

# KRAMER



## USER MANUAL

**MODEL:**

**WP-20**

Wall Plate



# WP-20 Wall Plate Quick Start Guide

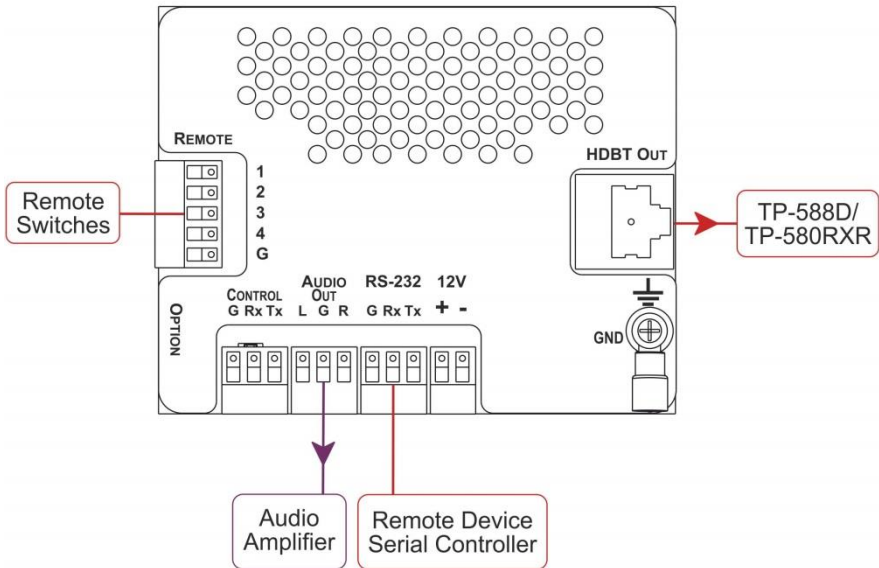
This guide helps you install and use your product for the first time. For more detailed information, go to <http://www.kramerav.com/manual/WP-20> to download the latest manual or scan the QR code on the left.

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

- ✓ The WP-20 Wall Plate
- ✓ 1 Quick start guide
- ✓ Power Adapter (12v DC)

## Step 2: Connect the outputs

Always switch off the power to 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.



**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.

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### Step 3: 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 one connected has priority |
| Off          | On           | Automatic—Priority selection.<br>HDMI 1 → HDMI 2 → PC IN<br>(default, high to low)                    |
| On           | Off          | Manual  |
| On           | On           | Manual  |

#### Audio Switching Selection

| DIP-switch 3 | DIP-switch 4 | Audio Input Selection   |
|--------------|--------------|---|
| Off          | Off          | Automatic—Priority selection.<br>Embedded HDMI → analog Audio In<br>(high to low) |
| Off          | On           | Automatic—Priority selection.<br>Analog Audio In → embedded HDMI<br>(high to low) |
| On           | Off          | Embedded HDMI   |
| On           | On           | Analog Audio In   |

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### Step 4: Connect the power

If the device is not supplied power via HDBT PoE, connect the power adapter to the **WP-20** and plug the adapter into the mains power.



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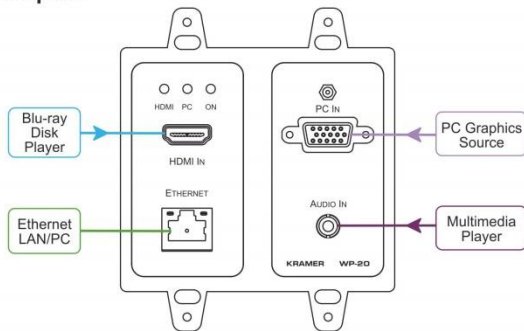
### Step 5: Install the WP-20

Mount the device in a suitable wall box.

We recommend that you open all holes in the walls of the box to assist in cooling the **WP-20**.

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### Step 6: Connect the inputs



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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 **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.

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## 2 Getting Started

We recommend that you:

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



Go to [www.kramerav.com/downloads/WP-20](http://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/>.



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## 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-588D** or the **TP-580RXR**). **WP-20** is a PoE (Power over Ethernet) receiver and can be powered by a compatible PoE provider, (for example, the **PSE-1**).

**WP-20** supports a range of up to 130m (430ft) at normal mode (2K), up to 100m at normal mode (4K UHD); up to 180m (590ft) ultra mode (1080p @60Hz @24bpp) when using **BC-HDKat6a** cables.



For optimum range and performance, use Kramer's **BC-HDKat6a** and **BC-DGKat7a23** shielded twisted pair (STP) cables. 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.

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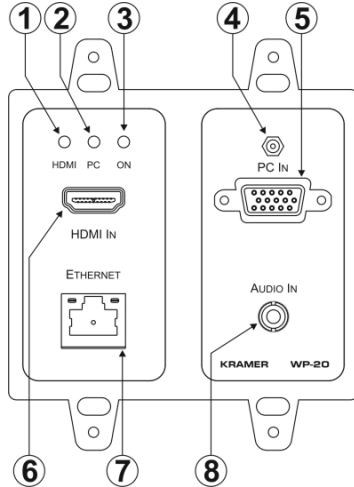


Figure 1: WP-20 Wall Plate Front Panel

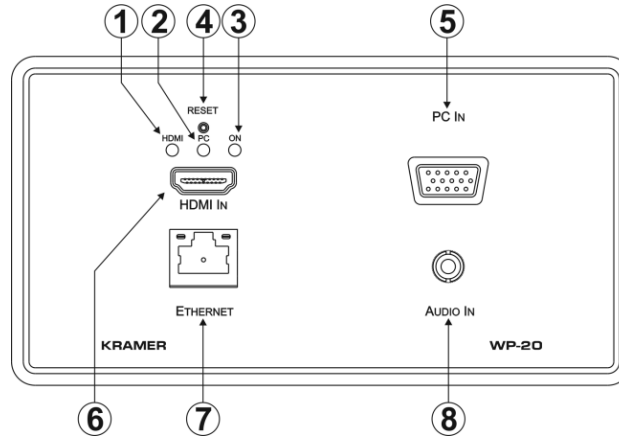


Figure 2: WP-20E Wall Plate Front Panel

| # | Feature                         | Function   |
|---|---------------------------------|--|
| 1 | <i>HDMI</i> LED                 | When HDMI is selected: <ul style="list-style-type: none"> <li>• Lights orange when external audio is selected</li> <li>• Lights green when embedded audio is selected</li> <li>• When HDMI is not selected the LED does not light</li> </ul>     |
| 2 | <i>PC Graphics</i> LED          | When PC input is selected: <ul style="list-style-type: none"> <li>• Lights orange when external audio is selected.</li> <li>• Lights green when there is no audio</li> <li>• When the PC input is not selected the LED does not light</li> </ul> |
| 3 | <i>ON</i> LED                   | The LED indicates the following: <ul style="list-style-type: none"> <li>• Lights green—power is provided by a power adapter</li> <li>• Lights orange—power is provided by PoE</li> </ul>   |
| 4 | Reset Button                    | Short press to reset the device, long press (5 seconds) to reset the device to factory default parameters  |
| 5 | <i>PC IN</i> Input Connector    | Connect to the PC graphics source, (for example, a laptop)   |
| 6 | <i>HDMI IN</i> Input Connector  | Connect to an HDMI source, (for example, a Blu-ray disk player)  |
| 7 | <i>ETHERNET</i> RJ-45 Connector | Connect to the Ethernet LAN  |
| 8 | <i>AUDIO IN</i> 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**.

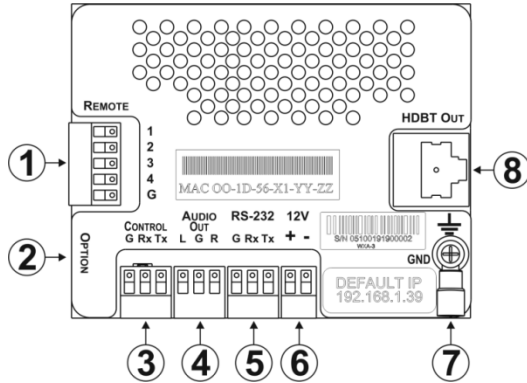


Figure 3: WP-20 Wall Plate Rear Panel

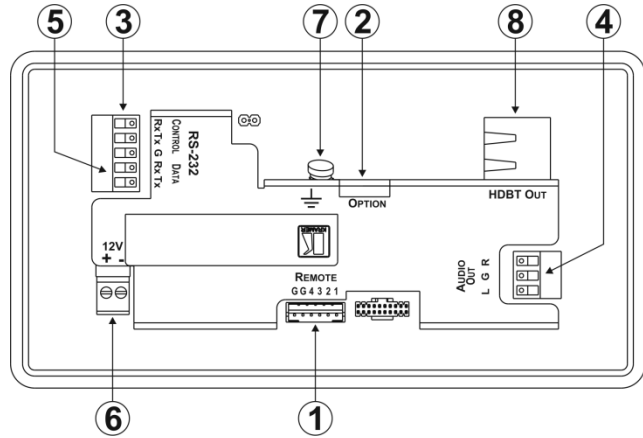


Figure 4: WP-20E Wall Plate Rear Panel

Figure 5: WP-20 Wall Plate Rear Panel

| # | Feature                               | Function   |
|---|---------------------------------------|--|
| 1 | <i>REMOTE</i> 5-pin Terminal Block    | Connect to the remote, contact-closure switches for remote control, (see <a href="#">Section 5.1</a> ) |
| 2 | <i>OPTION</i> 4-way DIP-switch        | Switches for setting the device behavior, (see <a href="#">Section 8.1</a> )                           |
| 3 | <i>CONTROL</i> 3-pin Terminal Block   | Connect to the serial controller to control the WP-20, (for example, a PC)                             |
| 4 | <i>AUDIO OUT</i> 3-pin Terminal Block | Connect to the unbalanced, stereo audio acceptor, (for example, amplified speakers)                    |
| 5 | <i>RS-232</i> 3-pin Terminal Block    | Connect to the PC to transfer data via RS-232, (for example, a serial controller for a remote device)  |
| 6 | 12VDC 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 | <i>HDBT OUT</i> RJ-45 TP Connector    | Connect to a compatible HDBT TP switcher or receiver (for example, the TP-588D/TP-580Rrx)              |

## 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.

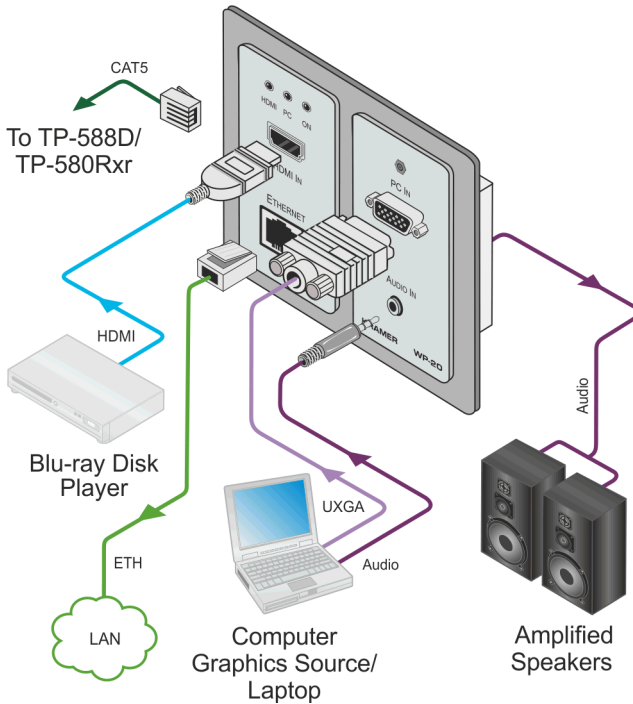


Figure 6: Connecting the WP-20 Wall Plate

**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-588D** or **TP-580Rxr**).
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.

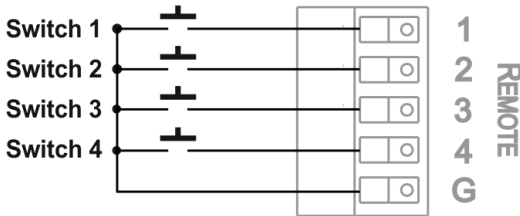


Figure 7: Remote Switches Terminal Block

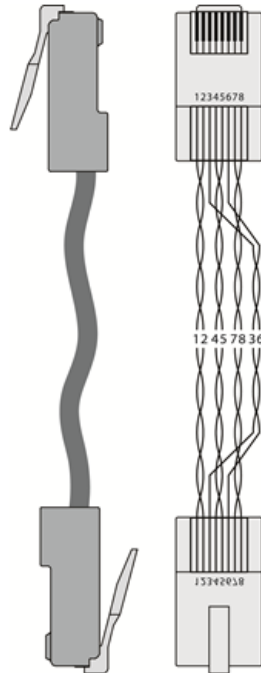
| # | Feature   | Function   |
|---|---|--|
| 1 | Input selection/VGA phase shift switch  | Short press—Input toggle<br>Long press—Adjusts the VGA phase shift, (see <a href="#">Section 6.4</a> )     |
| 2 | Step-in switch  | Activates the step-in function if relevant   |
| 3 | Analog audio output volume increase control, (see <a href="#">Section 7.4</a> ) | Short press—Increases the volume one step<br>Long press—Increases the volume from 0% to 100% in 10 seconds |
| 4 | Analog audio output volume decrease control, (see <a href="#">Section 7.4</a> ) | Short press—Decreases the volume one step<br>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



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## 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](#))

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# 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 0](#) and for using P3000 commands to control the volume see [Section 12.3.5](#).

The up/down volume steps per press are detailed in the table below.

| Ramp | Volume Reading | Volume (dB) |
|------|----------------|-------------|
| 1    | 100            | 0           |
| 1    | 99             | -0.5        |
| 1    | 98             | -1.0        |
| 1    | 97             | -1.5        |
| 1    | 96             | -2.0        |
| 1    | ...            | (0.5 steps) |
| 1    | 12             | -44.0       |
| 1    | 11             | -44.5       |
| 1    | 10             | -45.0       |
| 1    | 9              | -45.5       |
| 2    | ...            | (2.0 steps) |
| 2    | 8              | -47.0       |
| 2    | 7              | -49.0       |
| 2    | 6              | -51.0       |
| 2    | 5              | -53.0       |
| 2    | 4              | -55.0       |
| 2    | 3              | -57.0       |
| 2    | 2              | -59.0       |
| 2    | 1              | -61.0       |
| 2    | 0              | -63.0       |

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## 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.

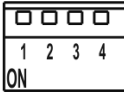


Figure 8: The Configuration DIP-switch

**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.<br>HDMI 1 → HDMI 2 → PC IN<br>(default, high to low)                    |
| On           | Off          | Manual  |
| On           | On           | Manual  |

#### Audio Switching Selection

| DIP-switch 3 | DIP-switch 4 | Audio Input Selection   |
|--------------|--------------|---|
| Off          | Off          | Automatic—Priority selection.<br>Embedded HDMI → analog Audio In<br>(high to low) |
| Off          | On           | Automatic—Priority selection.<br>Analog Audio In → embedded HDMI<br>(high to low) |
| 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<br>(signal off, 5V power on)   | 5 seconds       | 10 seconds      |
| Delay switching upon cable unplug<br>(signal off, power off)  | 0 seconds       | 0 seconds       |
| Delay 5V power off upon signal loss<br>(delay must be greater than "Delay switching<br>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](#).

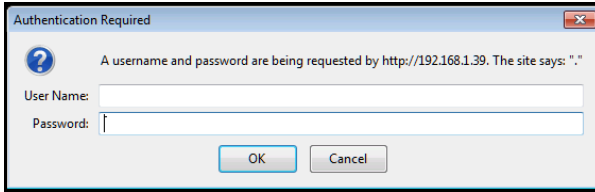


Figure 9: Entering Logon Credentials

Following a successful logon, the screen shown in [Figure 10](#) is displayed.

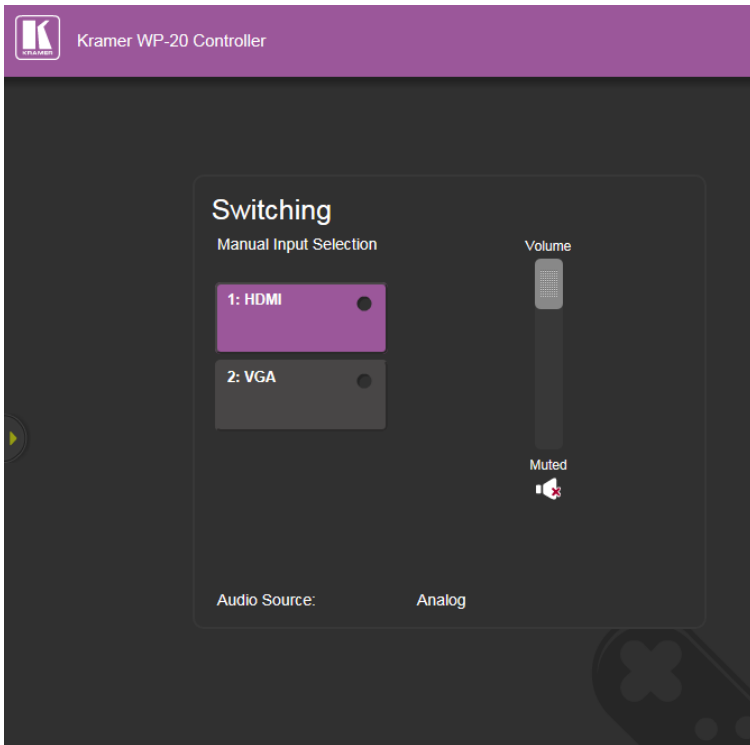


Figure 10: The Default Page

| 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](#).

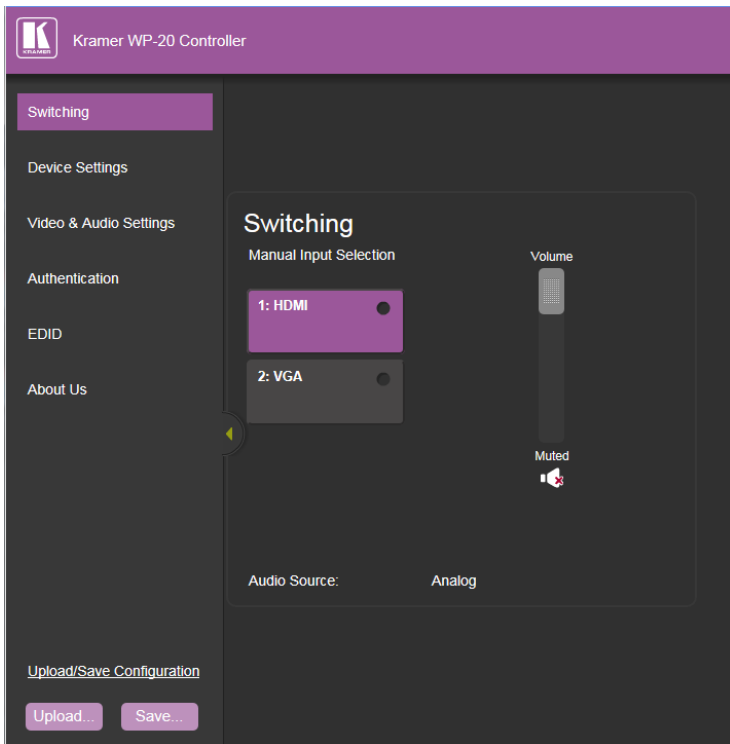


Figure 11: The Main Switching Page

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 <a href="#">Section 9.1.1</a> ) |
| 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.

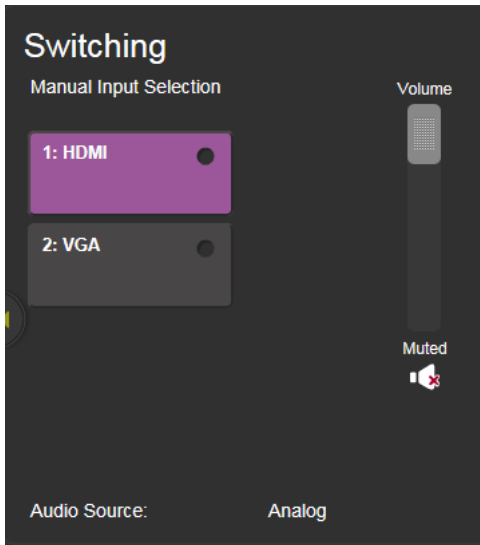


Figure 12: The Switching Page

| 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.

The screenshot shows the 'Device Settings' page with a dark background. It is divided into three main sections: Information, Settings, and Firmware Upgrade.

| Information      |                   |
|------------------|-------------------|
| Model            | WP-20             |
| Serial Number    | 50630500086       |
| Firmware Version | 1.17.27096        |
| Web Version      | 2.0.15            |
| MAC Address      | 00-1d-56-01-11-bf |

| Settings   |  |
|------------|--|
| DNS Name   | <input type="text" value="KRAMER_"/> <input type="button" value="SET"/>      |
| DHCP       | <input type="radio"/> ON <input checked="" type="radio"/> OFF                |
| IP Address | <input type="text" value="192.168.1.39"/> <input type="button" value="SET"/> |
| Mask       | <input type="text" value="255.255.0.0"/> <input type="button" value="SET"/>  |
| Gateway    | <input type="text" value="192.168.0.1"/> <input type="button" value="SET"/>  |
| TCP Port   | <input type="text" value="5000"/> <input type="button" value="SET"/>         |
| UDP Port   | <input type="text" value="50000"/> <input type="button" value="SET"/>        |

| Firmware Upgrade                             |  |
|--|--|
| Choose a file                                |  |
| <input type="button" value="BROWSE..."/>     |  |
| <input type="button" value="START UPGRADE"/> |  |
| Reset  |  |
| <input type="button" value="FACTORY RESET"/> |  |

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 <a href="#">Section 10.2</a> ) |
| 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.<br>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.

**Video & Audio Settings**

**Video**  
 Video selection mode: Auto : Last connected  
 Video auto switching priority: **HDMI** (selected), VGA (disabled)

**Audio**  
 Audio selection mode: Auto : Priority switching  
 Current selection: Embedded  
 HDCP Support (on HDMI input): **Enabled** (selected), Disabled (disabled)

**Timeout**

|  | video | audio |         |
|--|-------|-------|---------|
| Delay switching upon signal loss for (leave 5v ON) | 10    | 5     | seconds |
| Delay switching input upon cable unplug for        | 0     | 0     | seconds |
| Delay power off 5v upon signal loss for            | 900   |       | seconds |

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.<br>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.

The screenshot shows a dark-themed interface titled 'Authentication'. At the top, there is a toggle switch for 'Activate Security' which is currently set to 'ON'. Below this, there are three input fields for password management: 'Change Password : Current Password', 'New Password', and 'Retype New password'. A purple 'CHANGE' button is located at the bottom of the form.

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.

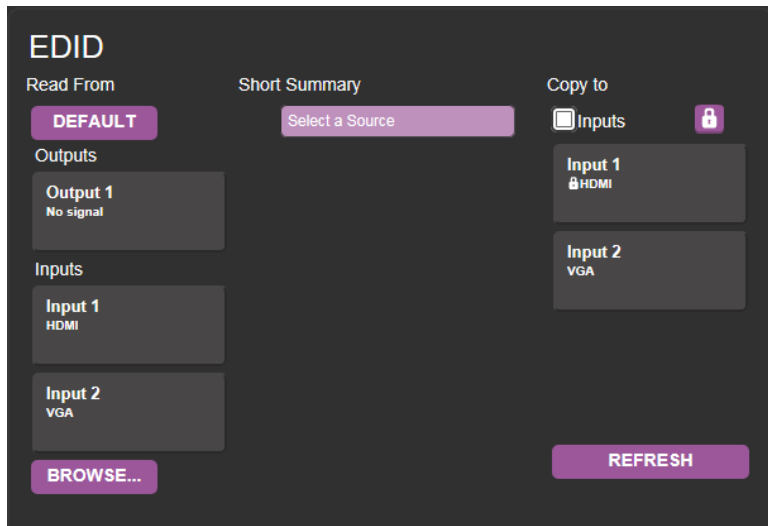


Figure 16: The EDID Page

**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<br>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<br>1 Unbalanced stereo audio on a 3.5mm mini jack  |   |
| PORTS:                               | 1 RS-232 3-pin terminal block<br>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<br>HDCP—works with sources that support HDCP repeater mode<br>HDBT certified   |   |
| MAXIMUM ANALOG AUDIO LEVEL:          | 3.1V p-p   |   |
| THD:                                 | 0.013%   |   |
| SNR:                                 | -70dB  |   |
| SUPPORTED WEB BROWSERS:              | Windows 7 and higher: <ul style="list-style-type: none"> <li>• Internet Explorer (32/64 bit) version 11</li> <li>• Firefox version 30</li> <li>• Chrome version 35</li> </ul> MAC: <ul style="list-style-type: none"> <li>• Chrome version 35</li> <li>• Firefox version 27</li> <li>• Safari version 7</li> </ul> |   |
| MAXIMUM TRANSMISSION DISTANCE:       | 180m (590ft) up to 1080p @60Hz @24bpp in extended mode<br>130m (430ft) up to 1080p @60Hz @36bpp 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")<br>W, D, H<br>2 Gang EU 15.1cm x 4.7cm x 8.6cm (5.94" x 1.85" x 3.39")<br>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:<br>WP-20-BLNK(W) P/N 68-80305099<br>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  
Color encoding formats... 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..... n/a

### 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

### 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



## 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..... 1.5  
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..... n/a

### 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

### 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

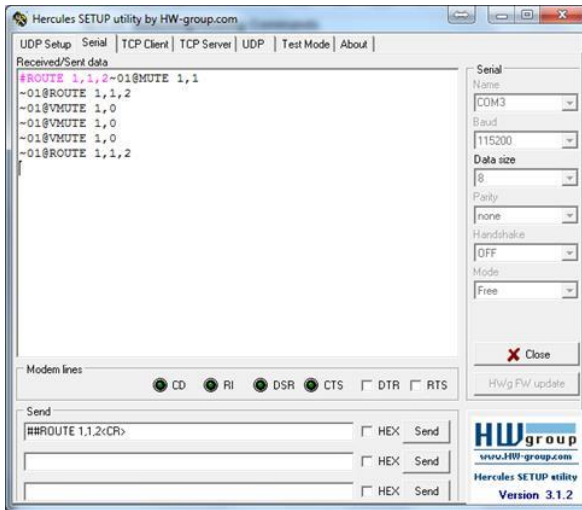
### Raw data

00,FF,FF,FF,FF,FF,FF,00,2D,B2,00,12,01,01,01,01,FF,18,01,04,6E,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,FF,00,35,30,35,2D,38,30,33,30,35,30,31,30,30,00,00,00,FC,00,57,  
50,2D,35,56,48,32,00,00,00,00,00,00,00,00,00,FD,00,38,4C,1E,53,11,00,0A,20,20,20,20,20,00,00,BE

## 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:

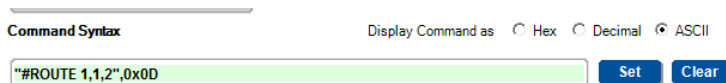


The framing of the command varies according to the terminal communication software.

- K-Touch Builder (Kramer software):

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

- 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 |
|-------|--------------------|----------------|-----------|
| #     | <i>Device_id@</i>  | <b>Message</b> | <b>CR</b> |

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

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

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

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

- **Device Message Format:**

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

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

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

## 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@SEOKCR LF   |                      |            |              |
| Parameters  |                      |            |              |
|   |                      |            |              |
| Response Triggers   |                      |            |              |
|   |                      |            |              |
| Notes   |                      |            |              |
| Validates the Protocol 3000 connection and gets the machine number<br>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:   | <b>BUILD-DATE?</b>    | End User                             | Public       |
| Description  |                       | Syntax                               |              |
| Set:   | -                     | -                                    |              |
| Get:   | Get device build date | # <b>BUILD-DATE?</b> <code>CR</code> |              |
| Response   |                       |                                      |              |
| ~ <code>nn</code> @ <b>BUILD-DATE</b> <code>SE</code> <i>date</i> <code>SE</code> <i>time</i> <code>CR LF</code> |                       |                                      |              |
| Parameters   |                       |                                      |              |
| <i>date</i> – Format: YYYY/MM/DD where YYYY = Year, MM = Month, DD = Day   |                       |                                      |              |
| <i>time</i> – Format: hh:mm:ss where hh = hours, mm = minutes, ss = seconds                                      |                       |                                      |              |
| Response Triggers  |                       |                                      |              |
|  |                       |                                      |              |
| Notes  |                       |                                      |              |
|  |                       |                                      |              |
| K-Config Example   |                       |                                      |              |
| `#BUILD-DATE?`,0x0D  |                       |                                      |              |

### 12.3.1.3 FACTORY

| Functions   |   | Permission               | Transparency |
|---|---|--------------------------|--------------|
| Set:  | <b>FACTORY</b>                                | End User                 | Public       |
| Get:  | -   | -                        | -            |
| Description   |   | Syntax                   |              |
| Set:  | Reset device to factory default configuration | #FACTORY <code>CR</code> |              |
| Get:  | -   | -                        |              |
| Response  |   |                          |              |
| ~nn@FACTORY <code>SP</code> OK <code>CR LF</code>   |   |                          |              |
| 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. #HELP <code>CR</code><br>2. #HELP <code>SP</code> COMMAND_NAME <code>CR</code> |              |
| Response  |   |   |              |
| 1. Multi-line: ~nn@Device available protocol 3000 commands: <code>CR LF</code> command, <code>SP</code> command... <code>CR LF</code> |   |   |              |
| 2. Multi-line: ~nn@HELP <code>SP</code> command: <code>CR LF</code> description <code>CR LF</code> USAGE:usage <code>CR LF</code>     |   |   |              |
| Parameters  |   |   |              |
| COMMAND_NAME – name of a specific command   |   |   |              |
| Response Triggers   |   |   |              |
|   |   |   |              |
| Notes   |   |   |              |
| To get help for a specific command use: HELP <code>SP</code> COMMAND_NAME <code>CR LF</code>  |   |   |              |
| K-Config Example  |   |   |              |
| "#HELP", 0x0D   |   |   |              |

### 12.3.1.5 MODEL

| Functions   |                  | Permission                      | Transparency |
|---|------------------|---------------------------------|--------------|
| Set:  | -                | -                               | -            |
| Get:  | <b>MODEL?</b>    | End User                        | Public       |
| Description   |                  | Syntax                          |              |
| Set:  | -                | -                               |              |
| Get:  | Get device model | # <b>MODEL?</b> <code>CR</code> |              |
| Response  |                  |                                 |              |
| ~ <code>nn</code> @ <b>MODEL</b> <code>SP</code> <i>model_name</i> <code>CR LF</code>   |                  |                                 |              |
| Parameters  |                  |                                 |              |
| <i>model_name</i> – 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:  | <b>PROT-VER?</b>            | End User                           | Public       |
| Description   |                             | Syntax                             |              |
| Set:  | -                           | -                                  |              |
| Get:  | Get device protocol version | # <b>PROT-VER?</b> <code>CR</code> |              |
| Response  |                             |                                    |              |
| ~ <code>nn</code> @ <b>PROT-VER</b> <code>SP</code> 3000: <i>version</i> <code>CR LF</code> |                             |                                    |              |
| Parameters  |                             |                                    |              |
| <i>version</i> - 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:   | <b>RESET</b> | Administrator                           | Public       |
| Get:   | -            | -                                       | -            |
| Description  |              | Syntax                                  |              |
| Set:   | Reset device | # <b>RESET</b> <input type="checkbox"/> |              |
| Get:   | -            | -                                       |              |
| Response   |              |   |              |
| ~ <input type="checkbox"/> <input type="checkbox"/> @ <b>RESET</b> <input type="checkbox"/> OK <input type="checkbox"/> <input type="checkbox"/> 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:  | <b>SN?</b>               | End User                              | Public       |
| Description   |                          | Syntax                                |              |
| Set:  | -                        | -                                     |              |
| Get:  | Get device serial number | # <b>SN?</b> <input type="checkbox"/> |              |
| Response  |                          |                                       |              |
| ~ <input type="checkbox"/> <input type="checkbox"/> @ <b>SN</b> <input type="checkbox"/> serial_number <input type="checkbox"/> 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:   | <b>VERSION?</b>             | End User                          | Public       |
| Description  |                             | Syntax                            |              |
| Set:   | -                           | -                                 |              |
| Get:   | Get firmware version number | # <b>VERSION?</b> <code>CR</code> |              |
| Response   |                             |                                   |              |
| ~ <code>nn</code> @ <b>VERSION?</b> <code>SE</code> <i>firmware_version</i> <code>CR LF</code> |                             |                                   |              |
| Parameters   |                             |                                   |              |
| <i>firmware_version</i> – XX.XX.XXXX where the digit groups are: major.minor.build version     |                             |                                   |              |
| Response Triggers  |                             |                                   |              |
|  |                             |                                   |              |
| Notes  |                             |                                   |              |
|  |                             |                                   |              |
| K-Config Example   |                             |                                   |              |
| `# <b>VERSION?</b> `,0x0D  |                             |                                   |              |

### 12.3.1.1 AV-SW-MODE

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

### 12.3.1.2 AV-SW-TIMEOUT

| Functions  |                            | Permission  | Transparency |
|--|----------------------------|---|--------------|
| Set:   | <b>AV-SW-TIMEOUT</b>       | End User  | Public       |
| Get:   | <b>AV-SW-TIMEOUT?</b>      | End User  | Public       |
| Description  |                            | Syntax  |              |
| Set:   | Set auto switching timeout | # <b>AV-SW-TIMEOUT</b> <i>S</i> <i>P</i> <i>action,time_out</i> <i>CR</i> |              |
| Get:   | Get auto switching timeout | # <b>AV-SW-TIMEOUT?</b> <i>S</i> <i>P</i> <i>action</i> <i>CR</i>         |              |
| Response   |                            |   |              |
| ~ <i>nn</i> @ <b>AV-SW-TIMEOUT</b> <i>S</i> <i>P</i> <i>action,time_out</i> <i>CR</i>  |                            |   |              |
| Parameters   |                            |   |              |
| <i>action</i> – event that triggers the auto switching timeout:<br>0 (video signal lost)<br>2 (audio signal lost)<br>4 (disable 5V on video output if no input signal detected)<br>5 (video cable unplugged)<br>6 (audio cable unplugged)<br><i>timeout</i> – timeout in seconds: 0-60000  |                            |   |              |
| Response Triggers  |                            |   |              |
|  |                            |   |              |
| Notes  |                            |   |              |
| The timeout must not exceed 60000 seconds.<br>The timeout for video and audio signal lost (0, 2) events must not be less than 5 seconds.<br>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.<br>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.<br>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:<br>"#AV-SW-TIMEOUT 0,5",0x0D  |                            |   |              |

### 12.3.1.3 DISPLAY

| Functions   |                       | Permission  | Transparency |
|---|-----------------------|---|--------------|
| Set:  | -                     | -   | -            |
| Get   | <b>DISPLAY?</b>       | End User  | Public       |
| Description   |                       | Syntax  |              |
| Set:  | -                     | -   |              |
| Get:  | Get output HPD status | # <b>DISPLAY?</b> <code>SP</code> <code>out_id</code> <code>CR</code> |              |
| Response  |                       |   |              |
| ~ <code>nr</code> @ <b>DISPLAY</b> <code>SE</code> <code>out_id,status</code> <code>CR</code> <code>LF</code>   |                       |   |              |
| Parameters  |                       |   |              |
| <i>out_id</i> - 1 (HDBT Out)<br><i>status</i> - 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:<br>After every change in output HPD status from On to Off (0)<br>After every change in output HPD status from Off to On (1)<br>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:<br>`#DISPLAY? 1",0x0D  |                       |   |              |

### 12.3.1.4 DPSW-STATUS

| Functions   |                           | Permission  | Transparency |
|---|---------------------------|---|--------------|
| Set:  | -                         | -   | -            |
| Get   | <b>DPSW-STATUS?</b>       | End User  | Public       |
| Description   |                           | Syntax  |              |
| Set:  | -                         | -   |              |
| Get:  | Get the DIP-switch status | # <b>DPSW-STATUS?</b> <b>SE</b> <i>dp_sw_id</i> <b>CR</b> |              |
| Response  |                           |   |              |
| ~ <b>nn</b> @ <b>DPSW-STATUS?</b> <b>SE</b> <i>dp_sw_id,status</i> <b>CR LF</b>   |                           |   |              |
| Parameters  |                           |   |              |
| <i>dp_sw_id</i> - 1 (video switch), 2 (video switch), 3 (audio switch), 4 (audio switch)<br><i>status</i> - 0 (up / Off), 1 (down / On) |                           |   |              |
| Response Triggers   |                           |   |              |
|   |                           |   |              |
| Notes   |                           |   |              |
|   |                           |   |              |
| K-Config Example  |                           |   |              |
| Get the status of DIP-switch 1 (video switch):<br>`#DPSW-STATUS? 1`,0x0D  |                           |   |              |

### 12.3.1.5 FPGA-VER

| Functions  |                          | Permission                                       | Transparency |
|--|--------------------------|--|--------------|
| Set:   | -                        | -  | -            |
| Get:   | <b>FPGA-VER?</b>         | End User   | Public       |
| Description  |                          | Syntax   |              |
| Set:   | -                        | -  |              |
| Get:   | Get current FPGA version | # <b>FPGA-VER?</b> <b>SE</b> <i>id</i> <b>CR</b> |              |
| Response   |                          |  |              |
| ~ <b>nn</b> @ <b>FPGA-VER?</b> <b>SE</b> <i>id,major_ver,minor_ver</i> <b>CR LF</b>  |                          |  |              |
| Parameters   |                          |  |              |
| <i>id</i> - 1 (FPGA)<br><i>major_ver</i> - Major FPGA version number for current firmware<br><i>minor_ver</i> - 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:<br>`#FPGA-VER? 1`,0x0D   |                          |  |              |



### 12.3.1.6 HDCP-MOD

| Functions  |                  | Permission  | Transparency |
|--|------------------|---|--------------|
| Set:   | <b>HDCP-MOD</b>  | Administrator   | Public       |
| Get:   | <b>HDCP-MOD?</b> | End User  | Public       |
| Description  |                  | Syntax  |              |
| Set:   | Set HDCP mode    | # <b>HDCP-MOD</b> [SE] <i>inp_id</i> , <i>mode</i> [CR] |              |
| Get:   | Get HDCP mode    | # <b>HDCP-MOD?</b> [SE] <i>inp_id</i> [CR]              |              |
| Response   |                  |   |              |
| Set / Get: ~ <i>nn</i> @ <b>HDCP-MOD</b> [SE] <i>inp_id</i> , <i>mode</i> [CR LF]  |                  |   |              |
| Parameters   |                  |   |              |
| <i>inp_id</i> – input number: 1 (HDMI In 1), 2 (HDMI In 2), 3 (PC In)<br><i>mode</i> – 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<br>A response is sent to all com ports after command execution if <b>HDCP-MOD</b> 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:<br>HDCP not supported - HDCP Off<br>HDCP support changes following detected sink - MIRROR OUTPUT  |                  |   |              |
| K-Config Example   |                  |   |              |
| Disable HDCP mode on HDMI In 2:<br>`#HDCP-MOD 2,0",0x0D  |                  |   |              |

### 12.3.1.7 HDCP-STAT

| Functions  |                        | Permission  | Transparency |
|--|------------------------|---|--------------|
| Set:   | -                      | -   | -            |
| Get:   | <b>HDCP-STAT?</b>      | End User  | Public       |
| Description  |                        | Syntax  |              |
| Set:   | -                      | -   |              |
| Get:   | Get HDCP signal status | #HDCP-STAT? <input type="checkbox"/> <i>stage,stage_id</i> <input type="checkbox"/> |              |
| Response   |                        |   |              |
| ~ <input type="checkbox"/> <i>stage,stage_id,mode</i> <input type="checkbox"/> <input type="checkbox"/>    |                        |   |              |
| Parameters   |                        |   |              |
| <i>stage</i> – 0 (input), 1 (output)   |                        |   |              |
| <i>stage_id</i> – for input stage: 1 (HDMI In 1), 2 (HDMI In 2), 3 (PC In), for output stage: 1 (HDBT Out) |                        |   |              |
| <i>actual_status</i> – 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:<br>`#HDCP-STAT? 0,1",0x0D`   |                        |   |              |

### 12.3.1.8 NAME

| Functions  |                                  | Permission                | Transparency |
|--|----------------------------------|---------------------------|--------------|
| Set:   | <b>NAME</b>                      | Administrator             | Public       |
| Get:   | <b>NAME?</b>                     | 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   |                                  |                           |              |
| <i>machine_name</i> - 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":<br>"#NAME room-442", 0x0D  |                                  |                           |              |

### 12.3.1.9 NAME-RST

| Functions   |   | Permission    | Transparency |
|---|---|---------------|--------------|
| Set:  | <b>NAME-RST</b>                             | 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:<br>"#NAME-RST", 0x0D |   |               |              |

### 12.3.1.10 PRIORITY

| Functions   |                    | Permission  | Transparency |
|---|--------------------|---|--------------|
| Set:  | <b>PRIORITY</b>    | Administrator   | Public       |
| Get:  | <b>PRIORITY?</b>   | Administrator   | Public       |
| Description   |                    | Syntax  |              |
| Set:  | Set input priority | # <b>PRIORITY</b> <u>SE</u> layer, <i>PRIORITY1</i> , <i>PRIORITY2</i> , <i>PRIORITY3</i> <u>CR</u> |              |
| Get:  | Get input priority | # <b>PRIORITY?</b> layer <u>CR</u>  |              |
| Response  |                    |   |              |
| ~ <u>na</u> @ <b>PRIORITY</b> <u>SE</u> layer, <i>PRIORITY1</i> , <i>PRIORITY2</i> , <i>PRIORITY3</i> <u>CR LE</u>  |                    |   |              |
| Parameters  |                    |   |              |
| layer – 1 (video):<br><i>PRIORITY1</i> - priority of HDMI In 1: 1 (highest priority), 2 (second priority), 3 (third priority)<br><i>PRIORITY2</i> - priority of HDMI In 2: 1 (highest priority), 2 (second priority), 3 (third priority)<br><i>PRIORITY3</i> - priority of PC In: 1 (highest priority), 2 (second priority), 3 (third priority)<br>layer – 2 (audio):<br><i>PRIORITY1</i> - priority of embedded audio: 1 (highest priority), 2 (second priority)<br><i>PRIORITY2</i> - priority of Audio In: 1 (highest priority), 2 (second priority) |                    |   |              |
| Response Triggers   |                    |   |              |
|   |                    |   |              |
| Notes   |                    |   |              |
| The number of <b>PRIORITY</b> parameters differs according to the selected layer<br>1 is the highest priority   |                    |   |              |
| K-Config Example  |                    |   |              |
| Set the video input priority of PC In as the highest priority:<br>"#PRIORITY 1,2,3,1",0x0D  |                    |   |              |

### 12.3.1.11 SIGNAL

| Functions   |                              | Permission   | Transparency |
|---|------------------------------|--|--------------|
| Set:  | -                            | -  | -            |
| Get   | <b>SIGNAL?</b>               | End User   | Public       |
| Description   |                              | Syntax   |              |
| Set:  | -                            | -  |              |
| Get:  | Get input signal lock status | # <b>SIGNAL?</b> <input type="text" value="SP"/> <input type="text" value="inp_id"/> <input type="text" value="CR"/> |              |
| Response  |                              |  |              |
| ~ <input type="text" value="nn"/> @ <b>SIGNAL</b> <input type="text" value="SP"/> <input type="text" value="inp_id,status"/> <input type="text" value="CR LF"/> |                              |  |              |
| Parameters  |                              |  |              |
| <i>inp_id</i> – input number: 1 (HDMI In 1), 2 (HDMI In 2), 3 (PC In)   |                              |  |              |
| <i>status</i> – 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:<br>`#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:  | <b>LOGIN</b>                          | Not Secure   | Public       |
| Get:  | <b>LOGIN?</b>                         | Not Secure   | Public       |
| Description   |                                       | Syntax   |              |
| Set:  | Set protocol permission               | # <b>LOGIN</b> [ <b>SP</b> login_level,password] <b>CR</b> |              |
| Get:  | Get current protocol permission level | # <b>LOGIN?</b> <b>CR</b>                                  |              |
| Response  |                                       |  |              |
| Set: ~[nn]@ <b>LOGIN</b> [ <b>SP</b> login_level,password] <b>SP</b> OK <b>CR LF</b>  |                                       |  |              |
| or  |                                       |  |              |
| ~[nn]@ <b>LOGIN</b> [ <b>SP</b> ERR <b>SP</b> 004] <b>CR LF</b> (if bad password entered)   |                                       |  |              |
| Get: ~[nn]@ <b>LOGIN</b> [ <b>SP</b> login_level] <b>CR LF</b>  |                                       |  |              |
| Parameters  |                                       |  |              |
| <i>login_level</i> – level of permissions required: User, Admin   |                                       |  |              |
| <i>password</i> – predefined password (by <b>PASS</b> command). Default password is an empty string   |                                       |  |              |
| Response Triggers   |                                       |  |              |
|   |                                       |  |              |
| Notes   |                                       |  |              |
| When the permission system is enabled, <b>LOGIN</b> 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 <b>SECUR</b> 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 <b>PASS</b> command is 33333):<br>"#LOGIN Admin,33333",0x0D                              |                                       |  |              |

### 12.3.2.2 LOGOUT

| Functions  |                                 | Permission                               | Transparency |
|--|---------------------------------|--|--------------|
| Set:   | <b>LOGOUT</b>                   | Not Secure                               | Public       |
| Get:   | -                               | -  | -            |
| Description  |                                 | Syntax                                   |              |
| Set:   | Cancel current permission level | # <b>LOGOUT</b> <input type="checkbox"/> |              |
| Get:   | -                               | -  |              |
| Response   |                                 |  |              |
| ~ <input type="checkbox"/> <input type="checkbox"/> @ <b>LOGOUT</b> <input type="checkbox"/> <input type="checkbox"/> OK <input type="checkbox"/> <input type="checkbox"/> 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:  | <b>PASS</b>                  | Administrator  | Public       |
| Get:  | <b>PASS?</b>                 | Administrator  | Public       |
| Description   |                              | Syntax   |              |
| Set:  | Set password for login level | # <b>PASS</b> <input type="checkbox"/> <input type="checkbox"/> login_level,password <input type="checkbox"/> <input type="checkbox"/> |              |
| Get:  | Get password for login level | # <b>PASS?</b> <input type="checkbox"/> <input type="checkbox"/> login_level <input type="checkbox"/> <input type="checkbox"/>         |              |
| Response  |                              |  |              |
| ~ <input type="checkbox"/> <input type="checkbox"/> @ <b>PASS</b> <input type="checkbox"/> <input type="checkbox"/> login_level,password <input type="checkbox"><input type="checkbox"/>CR LF</input> |                              |  |              |
| Parameters  |                              |  |              |
| <i>login_level</i> – level of login to set: User, Admin<br><i>password</i> – password for the <i>login_level</i> . 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:<br>`#PASS Admin,33333`,0x0D  |                              |  |              |

### 12.3.2.4 SECUR

| Functions   |                            | Permission                                    | Transparency |
|---|----------------------------|---|--------------|
| Set:  | <b>SECUR</b>               | Administrator                                 | Public       |
| Get:  | <b>SECUR?</b>              | Not Secure                                    | Public       |
| Description   |                            | Syntax  |              |
| Set:  | Start/stop security        | # <b>SECUR</b> [SE] <i>security_mode</i> [CR] |              |
| Get:  | Get current security state | # <b>SECUR?</b> [CR]                          |              |
| Response  |                            |   |              |
| ~nn[SE] <b>SECUR</b> [SE] <i>security_mode</i> [CR LF]                                |                            |   |              |
| Parameters  |                            |   |              |
| <i>security_mode</i> – 1 (On / enable security), 0 (Off / disable security)           |                            |   |              |
| Response Triggers   |                            |   |              |
|   |                            |   |              |
| Notes   |                            |   |              |
| The permission system works only if security is enabled with the <b>SECUR</b> command |                            |   |              |
| K-Config Example  |                            |   |              |
| Enable the permission system:<br>"#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)<br>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)<br>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<br>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:<br>`#ROUTE 3,1,3",0x0D<br>Set the remote input switching of data to data mode:<br>`#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 <sup>SP</sup> channel,value <sup>CR</sup> |              |
| Get:  | Get ADC (VGA) sampling phase | #VGA-PHASE? <sup>SP</sup> channel <sup>CR</sup>      |              |
| Response  |                              |  |              |
| ~nn@VGA-PHASE <sup>SP</sup> channel,value <sup>CR LF</sup>  |                              |  |              |
| 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:<br>`#VGA-PHASE 3,++,0x0D`             |                              |  |              |

### 12.3.4.2 VMUTE

| Functions   |                                    | Permission  | Transparency |
|---|------------------------------------|---|--------------|
| Set:  | <b>VMUTE</b>                       | End User  | Public       |
| Get:  | <b>VMUTE?</b>                      | End User  | Public       |
| Description   |                                    | Syntax  |              |
| Set:  | Set enable/disable video on output | # <b>VMUTE</b> [ <b>SP</b> output_id,flag <b>CR</b> ]       |              |
| Get:  | Get video on output status         | # <b>VMUTE?</b> [ <b>SP</b> output_id <b>SP</b> <b>CR</b> ] |              |
| Response  |                                    |   |              |
| Set / Get: ~[ <b>nn</b> @ <b>VMUTE</b> [ <b>SP</b> output_id,flag <b>CR</b> <b>LF</b> ] |                                    |   |              |
| 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:<br>`#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<br>Public                 |
| Description  | Syntax                              |                                    |
| Set:   |                                     |                                    |
| Get:   | Get audio in video embedding status | #AUD-EMB?SF <code>in,out</code> CR |
| Response   |                                     |                                    |
| ~nn@AUD-EMB <code>SF</code> <code>in,out,status</code> CR LF   |                                     |                                    |
| Parameters   |                                     |                                    |
| <i>in</i> – embedded audio input number: 1 (Audio In)<br><i>out</i> – video output number in which audio is embedded: 1 (HDBT Out)<br><i>status</i> – embedded status: 1 (On), 0 (Off)   |                                     |                                    |
| Response Triggers  |                                     |                                    |
| A response is sent to the com port from which the get command was received<br>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:  | <b>AUD-LVL</b>                           | End User                             | Public       |
| Get:  | <b>AUD-LVL?</b>                          | End User                             | Public       |
| Description   |  | Syntax                               |              |
| Set:  | Set volume for specific amplifier output | #AUD-LVL[SE]stage,channel,volume[CR] |              |
| Get:  | Get volume for specific amplifier output | #AUD-LVL?[SE]stage,channel[CR]       |              |
| Response  |  |                                      |              |
| ~nn@AUD-LVL[SE]stage,channel,volume[CR LF]  |  |                                      |              |
| Parameters  |  |                                      |              |
| <i>stage</i> – 1 (audio output)<br><i>channel</i> – output channel number of selected stage: 1 (Audio Out)<br><i>volume</i> – 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<br>A minus sign precedes negative values  |  |                                      |              |
| K-Config Example  |  |                                      |              |
| Set the volume of the Audio Out (1) output to 75%:<br>"#AUD-LVL 1,1,75",0x0D  |  |                                      |              |

### 12.3.5.3 AUD-SIGNAL

| Functions   |                               | Permission   | Transparency |
|---|-------------------------------|--|--------------|
| Set:  | -                             | -  | -            |
| Get   | <b>AUD-SIGNAL?</b>            | End User   | Public       |
| Description   |                               | Syntax   |              |
| Set:  | -                             | -  |              |
| Get:  | Get audio input signal status | # <b>AUD-SIGNAL?</b> <code>[SF]</code> <i>inp_id</i> <code>[CR]</code> |              |
| Response  |                               |  |              |
| ~ <code>[nn]</code> @ <b>AUD-SIGNAL</b> <code>[SF]</code> <i>inp_id,status</i> <code>[CR LF]</code>   |                               |  |              |
| Parameters  |                               |  |              |
| <i>inp_id</i> – audio input number: 1 (Audio In)<br><i>status</i> – 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<br>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:   | <b>MUTE</b>    | End User   | Public       |
| Get:   | <b>MUTE?</b>   | End User   | Public       |
| Description  |                | Syntax   |              |
| Set:   | Set audio mute | # <b>MUTE</b> <code>[SF]</code> <i>channel,mute_mode</i> <code>[CR]</code> |              |
| Get:   | Get audio mute | # <b>MUTE?</b> <code>[SF]</code> <i>channel</i> <code>[CR]</code>          |              |
| Response   |                |  |              |
| ~ <code>[nn]</code> @ <b>MUTE</b> <code>[SF]</code> <i>channel, mute_mode</i> <code>[CR LF]</code> |                |  |              |
| Parameters   |                |  |              |
| <i>channel</i> – audio output number: 1 (Audio Out)<br><i>mute_mode</i> – 0 (Off), 1 (On)          |                |  |              |
| Response Triggers  |                |  |              |
|  |                |  |              |
| Notes  |                |  |              |
|  |                |  |              |
| K-Config Example   |                |  |              |
| Mute the Audio Out output:<br>`#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:  | <b>ETH-PORT</b>            | Administrator  | Public       |
| Get:  | <b>ETH-PORT?</b>           | End User   | Public       |
| Description   |                            | Syntax   |              |
| Set:  | Set Ethernet port protocol | # <b>ETH-PORT</b> <b>[SE]</b> <i>portType</i> , <i>ETHPort</i> <b>[CR]</b> |              |
| Get:  | Get Ethernet port protocol | # <b>ETH-PORT?</b> <b>[SE]</b> <i>portType</i> <b>[CR]</b>                 |              |
| Response  |                            |  |              |
| ~ <b>[nn]</b> @ <b>ETH-PORT</b> <b>[SE]</b> <i>portType</i> , <i>ETHPort</i> <b>[CR LF]</b> |                            |  |              |
| Parameters  |                            |  |              |
| <i>portType</i> – string of 3 letters indicating the port type: TCP, UDP                    |                            |  |              |
| <i>ETHPort</i> – 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 <sup>16</sup> -1)                  |                            |  |              |
| K-Config Example  |                            |  |              |
| Set the Ethernet port protocol for TCP to port 12457:<br>"#ETH-PORT TCP,12457",0x0D         |                            |  |              |

### 12.3.6.2 NET-DHCP

| Functions  |                  | Permission  | Transparency |
|--|------------------|---|--------------|
| Set:   | <b>NET-DHCP</b>  | Administrator   | Public       |
| Get:   | <b>NET-DHCP?</b> | End User  | Public       |
| Description  |                  | Syntax  |              |
| Set:   | Set DHCP mode    | # <b>NET-DHCP</b> <input type="checkbox"/> <i>mode</i> <input type="checkbox"/> |              |
| Get:   | Get DHCP mode    | # <b>NET-DHCP?</b> <input type="checkbox"/>                                     |              |
| Response   |                  |   |              |
| ~ <input type="checkbox"/> @ <b>NET-DHCP</b> <input type="checkbox"/> <i>mode</i> <input type="checkbox"/> LF  |                  |   |              |
| Parameters   |                  |   |              |
| <i>mode</i> – 0 (do not use DHCP. Use the IP address set by the factory or the <b>NET-IP</b> command), 1 (try to use DHCP. If unavailable, use the IP address set by the factory or the <b>NET-IP</b> command)   |                  |   |              |
| Response Triggers  |                  |   |              |
|  |                  |   |              |
| Notes  |                  |   |              |
| <p>Connecting Ethernet to devices with DHCP may take more time in some networks</p> <p>To connect with a randomly assigned IP by DHCP, specify the device DNS name (if available) using the <b>NAME</b> command. You can also get an assigned IP by direct connection to USB or RS-232 protocol port if available</p> <p>Consult your network administrator for correct settings</p> |                  |   |              |
| K-Config Example   |                  |   |              |
| <p>Enable DHCP mode, if available:</p> <pre>"#NET-DHCP 1",0x0D</pre>   |                  |   |              |



### 12.3.6.3 NET-GATE

| Functions  |                  | Permission  | Transparency |
|--|------------------|---|--------------|
| Set:   | <b>NET-GATE</b>  | Administrator   | Public       |
| Get:   | <b>NET-GATE?</b> | End User  | Public       |
| Description  |                  | Syntax  |              |
| Set:   | Set gateway IP   | # <b>NET-GATE</b> <input type="checkbox"/> <i>ip_address</i> <input type="checkbox"/> |              |
| Get:   | Get gateway IP   | # <b>NET-GATE?</b> <input type="checkbox"/>   |              |
| Response   |                  |   |              |
| ~ <input type="checkbox"/> @ <b>NET-GATE</b> <input type="checkbox"/> <i>ip_address</i> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>               |                  |   |              |
| Parameters   |                  |   |              |
| <i>ip_address</i> – 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:<br>"#NET-GATE 192.168.000.001",0x0D   |                  |   |              |

### 12.3.6.4 NET-IP

| Functions  |                | Permission  | Transparency |
|--|----------------|---|--------------|
| Set:   | <b>NET-IP</b>  | Administrator   | Public       |
| Get:   | <b>NET-IP?</b> | End User  | Public       |
| Description  |                | Syntax  |              |
| Set:   | Set IP address | # <b>NET-IP</b> <input type="checkbox"/> <i>ip_address</i> <input type="checkbox"/> |              |
| Get:   | Get IP address | # <b>NET-IP?</b> <input type="checkbox"/>   |              |
| Response   |                |   |              |
| ~ <input type="checkbox"/> @ <b>NET-IP</b> <input type="checkbox"/> <i>ip_address</i> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |                |   |              |
| Parameters   |                |   |              |
| <i>ip_address</i> – 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:<br>"#NET-IP 192.168.001.039",0x0D  |                |   |              |

### 12.3.6.5 NET-MAC

| Functions   |                 | Permission                                 | Transparency |
|---|-----------------|--|--------------|
| Set:  | -               | -  | -            |
| Get:  | <b>NET-MAC?</b> | End User                                   | Public       |
| Description   |                 | Syntax                                     |              |
| Set:  | -               | -  |              |
| Get:  | Get MAC address | # <b>NET-MAC?</b> <input type="checkbox"/> |              |
| Response  |                 |  |              |
| ~nn@ <b>NET-MAC</b> <input type="checkbox"/> mac_address <input type="checkbox"/> 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:   | <b>NET-MASK</b>  | Administrator  | Public       |
| Get:   | <b>NET-MASK?</b> | End User   | Public       |
| Description  |                  | Syntax   |              |
| Set:   | Set subnet mask  | # <b>NET-MASK</b> <input type="checkbox"/> net_mask <input type="checkbox"/> |              |
| Get:   | Get subnet mask  | # <b>NET-MASK?</b> <input type="checkbox"/>                                  |              |
| Response   |                  |  |              |
| ~nn@ <b>NET-MASK</b> <input type="checkbox"/> net_mask <input type="checkbox"/> CR LF  |                  |  |              |
| Parameters   |                  |  |              |
| net_mask - format: xxx.xxx.xxx.xxx   |                  |  |              |
| Response Triggers  |                  |  |              |
| The subnet mask limits the Ethernet connection within the local network<br>Consult your network administrator for correct settings |                  |  |              |
| Notes  |                  |  |              |
|  |                  |  |              |
| K-Config Example   |                  |  |              |
| Set the subnet mask to 255.255.0.0:<br>"#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[SE]src_type,src_id,dst_type,dest_bitmap[CR LF] |              |
| Get:  | -  | -  |              |
| Response  |  |  |              |
| ~nn@CPEDID[SE]src_type,src_id,dst_type,dest_bitmap[CR LF]   |  |  |              |
| Parameters  |  |  |              |
| <p>src_type – EDID source type (usually output): 0 (input), 1 (output), 2 (default EDID)</p> <p>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)</p> <p>dst_type – EDID destination type (usually input): 0 (input), 1 (output), 2 (default EDID)</p> <p>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.</p> |  |  |              |
| Response Triggers   |  |  |              |
| Response is sent to the com port from which the Set was received (before execution)   |  |  |              |
| Notes   |  |  |              |
| <p>Destination bitmap size depends on device properties (for 64 inputs it is a 64-bit word)</p> <p>Example: bitmap 0x0013 means inputs 1, 2 and 5 are loaded with the new EDID.</p> <p>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.</p>   |  |  |              |
| K-Config Example  |  |  |              |
| <p>Copy the EDID data from the HDBT Out output (EDID source) to the HDMI In 1 input:</p> <pre>"#CPEDID 1,1,0,0x1",0x0D</pre> <p>Copy the EDID data from the default EDID source to HDMI In 1 and PC In inputs:</p> <pre>"#CPEDID 2,0,0,0x5",0x0D</pre>  |  |  |              |

### 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 <input type="text"/> <i>input_id</i> , <input type="text"/> <i>lock_mode</i> <input type="text"/> |              |
| Get:   | Get EDID lock state | #LOCK-EDID? <input type="text"/> <i>input_id</i> <input type="text"/>  |              |
| Response   |                     |  |              |
| ~nn@LOCK-EDID <input type="text"/> <i>input_id</i> , <input type="text"/> <i>lock_mode</i> <input type="text"/> <input type="text"/> |                     |  |              |
| Parameters   |                     |  |              |
| <i>input_id</i> - 1 (HDMI In 1), 2 (HDMI In 2), 3 (PC In),<br><i>lock_mode</i> - 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:<br>"#LOCK-EDID 2,1",0x0D   |                     |  |              |

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P/N: 2900-300386



Rev: 2



## SAFETY WARNING

Disconnect the unit from the power supply before opening and servicing

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