 x 1024p at  85Hz - VESA STD
```

1600 x 1200p at 60Hz - VESA STD
1024 x 768p at 85Hz - VESA STD
800 x 600p at 85Hz - VESA STD
640 x 480p at 85Hz - VESA STD
1152 x 864p at 70Hz - VESA STD
1280 x 960p at 60Hz - VESA STD

EIA/CEA-861 Information
Revision number..... 3
IT underscan..... Supported
Basic audio..... Supported
YCbCr 4:4:4..... Supported
YCbCr 4:2:2..... Supported
Native formats..... 1
Detailed timing #1..... 1920x1080p at 60Hz (16:10)
Modeline..... "1920x1080" 148.500 1920 2008 2052 2200 1080 1084 1089 1125 +hsync +vsync
Detailed timing #2..... 1920x1080i at 60Hz (16:10)
Modeline..... "1920x1080" 74.250 1920 2008 2052 2200 1080 1084 1094 1124 interlace +hsync +vsync
Detailed timing #3..... 1280x720p at 60Hz (16:10)
Modeline..... "1280x720" 74.250 1280 1390 1430 1650 720 725 730 750 +hsync +vsync
Detailed timing #4..... 720x480p at 60Hz (16:10)
Modeline..... "720x480" 27.000 720 736 798 858 480 489 495 525 -hsync -vsync

CE audio data (formats supported)
LPCM 2-channel, 16/20/24 bit depths at 32/44/48 kHz

CE video identifiers (VICs) - timing/formats supported
1920 x 1080p at 60Hz - HDTV (16:9, 1:1)
1920 x 1080i at 60Hz - HDTV (16:9, 1:1)
1280 x 720p at 60Hz - HDTV (16:9, 1:1) [Native]
720 x 480p at 60Hz - EDTV (16:9, 32:27)
720 x 480p at 60Hz - EDTV (4:3, 8:9)
720 x 480i at 60Hz - Doublescan (16:9, 32:27)
720 x 576i at 50Hz - Doublescan (16:9, 64:45)
640 x 480p at 60Hz - Default (4:3, 1:1)
NB: NTSC refresh rate = (Hz*1000)/1001

CE vendor specific data (VSDB)
IEEE registration number. 0x000C03
CEC physical address..... 1.0.0.0
Maximum TMDS clock..... 165MHz

CE speaker allocation data
Channel configuration.... 2.0
Front left/right..... Yes
Front LFE..... No
Front center..... No
Rear left/right..... No
Rear center..... No
Front left/right center.. No
Rear left/right center... No
Rear LFE..... No

Report information
Date generated..... 28/11/2017
Software revision..... 2.90.0.1020
Data source..... Real-time 0x0071
Operating system..... 6.1.7601.2.Service Pack 1

Raw data
00,FF,FF,FF,FF,FF,FF,00,2D,B2,00,12,00,00,00,00,FF,19,01,03,80,34,20,78,EA,B3,25,AC,51,30,B4,26,
10,50,54,FF,FF,80,81,8F,81,99,A9,40,61,59,45,59,31,59,71,4A,81,40,01,1D,00,72,51,D0,1E,20,6E,28,
55,00,07,44,21,00,00,1E,00,00,00,FD,00,38,4C,1E,53,11,00,0A,20,20,20,20,20,20,00,00,00,FC,00,57,
50,2D,32,30,0A,20,20,20,20,20,20,20,02,3A,80,18,71,38,2D,40,58,2C,45,00,07,44,21,00,00,1E,01,B6,
02,03,1B,F1,23,09,07,07,48,10,05,84,03,02,07,16,01,65,03,0C,00,10,00,83,01,00,00,02,3A,80,18,71,
38,2D,40,58,2C,45,00,07,44,21,00,00,1E,01,1D,80,18,71,1C,16,20,58,2C,25,00,07,44,21,00,00,9E,01,
1D,00,72,51,D0,1E,20,6E,28,55,00,07,44,21,00,00,1E,8C,0A,D0,8A,20,E0,2D,10,10,3E,96,00,07,44,21,
00,00,18,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,47

11.2 PC-UXGA

Monitor
Model name..... WP-20
Manufacturer..... KMR
Plug and Play ID..... KMR1200
Serial number..... n/a
Manufacture date..... 2015, ISO week 255
Filter driver..... None

EDID revision..... 1.3
Input signal type..... Analog 0.700,0.000 (0.7V p-p)
Sync input support..... Separate, Composite, Sync-on-green
Display type..... RGB color
Screen size..... 520 x 320 mm (24.0 in)
Power management..... Standby, Suspend, Active off/sleep
Extension blocs..... None

DDC/CI..... Not supported

Color characteristics
Default color space..... sRGB
Display gamma..... 2.20
Red chromaticity..... Rx 0.674 - Ry 0.319
Green chromaticity..... Gx 0.188 - Gy 0.706
Blue chromaticity..... Bx 0.148 - By 0.064
White point (default).... Wx 0.313 - Wy 0.329
Additional descriptors... None

Timing characteristics
Horizontal scan range.... 30-83kHz
Vertical scan range..... 56-76Hz
Video bandwidth..... 170MHz
CVT standard..... Not supported
GTF standard..... Not supported
Additional descriptors... None
Preferred timing..... Yes
Native/preferred timing.. 1280x720p at 60Hz (16:10)
Modeline..... "1280x720" 74.250 1280 1390 1430 1650 720 725 730 750 +hsync +vsync
Detailed timing #1..... 1920x1080p at 60Hz (16:10)
Modeline..... "1920x1080" 148.500 1920 2008 2052 2200 1080 1084 1089 1125 +hsync +vsync

Standard timings supported
720 x 400p at 70Hz - IBM VGA
720 x 400p at 88Hz - IBM XGA2
640 x 480p at 60Hz - IBM VGA
640 x 480p at 67Hz - Apple Mac II
640 x 480p at 72Hz - VESA
640 x 480p at 75Hz - VESA
800 x 600p at 56Hz - VESA
800 x 600p at 60Hz - VESA
800 x 600p at 72Hz - VESA
800 x 600p at 75Hz - VESA
832 x 624p at 75Hz - Apple Mac II
1024 x 768i at 87Hz - IBM
1024 x 768p at 60Hz - VESA
1024 x 768p at 70Hz - VESA
1024 x 768p at 75Hz - VESA
1280 x 1024p at 75Hz - VESA
1152 x 870p at 75Hz - Apple Mac II
1280 x 1024p at 75Hz - VESA STD
1280 x 1024p at 85Hz - VESA STD
1600 x 1200p at 60Hz - VESA STD
1024 x 768p at 85Hz - VESA STD
800 x 600p at 85Hz - VESA STD
640 x 480p at 85Hz - VESA STD
1152 x 864p at 70Hz - VESA STD

1280 x 960p at 60Hz - VESA STD

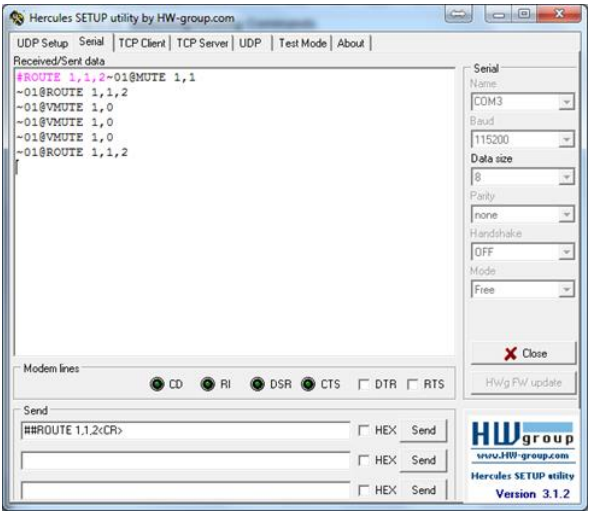
Report information
Date generated..... 28/11/2017
Software revision..... 2.90.0.1020
Data source..... Real-time 0x0021
Operating system..... 6.1.7601.2.Service Pack 1

Raw data
00,FF,FF,FF,FF,FF,FF,00,2D,B2,00,12,00,00,00,00,FF,19,01,03,6E,34,20,78,EE,B3,25,AC,51,30,B4,26,
10,50,54,FF,FF,80,81,8F,81,99,A9,40,61,59,45,59,31,59,71,4A,81,40,01,1D,00,72,51,D0,1E,20,6E,28,
55,00,07,44,21,00,00,1E,00,00,00,FD,00,38,4C,1E,53,11,00,0A,20,20,20,20,20,20,00,00,00,FC,00,57,
50,2D,32,30,0A,20,20,20,20,20,20,20,02,3A,80,18,71,38,2D,40,58,2C,45,00,07,44,21,00,00,1E,00,C5

12 Protocol 3000

The **WP-20** can be operated using the Kramer Protocol 3000 serial commands. The command framing varies according to how you interface with the **WP-20**. For example, a basic video input switching command that routes a layer 1 video signal to HDBT out 1 from HDMI input 2 (`ROUTE 1,1,2`), is entered as follows:

- Terminal communication software, such as Hercules:

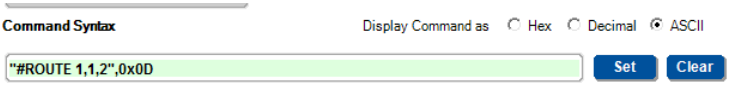


The framing of the command varies according to the terminal communication software.

- K-Touch Builder (Kramer software):

'Device Code (17)' PROPERTIES	
name	Device Code (17)
data	#ROUTE 1,1,2\x0D

- K-Config (Kramer configuration software):



All the examples provided in this section are based on using the K-Config software.

You can enter commands directly using terminal communication software (e.g., Hercules) by connecting a PC to the serial or Ethernet port on the **WP-20**. To enter CR press the Enter key (LF is also sent but is ignored by the command parser).

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

For more information about:

- Using Protocol 3000 commands, see Section 12.1
- General syntax used for Protocol 3000 commands, see Section 12.2
- Protocol 3000 commands available for the **WP-20**, see Section 12.3

12.1 Understanding Protocol 3000

Protocol 3000 commands are structured according to the following:

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

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

The maximum string length is 64 characters.

- **Message starting character:**
  - # – For host command/query
  - ~ – For device response
- **Device address** – K-NET Device ID followed by @ (optional, K-NET only)
- **Query sign** – ? follows some commands to define a query request
- **Message closing character:**
  - CR – Carriage return for host messages (ASCII 13)
  - CR LF – Carriage return for device messages (ASCII 13) and line-feed (ASCII 10)
- **Command chain separator character –** Multiple commands can be chained in the same string. Each command is delimited by a pipe character (|). When chaining commands, enter the message starting character and the message closing character only at the beginning and end of the string.

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

12.2 Kramer Protocol 3000 Syntax

The Kramer Protocol 3000 syntax uses the following delimiters:

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

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

The Protocol 3000 syntax is in the following format:

- **Host Message Format**:

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

- **Simple Command** – Command string with only one command without addressing:

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

- **Command String** – Formal syntax with command concatenation and addressing:

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

- **Device Message Format**:

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

- **Device Long Response** – Echoing command:

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

12.3 Protocol 3000 Commands

This section includes the following commands:

- System Commands (see Section 12.3.1)
- Authentication Commands (see Section 12.3.2)
- Switching/Routing Commands (see Section 12.3.3)
- Video Commands (see Section 12.3.4)
- Audio Commands (see Section 12.3.5)
- Communication Commands (see Section 12.3.6)
- EDID Handling Commands (see Section 12.3.7)

12.3.1 System Commands

Command	Description
#	Protocol handshaking (system mandatory)
BUILD-DATE	Get device build date (system mandatory)
FACTORY	Reset to factory default configuration
HELP	Get command list (system mandatory)
MODEL	Get device model (system mandatory)
PROT-VER	Get device protocol version (system mandatory)
RESET	Reset device (system mandatory)
SN	Get device serial number (system mandatory)
VERSION	Get device firmware version (system mandatory)
AV-SW-MODE	Set/get auto switch mode (system)
AV-SW-TIMEOUT	Set/get auto switching timeout (system)
DISPLAY	Get output HPD status (system)
DPSW-STATUS	Get the DIP-switch status (system)
FPGA-VER	Get current FPGA version (system)
HDCP-MOD	Set/get HDCP mode (system)
HDCP-STAT	Get HDCP signal status (system)
NAME	Set/get machine (DNS) name (system – Ethernet)
NAME-RST	Reset machine (DNS) name to factory default (system – Ethernet)
PRIORITY	Set/get priority for all channels (system)
SIGNAL	Get input signal lock status (system)

12.3.1.1

Functions		Permission	Transparency
Set:	**#**	End User	Public
Get:	**-**	-	-
Description		**Syntax**	
Set:	Protocol handshaking	**#**CR	
Get:	-	-	
Response			
~nn@SP**OK**CR LF			
Parameters			
Response Triggers			
Notes			
Validates the Protocol 3000 connection and gets the machine number Step-in master products use this command to identify the availability of a device			
K-Config Example			
"#",0x0D			

12.3.1.2 BUILD-DATE

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

Description	Syntax
Set:	-	-
Get:	Get device build date	#**BUILD-DATE?**CR

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

Response Triggers

Notes

K-Config Example

"#BUILD-DATE?",0x0D

12.3.1.3 FACTORY

Functions		Permission	Transparency
Set:	**FACTORY**	End User	Public
Get:	-	-	-
Description		**Syntax**	
Set:	Reset device to factory default configuration	#**FACTORY**CR	
Get:	-	-	
Response			
~nn@**FACTORY**SPOKCR LF			
Parameters			
Response Triggers			
Notes			
This command deletes all user data from the device. The deletion can take some time. Your device may require powering off and powering on for the changes to take effect.			
K-Config Example			
"#FACTORY",0x0D			

12.3.1.4 HELP

Functions		Permission	Transparency
Set:	-	-	-
Get:	HELP	End User	Public
Description		**Syntax**	
Set:	-	-	
Get:	Get command list or help for specific command	1. #HELPCR 2. #HELPSP*COMMAND_NAME*CR	
Response			
1. Multi-line: ~nn@Device available protocol 3000 commands:CR LF*command*,SP *command*...CR LF 2. Multi-line: ~nn@HELPSP*command*:CR LF*description*CR LFUSAGE:*usage*CR LF			
Parameters			
COMMAND_NAME – name of a specific command			
Response Triggers			
Notes			
To get help for a specific command use: HELPSPCOMMAND_NAMECR LF			
K-Config Example			
"#HELP",0x0D			

12.3.1.5 MODEL

Functions		Permission	Transparency
Set:	-	-	-
Get:	**MODEL?**	End User	Public
Description		**Syntax**	
Set:	-	-	
Get:	Get device model	#**MODEL?**CR	
Response			
~nn@**MODEL**SP*model_name*CR LF			
Parameters			
model_name – String of up to 19 printable ASCII chars			
Response Triggers			
Notes			
This command identifies equipment connected to Step-in master products and notifies of identity changes to the connected equipment. The Matrix saves this data in memory to answer REMOTE-INFO requests			
K-Config Example			
"#MODEL?",0x0D			

12.3.1.6 PROT-VER

Functions		Permission	Transparency
Set:	-	-	-
Get:	**PROT-VER?**	End User	Public
Description		**Syntax**	
Set:	-	-	
Get:	Get device protocol version	#**PROT-VER?**CR	
Response			
~nn@**PROT-VER**SP3000:*version*CR LF			
Parameters			
version - XX.XX where X is a decimal digit			
Response Triggers			
Notes			
K-Config Example			
"#PROT-VER?",0x0D			

12.3.1.7 RESET

Functions		Permission	Transparency
Set:	**RESET**	Administrator	Public
Get:	**-**	-	-
Description		**Syntax**	
Set:	Reset device	#**RESET**CR	
Get:	-	-	
Response			
~nn@**RESET**SP**OK**CR LF			
Parameters			
Response Triggers			
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.			
K-Config Example			
"#RESET",0x0D			

12.3.1.8 SN

Functions		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 – 11 decimal digits, factory assigned			
Response Triggers			
Notes			
This device has a 14 digit serial number, only the last 11 digits are displayed			
K-Config Example			
"#SN?",0x0D			

12.3.1.9 VERSION

Functions		Permission	Transparency
Set:	-	-	-
Get:	**VERSION?**	End User	Public
Description		**Syntax**	
Set:	-	-	
Get:	Get firmware version number	#**VERSION?**CR	
Response			
~nn@**VERSION**SP*firmware_version*CR LF			
Parameters			
firmware_version – XX.XX.XXXX where the digit groups are: major.minor.build version			
Response Triggers			
Notes			
K-Config Example			
"#VERSION?",0x0D			

12.3.1.1 AV-SW-MODE

Functions		Permission	Transparency
Set:			
Get:	**AV-SW-MODE?**	End user	Public
Description		**Syntax**	
Set:			
Get:	Get input auto switch mode (per output)	#**AV-SW-MODE?**SP*layer,output_id*CR	
Response			
~nn@**AV-SW-MODE**SP*layer,output_id,mode*CR LF			
Parameters			
layer – 1 (video), 2 (audio) output_id – for video layer: 1 (HDBT Out), for audio layer: 1 (Audio Out) mode – 0 (manual), 1 (priority switch), 2 (last connected switch)			
Response Triggers			
Notes			
K-Config Example			
Get the input audio switch mode for HDBT Out: "#AV-SW-MODE? 1,1",0x0D			

12.3.1.2 AV-SW-TIMEOUT

Functions		Permission	Transparency
Set:	**AV-SW-TIMEOUT**	End User	Public
Get:	**AV-SW-TIMEOUT?**	End User	Public
Description		**Syntax**	
Set:	Set auto switching timeout	#**AV-SW-TIMEOUT**SP*action,time_out*CR	
Get:	Get auto switching timeout	#**AV-SW-TIMEOUT?**SP*action*CR	

Response

~nn@**AV-SW-TIMEOUT**SP*action,time_out*CR

Parameters

action – event that triggers the auto switching timeout:
- 0 (video signal lost)
- 2 (audio signal lost)
- 4 (disable 5V on video output if no input signal detected)
- 5 (video cable unplugged)
- 6 (audio cable unplugged)

timeout – timeout in seconds: 0-60000

Response Triggers

Notes

The timeout must not exceed 60000 seconds.
The timeout for video and audio signal lost (0, 2) events must not be less than 5 seconds.
The timeout for video and audio cable unplugged (5, 6) events must not exceed the timeout for the disable 5V on video output if no input signal detected (4) event.
The timeout for the disable 5V on video output if no input signal detected (4) event must not be less than the timeout for video and audio cable unplugged (5, 6) events.
The timeout for the disable 5V on video output if no input signal detected (4) event overlaps with the timeouts for all other events (0, 2, 5, 6).

K-Config Example

Set the auto switching timeout to 5 seconds in the event of video signal lost:
"#AV-SW-TIMEOUT 0,5",0x0D

12.3.1.3 DISPLAY

Functions		Permission	Transparency
Set:	-	-	-
Get	**DISPLAY?**	End User	Public
Description		**Syntax**	
Set:	-	-	
Get:	Get output HPD status	#**DISPLAY?**SP*out_id*CR	

Response

~nn@**DISPLAY**SP*out_id*,*status*CR LF

Parameters

out_id – 1 (HDBT Out)

status – HPD status according to signal validation : 0 (Off), 1 (On), 2 (On and all parameters are stable and valid)

Response Triggers

A response is sent to the com port from which the Get was received, after command execution and:

After every change in output HPD status from On to Off (0)

After every change in output HPD status from Off to On (1)

After every change in output HPD status form Off to On and all parameters (new EDID, etc.) are stable and valid (2)

Notes

K-Config Example

Get the output HPD status of HDBT Out:

"#DISPLAY? 1",0x0D

12.3.1.4 DPSW-STATUS

Functions		Permission	Transparency
Set:	-	-	-
Get	**DPSW-STATUS?**	End User	Public
Description		**Syntax**	
Set:	-	-	
Get:	Get the DIP-switch status	#**DPSW-STATUS?**SP*dp_sw_id*CR	
Response			
~nn@**DPSW-STATUS?**SP*dp_sw_id*,*status*CR LF			
Parameters			
Dp_sw_id – 1 (video switch), 2 (video switch), 3 (audio switch), 4 (audio switch) *status* – 0 (up / Off), 1 (down / On)			
Response Triggers			
Notes			
K-Config Example			
Get the status of DIP-switch 1 (video switch): "#DPSW-STATUS? 1",0x0D			

12.3.1.5 FPGA-VER

Functions		Permission	Transparency
Set:	-	-	-
Get:	**FPGA-VER?**	End User	Public
Description		**Syntax**	
Set:	-	-	
Get:	Get current FPGA version	#**FPGA-VER?**SP*id*CR	
Response			
~nn@**FPGA-VER**SP*id*,*major_ver*,*minor_ver*CR LF			
Parameters			
id – 1 (FPGA) *major_ver* – Major FPGA version number for current firmware *minor_ver* – Minor FPGA version number for current firmware			
Response Triggers			
Notes			
FPGA – field programmable gate array			
K-Config Example			
Get the FPGA version number for the current firmware: "#FPGA-VER? 1",0x0D			

12.3.1.6 HDCP-MOD

Functions		Permission	Transparency
Set:	**HDCP-MOD**	Administrator	Public
Get:	**HDCP-MOD?**	End User	Public
Description		**Syntax**	
Set:	Set HDCP mode	#**HDCP-MOD**SP*inp_id*,*mode*CR	
Get:	Get HDCP mode	#**HDCP-MOD?**SP*inp_id*CR	
Response			
Set / Get: ~nn@**HDCP-MOD**SP*inp_id*,*mode*CR LF			
Parameters			
inp_id – input number: 1 (HDMI In 1), 2 (HDMI In 2), 3 (PC In) *mode* – HDCP mode: 0 (HDCP Off), 3 (Mirror output – MAC mode)			
Response Triggers			
A response is sent to the com port from which the set (before execution) / get command was received A response is sent to all com ports after command execution if HDCP-MOD was set by any other external control device (device button, device menu or other) or if the HDCP mode changed			
Notes			
Set HDCP working mode on the device input: HDCP not supported - HDCP Off HDCP support changes following detected sink - MIRROR OUTPUT			
K-Config Example			
Disable HDCP mode on HDMI In 2: "#HDCP-MOD 2,0",0x0D			

12.3.1.7 HDCP-STAT

Functions		Permission	Transparency
Set:	-	-	-
Get:	**HDCP-STAT?**	End User	Public
Description		**Syntax**	
Set:	-	-	
Get:	Get HDCP signal status	#**HDCP-STAT?**SP*stage*,*stage_id*CR	

Response

~ nn@**HDCP-STAT**SP*stage*,*stage_id*,*mode*CR LF

Parameters

stage – 0 (input), 1 (output)
stage_id – for input stage: 1 (HDMI In 1), 2 (HDMI In 2), 3 (PC In), for output stage: 1 (HDBT Out)
actual_status – signal encryption status: 0 (On), 1 (Off)

Response Triggers

A response is sent to the com port from which the Get command was received

Notes

Output stage (1) – get the HDCP signal status of the sink device connected to HDBT Out
Input stage (0) – get the HDCP signal status of the source device connected to the specified input

K-Config Example

Get the HDCP input signal status of the source device connected to HDMI In 1:
"#HDCP-STAT? 0,1",0x0D

12.3.1.8 NAME

Functions		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 characters (can include hyphens but not at the beginning or end)			
Response Triggers			
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).			
K-Config Example			
Set the DNS name of the device to “room-442”: “#NAME room-442”,0x0D			

12.3.1.9 NAME-RST

Functions		Permission	Transparency
Set:	**NAME-RST**	Administrator	Public
Get:	-	-	-
Description		**Syntax**	
Set:	Reset machine (DNS) name to factory default	#**NAME-RST**CR	
Get:	-	-	
Response			
~nn@**NAME-RST**SP**OK**CR LF			
Parameters			
Response Triggers			
Notes			
Factory default of machine (DNS) name is “KRAMER_”			
K-Config Example			
Reset the DNS name of the device to the factory default: “#NAME-RST”,0x0D			

12.3.1.10 PRIORITY

Functions		Permission	Transparency
Set:	**PRIORITY**	Administrator	Public
Get:	**PRIORITY?**	Administrator	Public
Description		**Syntax**	
Set:	Set input priority	#**PRIORITY**SP*layer*,*PRIORITY1*,*PRIORITY2*,*PRIORITY3*CR	
Get:	Get input priority	# **PRIORITY?***layer*CR	

Response

~nn@**PRIORITY**SP*layer*,*PRIORITY1*,*PRIORITY2*,*PRIORITY3*CR LF

Parameters

layer – 1 (video):
PRIORITY1 - priority of HDMI In 1: 1 (highest priority), 2 (second priority), 3 (third priority)
PRIORITY2 - priority of HDMI In 2: 1 (highest priority), 2 (second priority), 3 (third priority)
PRIORITY3 - priority of PC In: 1 (highest priority), 2 (second priority), 3 (third priority)
layer – 2 (audio):
PRIORITY1 - priority of embedded audio: 1 (highest priority), 2 (second priority)
PRIORITY2 - priority of Audio In: 1 (highest priority), 2 (second priority)

Response Triggers

Notes

The number of PRIORITY parameters differs according to the selected layer
1 is the highest priority

K-Config Example

Set the video input priority of PC In as the highest priority:
"#PRIORITY 1,2,3,1",0x0D

12.3.1.11 SIGNAL

Functions		Permission	Transparency
Set:	-	-	-
Get	**SIGNAL?**	End User	Public
Description		**Syntax**	
Set:	-	-	
Get:	Get input signal lock status	#**SIGNAL?**SP*inp_id*CR	

Response

~nn@**SIGNAL**SP*inp_id*,*status*CR LF

Parameters

inp_id – input number: 1 (HDMI In 1), 2 (HDMI In 2), 3 (PC In)
status – lock status according to signal validation: 0 (Off), 1 (On)

Response Triggers

After execution, a response is sent to the com port from which the Get was received
A response is sent after every change in input signal status from On to Off or from Off to On

Notes

K-Config Example

Get the input signal lock status of HDMI In 2:
"#SIGNAL? 2",0x0D

12.3.2 Authentication Commands

Command	Description
LOGIN	Set/get protocol permission
LOGOUT	Cancel current permission level
PASS	Set/get password for login level
SECUR	Set/get current security state

12.3.2.1 LOGIN

Functions		Permission	Transparency
Set:	**LOGIN**	Not Secure	Public
Get:	**LOGIN?**	Not Secure	Public
Description		**Syntax**	
Set:	Set protocol permission	#**LOGIN**SP*login_level*,*password*CR	
Get:	Get current protocol permission level	#**LOGIN?**CR	

Response

Set: ~nn**@LOGIN**SP*login_level*,*password*SP**OK**CR LF
or
~nn**@LOGIN**SPERRSP004CR LF (if bad password entered)
Get: ~nn**@LOGIN**SP*login_level*CR LF

Parameters

login_level – level of permissions required: User, Admin
password – predefined password (by PASS command). Default password is an empty string

Response Triggers

Notes

When the permission system is enabled, LOGIN enables running commands with the User or Administrator permission level
When set, login must be performed upon each connection
The permission system works only if security is enabled with the SECUR command. It is not mandatory to enable the permission system in order to use the device

K-Config Example

Set the protocol permission level to Admin (when the password defined in the PASS command is 33333):
"#LOGIN Admin,33333",0x0D

12.3.2.2 LOGOUT

Functions		Permission	Transparency
Set:	**LOGOUT**	Not Secure	Public
Get:	**-**	-	-
Description		**Syntax**	
Set:	Cancel current permission level	#**LOGOUT**CR	
Get:	-	-	
Response			
~nn@**LOGOUT**SP**OK**CR LF			
Parameters			
Response Triggers			
Notes			
Logs out from User or Administrator permission levels			
K-Config Example			
"#LOGOUT",0x0D			

12.3.2.3 PASS

Functions		Permission	Transparency
Set:	**PASS**	Administrator	Public
Get:	**PASS?**	Administrator	Public
Description		**Syntax**	
Set:	Set password for login level	#**PASS**SP*login_level*,*password*CR	
Get:	Get password for login level	#**PASS?**SP*login_level*CR	
Response			
~nn@**PASS**SP*login_level*,*password*CR LF			
Parameters			
login_level – level of login to set: User, Admin *password* – password for the *login_level*. Up to 15 printable ASCII chars.			
Response Triggers			
Notes			
The default password is an empty string			
K-Config Example			
Set the password for the Admin protocol permission level to 33333: "#PASS Admin,33333",0x0D			

12.3.2.4 SECUR

Functions		Permission	Transparency
Set:	**SECUR**	Administrator	Public
Get:	**SECUR?**	Not Secure	Public
Description		**Syntax**	
Set:	Start/stop security	#**SECUR**SP*security_mode*CR	
Get:	Get current security state	#**SECUR?**CR	
Response			
~nn@**SECUR**SP*security_mode*CR LF			
Parameters			
security_mode – 1 (On / enable security), 0 (Off / disable security)			
Response Triggers			
Notes			
The permission system works only if security is enabled with the SECUR command			
K-Config Example			
Enable the permission system: "#SECUR 0",0x0D			

12.3.3 Switching/Routing Commands

Command	Description
ROUTE	Set/get layer routing

12.3.3.1 ROUTE

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

Response

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

Parameters

`layer` – `1` (video), `3` (data)
`dest` – for video layer: `1` (HDBT Out), for data layer: `1` (HDBT data port), `2` (**WP-20** data port), `3` (**WP-20** internal control port)
`src` – for video layer: `1` (HDMI In 1), `2` (HDMI In 2), `3` (PC In), for data layer: `1` (HDBT data port), `2` (**WP-20** data port), `3` (**WP-20** internal control port)

Response Triggers

Notes

The get command identifies input switching on Step-in clients
The set command is for remote input switching on Step-in clients (essentially via by the Web)

K-Config Example

Set the remote input switching of data to control mode:
"#ROUTE 3,1,3",0x0D
Set the remote input switching of data to data mode:
"#ROUTE 3,1,2",0x0D

12.3.4 Video Commands

Command	Description
VGA-PHASE	Set/get ADC (VGA) sampling phase
VMUTE	Set/get video on output mute

12.3.4.1 VGA-PHASE

Functions		Permission	Transparency
Set:	**VGA-PHASE**	End User	Public
Get:	**VGA-PHASE?**	End User	Public
Description		**Syntax**	
Set:	Set ADC (VGA) sampling phase	#**VGA-PHASE**SP*channel*,*value*CR	
Get:	Get ADC (VGA) sampling phase	#**VGA-PHASE?**SP*channel*CR	

Response

~nn@**VGA-PHASE**SP*channel*,*value*CR LF

Parameters

channel – input number: 3 (PC In)
value – phase number in LSB units: 1-30, ++ (increase current value), -- (decrease current value)

Response Triggers

Notes

K-Config Example

Increase the current value of the ADC (VGA) sampling phase:
"#VGA-PHASE 3,++",0x0D

12.3.4.2 VMUTE

Functions		Permission	Transparency
Set:	**VMUTE**	End User	Public
Get:	**VMUTE?**	End User	Public
Description		**Syntax**	
Set:	Set enable/disable video on output	#**VMUTE** SP *output_id,flag* CR	
Get:	Get video on output status	#**VMUTE?** SP *output_id* SP CR	
Response			
Set / Get: ~nn@**VMUTE** SP *output_id,flag* CR LF			
Parameters			
output_id – 1 (HDBT Out) *flag* – 0 (disable video on output), 1 (enable video on output), 2 (blank video)			
Response Triggers			
Notes			
K-Config Example			
Disable the video output on HDBT Out: "#VMUTE 3,0",0x0D			

12.3.5 Audio Commands

Command	Description
AUD-EMB	Get audio in video embedding status
AUD-LVL	Set/get volume for specific amplifier output
AUD-SIGNAL?	Get audio input signal status
MUTE	Set/get audio mute

12.3.5.1 AUD-EMB

Functions		Permission	Transparency
Set:			
Get:	**AUD-EMB?**	End User	Public
Description		**Syntax**	
Set:			
Get:	Get audio in video embedding status	#**AUD-EMB?**SP*in*,*out*CR	

Response

~nn@**AUD-EMB**SP*in*,*out*,*status*CR LF

Parameters

in – embedded audio input number: 1 (Audio In)
out – video output number in which audio is embedded: 1 (HDBT Out)
status – embedded status: 1 (On), 0 (Off)

Response Triggers

A response is sent to the com port from which the get command was received
After execution, a response is sent to all com ports if AUD-EMB was set by any other external control device (button press, device menu and similar)

Notes

K-Config Example

"#AUD-EMB? 1,1",0x0D

12.3.5.2 AUD-LVL

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

Response

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

Parameters

stage – 1 (audio output)
channel – output channel number of selected stage: 1 (Audio Out)
volume – audio parameter percentage: 0-100 (percent value), ++ (increase current value by 1 percent), -- decrease current value by 1 percent

Response Triggers

Notes

All values are in percentages
A minus sign precedes negative values

K-Config Example

Set the volume of the Audio Out (1) output to 75%:
"#AUD-LVL 1,1,75",0x0D

12.3.5.3 AUD-SIGNAL

Functions		Permission	Transparency
Set:	-	-	-
Get	**AUD-SIGNAL?**	End User	Public
Description		**Syntax**	
Set:	-	-	
Get:	Get audio input signal status	# **AUD-SIGNAL?**SP*inp_id*CR	
Response			
~nn@**AUD-SIGNAL**SP*inp_id,status*CR LF			
Parameters			
inp_id – audio input number: 1 (Audio In) *status* – 0 (Off / no signal), 1 (On / signal present)			
Response Triggers			
After execution, a response is sent to the com port from which the get command was received A response is sent to all com ports if the audio status was changed on any input			
Notes			
K-Config Example			
"#AUD-SIGNAL? 1",0x0D			

12.3.5.4 MUTE

Functions		Permission	Transparency
Set:	**MUTE**	End User	Public
Get:	**MUTE?**	End User	Public
Description		**Syntax**	
Set:	Set audio mute	#**MUTE**SP*channel,mute_mode*CR	
Get:	Get audio mute	#**MUTE?**SP*channel*CR	
Response			
~nn@**MUTE**SP*channel, mute_mode*CR LF			
Parameters			
channel – audio output number: 1 (Audio Out) *mute_mode* – 0 (Off), 1 (On)			
Response Triggers			
Notes			
K-Config Example			
Mute the Audio Out output: "#MUTE 1,1",0x0D			

12.3.6 Communication Commands

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

12.3.6.1 ETH-PORT

Functions		Permission	Transparency
Set:	**ETH-PORT**	Administrator	Public
Get:	**ETH-PORT?**	End User	Public
Description		**Syntax**	
Set:	Set Ethernet port protocol	#**ETH-PORT**SP*portType*,*ETHPort*CR	
Get:	Get Ethernet port protocol	#**ETH-PORT?**SP*portType*CR	

Response

~nn@**ETH-PORT**SP*portType*,*ETHPort*CR LF

Parameters

portType – string of 3 letters indicating the port type: TCP, UDP
ETHPort – TCP / UDP port number: 0-65565

Response Triggers

Notes

If the port number you enter is already in use, an error is returned
The port number must be within the following range: 0-(2^16-1)

K-Config Example

Set the Ethernet port protocol for TCP to port 12457:
"#ETH-PORT TCP,12457",0x0D

12.3.6.2 NET-DHCP

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

Response

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

Parameters

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

Response Triggers

Notes

Connecting Ethernet to devices with DHCP may take more time in some networks
To connect with a randomly assigned IP by DHCP, specify the device DNS name (if available) using the NAME command. You can also get an assigned IP by direct connection to USB or RS-232 protocol port if available
Consult your network administrator for correct settings

K-Config Example

Enable DHCP mode, if available:
"#NET-DHCP 1",0x0D

12.3.6.3 NET-GATE

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

Response

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

Parameters

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

Response Triggers

Notes

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

K-Config Example

Set the gateway IP address to 192.168.0.1:
"#NET-GATE 192.168.000.001",0x0D

12.3.6.4 NET-IP

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

Response

~nn@**NET-IP**SP*ip_address*CR LF

Parameters

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

Response Triggers

Notes

Consult your network administrator for correct settings

K-Config Example

Set the IP address to 192.168.1.39:
"#NET-IP 192.168.001.039",0x0D

12.3.6.5 NET-MAC

Functions		Permission	Transparency
Set:	-	-	-
Get:	**NET-MAC?**	End User	Public
Description		**Syntax**	
Set:	-	-	
Get:	Get MAC address	#**NET-MAC?**CR	
Response			
~nn@**NET-MAC**SP*mac_address*CR LF			
Parameters			
mac_address – unique MAC address. Format: XX-XX-XX-XX-XX-XX where X is hex digit			
Response Triggers			
Notes			
K-Config Example			
"#NET-MAC?",0x0D			

12.3.6.6 NET-MASK

Functions		Permission	Transparency
Set:	**NET-MASK**	Administrator	Public
Get:	**NET-MASK?**	End User	Public
Description		**Syntax**	
Set:	Set subnet mask	#**NET-MASK**SP*net_mask*CR	
Get:	Get subnet mask	#**NET-MASK?**CR	
Response			
~nn@**NET-MASK**SP*net_mask*CR LF			
Parameters			
net_mask - format: xxx.xxx.xxx.xxx			
Response Triggers			
The subnet mask limits the Ethernet connection within the local network Consult your network administrator for correct settings			
Notes			
K-Config Example			
Set the subnet mask to 255.255.0.0: "#NET-MASK 255.255.000.000",0x0D			

12.3.7 EDID Handling Commands

Additional EDID data functions can be performed via the **WP-20** Web pages or a compatible EDID management application, such as Kramer EDID Designer (see http://www.kramerav.com/product/EDID%20Designer).

Command	Description
CPEDID	Copy EDID data from the output to the input EEPROM
LOCK-EDID	Lock last read EDID

12.3.7.1 CPEDID

Functions		Permission	Transparency
Set:	**CPEDID**	End User	Public
Get:	-	-	-
Description		**Syntax**	
Set:	Copy EDID data from the output to the input EEPROM	#**CPEDID**SP*src_type,src_id,dst_type, dest_bitmap*CR	
Get:	-	-	
Response			
~nn@**CPEDID**SP*src_type,src_id,dst_type,dest_bitmap*CR LF			
Parameters			
src_type – EDID source type (usually output): 0 (input), 1 (output), 2 (default EDID) *src_id* – for input source: 1 (HDMI In 1), 2 (HDMI In 2), 3 (PC In), for output source: 1 (HDBT Out), for default EDID source: 0 (default EDID) *dst_type* – EDID destination type (usually input): 0 (input), 1 (output), 2 (default EDID) *dest_bitmap* – bitmap representing destination IDs. Format: XXXX…X, where X is hex digit. The binary form of every hex digit represents corresponding destinations. Setting '1' indicates that EDID data is copied to this destination. Setting '0' indicates that EDID data is not copied to this destination.			
Response Triggers			
Response is sent to the com port from which the Set was received (before execution)			
Notes			
Destination bitmap size depends on device properties (for 64 inputs it is a 64-bit word) Example: bitmap 0x0013 means inputs 1, 2 and 5 are loaded with the new EDID. In this device, if the destination type is input (0), the bitmap size is 3 bits, for example bitmap 0x5 means inputs 1 and 3 are loaded with the new EDID.			
K-Config Example			
Copy the EDID data from the HDBT Out output (EDID source) to the HDMI In 1 input: "#CPEDID 1,1,0,0x1",0x0D Copy the EDID data from the default EDID source to HDMI In 1 and PC In inputs: "#CPEDID 2,0,0,0x5",0x0D			

12.3.7.2 LOCK-EDID

Functions		Permission	Transparency
Set:	**LOCK-EDID**	End User	End User
Get:	**LOCK-EDID?**	End User	End User
Description		**Syntax**	
Set:	Lock last read EDID	#**LOCK-EDID**SP*input_id*,*lock_mode*CR	
Get :	Get EDID lock state	#**LOCK-EDID?**SP*input_id*CR	
Response			
~nn@**LOCK-EDID**SP*input_id*,*lock_mode*CR LF			
Parameters			
input_id – 1 (HDMI In 1), 2 (HDMI In 2), 3 (PC In), *lock_mode* – 0 (Off: unlocks EDID), 1 (On: locks EDID)			
Response Triggers			
Notes			
K-Config Example			
Lock the last read EDID from the HDMI In 2 input: "#LOCK-EDID 2,1",0x0D			

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P/N: 2900-300386 Rev: 3

SAFETY WARNING

Disconnect the unit from the power supply before opening and servicing

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