USER MANUAL

MODEL:
VS-44UHDA
4x4 UHD Matrix Switcher
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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 the video, audio, presentation, and broadcasting professional 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.

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/VS-44UHDA to check for up-to-date user manuals, application programs, and to check if firmware upgrades are available (where appropriate).

Achieving the Best Performance

• Use only good quality connection cables (we recommend Kramer high-performance, high-resolution cables) to avoid interference, deterioration in signal quality due to poor matching, and elevated noise levels (often associated with low quality cables).

• Do not secure the cables in tight bundles or roll the slack into tight coils.

• Avoid interference from neighbouring electrical appliances that may adversely influence signal quality.

• Position your Kramer VS-44UHDA 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.
Safety Instructions

Caution: There are no operator serviceable parts inside the unit.

Warning: Use only the power cord that is supplied with the unit.

Warning: Do not open the unit. High voltages can cause electrical shock! Servicing by qualified personnel only.

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

Recycling Kramer Products

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

Overview

Congratulations on purchasing your Kramer VS-44UHDA.

VS-44UHDA is a high-quality 4x4 UHD Matrix Switcher for HDMI signals up to 4K@60Hz 4:2:0 and embedded/de-embedded analog audio. It reclocks and equalizes the signals and can route any one of four HDMI, HDCP-compliant sources (selectable) to any or all outputs simultaneously. The VS-44UHDA offers unmatched audio flexibility where any embedded digital or analog audio input can be routed to any embedded digital or analog audio output in addition to 4 ARC sources to produce an equivalent 12x12 audio matrix.

The VS-44UHDA provides exceptional quality, advanced and user-friendly operation, and flexible control.

Exceptional Quality

- Max. data rate – 8.91Gbps data rate (2.97Gbps per graphics channel).
- Max. resolution – Up to 4K@60Hz UHD (4:2:0).
- Step-in over HDMI technology.
- HDMI, HDCP and DVI Compliance.
- HDMI support – Deep color, 3D, ARC, up to 7.1 uncompressed audio channels.
- Kramer reKlocking™ and equalization technology – rebuilds the digital signal to travel longer distances.

Advanced and User-friendly Operation

- Fast switching.
- Audio level and balance support.
• Embedded pattern generator (480p) – With selectable patterns.
• Selectable HDCP per input.
• Memory locations – 8 presets for quick access to common configurations.
• Advanced EDID management per input.
• Active source and acceptor detection.
• Easy front-panel operation.
• Selectable switching speed.
• Lock button to prevent tampering.
• Kramer protocol 3000 support.
• Firmware upgrade via mini USB, Ethernet or the RS-232 port.
• Control Options – RS-232 serial commands transmitted by a PC, touch screen system or other serial controller, Ethernet port via LAN.
• 7-segment display, indicating the video and audio status and other functions.
• Audio breakaway and AFV (audio-follow-video) operation support.
• Efficient power-saving features.
• Includes non-volatile memory that retains the last settings, after switching the power off and then on again.

Flexible Connectivity

• Supports up to four analog audio inputs, four digital audio inputs and 4 ARC inputs.
• 4x4 switching for HDMI signals, 12x12 switching for audio signals.
• ARC from HDMI outputs and analog audio inputs to HDMI inputs 1 to 4.
• Supports Step-in function.
• Housed in a 19” 1U rack mountable enclosure, with rack ears included, and is fed from a 100-240 VAC universal switching power supply.

Typical Applications

The VS-44UHDA is ideal for the following typical applications:

• Presentation and multimedia applications.
• Systems that require automatic HDMI routing.

Controlling your VS-44UHDA

Control your VS-44UHDA directly via the front panel push buttons, or:

• By RS-232 serial commands transmitted by a touch screen system, PC, or other serial controller.
• Via the Ethernet using built-in user-friendly Web pages.
Defining the VS-44UHDA 4x4 UHD Matrix Switcher

This section defines the VS-44UHDA.

The behavior of the front panel buttons and the 7-segment display changes along with the operation modes. For further details see Operating VS-44UHDA via Front Panel Buttons on page 12.

<table>
<thead>
<tr>
<th>#</th>
<th>Feature</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>IN (PATTERN) SELECTOR Buttons</td>
<td>Press to select the input (1 to 4) to switch after selecting an output (also used for storing machine setups in the STO-RCL modes and for selecting a pattern in the Pattern mode).</td>
</tr>
<tr>
<td>2</td>
<td>OUT (MUTE) SELECTOR Buttons</td>
<td>Press to select an output (1 to 4) to which the input is routed. Also used for storing machine presets.</td>
</tr>
<tr>
<td>3</td>
<td>MUTE/PATTERN Button</td>
<td>Press to view the current pattern status and select the output/s to which a pattern is routed. Press to mute audio or video on a selected output when D-AUDIO/A-AUDIO, and/or VIDEO buttons are pressed (lit).</td>
</tr>
<tr>
<td>4</td>
<td>ALL Button</td>
<td>Press to perform an action on all outputs (for example setting Mute mode, Pattern mode and so on). For switching, press ALL and then a specific INPUT button to route the selected input to all outputs. For example, press ALL and then IN 2 to route input 2 to all the outputs.</td>
</tr>
<tr>
<td>5</td>
<td>STO and RCL Buttons</td>
<td>Press STO to store the current switching setting to a preset button. Press RCL to recall the switching setting from a preset button.</td>
</tr>
<tr>
<td>6</td>
<td>A-AUDIO Button</td>
<td>Press to enable analog audio routing. When pressed together with VIDEO, the analog audio is routed together with the video signal.</td>
</tr>
<tr>
<td>7</td>
<td>D-AUDIO Button</td>
<td>Press to enable digital audio routing. When pressed together with VIDEO, the digital audio is routed together with the video signal.</td>
</tr>
<tr>
<td>8</td>
<td>VIDEO Button</td>
<td>Press to select video inputs. When pressed together with D-AUDIO/A-AUDIO, video is switched together with audio.</td>
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<td>9</td>
<td>LOCK Button</td>
<td>Press and hold (for about 3 seconds) to toggle locking/releasing of the front panel buttons. Press to save the following setups: HDCP (On/Off), ARC, Fast Switch and Switch mode.</td>
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<tr>
<td>10</td>
<td>EDID Button</td>
<td>Press to capture the EDID.</td>
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<tr>
<td>11</td>
<td>OUTPUT/INPUT 7-segment LED Display</td>
<td>Displays the selected inputs switched to the outputs (marked above each input).</td>
</tr>
<tr>
<td>#</td>
<td>Feature</td>
<td>Function</td>
</tr>
<tr>
<td>----</td>
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<td>AUDIO IN on 3.5 Mini Jack Connectors</td>
<td>Connect to unbalanced stereo analog audio sources (from 1 to 4).</td>
</tr>
<tr>
<td>13</td>
<td>INPUT HDMI Connector</td>
<td>Connect to the HDMI source (from 1 to 4).</td>
</tr>
<tr>
<td>14</td>
<td>AUDIO OUTPUT on 5-pin Terminal Block Connectors</td>
<td>Connect to balanced stereo analog audio acceptor (see pinout below), from 1 to 4.</td>
</tr>
<tr>
<td>15</td>
<td>OUTPUT HDMI Connectors</td>
<td>Connect to HDMI acceptors (from 1 to 4).</td>
</tr>
<tr>
<td>16</td>
<td>PROG Mini USB Port</td>
<td>Use for firmware upgrade or communication (connecting to a PC or a serial controller).</td>
</tr>
<tr>
<td>17</td>
<td>SETUP DIP-Switches</td>
<td>N/A</td>
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<td>18</td>
<td>5V/2A USB Port</td>
<td>Use to charge a device.</td>
</tr>
<tr>
<td>19</td>
<td>Reset Button</td>
<td>Press and hold while powering the device to reset IP settings to factory default values.</td>
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<td>20</td>
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<td>22</td>
<td>RS-232 3-pin Terminal Block Connectors</td>
<td>Connect to a PC or a serial controller.</td>
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<td>23</td>
<td>Mains Power Connector</td>
<td>Connect to the mains power.</td>
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<tr>
<td>24</td>
<td>Mains Power Fuse</td>
<td>Fuse for protecting the device.</td>
</tr>
<tr>
<td>25</td>
<td>Mains Power Switch</td>
<td>Switch for turning the device on or off.</td>
</tr>
</tbody>
</table>
Installing in a Rack

This section provides instructions for rack mounting the VS-44UHDA. Before installing in a rack, verify that the environment is within the recommended range:

- Operation temperature – 0°C to 40°C (32 to 104°F).
- Storage temperature – -40°C to +70°C (-40 to +158°F).
- Humidity – 10% to 90%, RHL non-condensing.

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

- It is located within recommended environmental conditions. Operating ambient temperature of a closed or multi-unit rack assembly may exceed ambient room temperature.
- Once rack mounted, there is enough air still flow around the VS-44UHDA.
- The VS-44UHDA is placed upright in the correct horizontal position.
- You do not overload the circuit(s). When connecting the VS-44UHDA to the supply circuit, overloading the circuits may have a detrimental effect on overcurrent protection and supply wiring. Refer to the appropriate nameplate ratings for information. For example, for fuse replacement, see the value printed on the product label.
- The VS-44UHDA is earthed (grounded) and connected only to an electricity socket with grounding. Pay particular attention when electricity is supplied indirectly (for example, when the power cord is not plugged directly into the wall socket but to an extension cable or power strip). Use only the supplied power cord.

To rack-mount the VS-44UHDA:

1. Attach both ear brackets to the VS-44UHDA: Remove the screws from each side of the VS-44UHDA (3 on each side), and replace them through the ear brackets.

2. Place the ears of the VS-44UHDA against the rack rails and insert the appropriate screws (not provided) through each of the four holes in the rack ears.

Some models, may feature built-in rack ears:

- Detachable rack ears can be removed for desktop use.
- Always mount the VS-44UHDA in the rack before connecting any cables or power.
- If you are using a Kramer rack adapter kit (for a machine that is not 19"), see the Rack Adapters user manual for installation instructions available from our Web site www.kramerav.com/downloads/VS-44UHDA.
Connecting the VS-44UHDA

Always switch off the power to each device before connecting it to your VS-44UHDA. After connecting your VS-44UHDA, connect its power and then switch on the power to each device.

Although this connecting example shows only several inputs and outputs that are connected, you can connect all the inputs and outputs simultaneously.

To connect the VS-44UHDA as illustrated in the example in Figure 3, do the following:

1. Connect up to four video sources to the inputs (from INPUT 1 to INPUT 4). For example, connect:
   - A laptop to the INPUT 1 HDMI connector.
   - Blu-ray players to the INPUT 2, 3 and 4 HDMI connectors.

2. Connect up to four analog stereo audio sources (from IN 1 to IN 4). For example, connect:
   - The analog audio output of a laptop to the AUDIO IN 1 3.5mm mini jack.
   - An i-Pod to the AUDIO IN 2 3.5mm jack.

3. Connect the four video HDMI outputs (from OUTPUT 1 to OUTPUT 4) to up to four acceptors. For example, connect the:
   - OUTPUT 1 HDMI connector to a projector.
   - OUTPUT 2, OUTPUT 3 and OUTPUT 4 HDMI connectors each to a display.

4. Connect the four balanced analog output 5-pin terminal block connectors (from OUTPUT 1 to OUTPUT 4) to up to four audio acceptors. For example, connect OUTPUT 4 to active speakers.

5. Connect the power cord.
   We recommend that you use only the power cord that is supplied with this machine

6. If required, connect:
   - The 5V/2A USB port to the USB port of another device to charge it.
   - The ETHERNET port.
Connecting Balanced/Unbalanced Stereo Audio Output

The following are the pinouts for connecting to balanced or unbalanced stereo audio sources:

- **Figure 4: Connecting to a Balanced Stereo Audio Output**

- **Figure 5: Connecting an Unbalanced Stereo Audio Acceptor to the Balanced Output**

Connecting to VS-44UHDA via RS-232

You can connect to the VS-44UHDA via an RS-232 connection using, for example, a PC.

To connect to the VS-44UHDA via RS-232:

- Connect the RS-232 rear panel port on the VS-44UHDA unit via a 9-wire straight cable (only pin 2 to pin 2, pin 3 to pin 3, and pin 5 to pin 5 need to be connected) to the RS-232 9-pin D-sub port on your PC.
Connecting VS-44UHDA via the ETHERNET Port

You can connect to the VS-44UHDA via Ethernet using either of the following methods:

- Directly to the PC using a crossover cable (see Connecting the Ethernet Port Directly to a PC on page 9).
- Via a network hub, switch, or router, using a straight-through cable (see Connecting the Ethernet Port via a Network Hub or Switch on page 11).

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

Connecting the Ethernet Port Directly to a PC

You can connect the Ethernet port of the VS-44UHDA directly to the Ethernet port on your PC using a crossover cable with RJ-45 connectors.

This type of connection is recommended for identifying the VS-44UHDA with the factory configured default IP address.

After connecting the VS-44UHDA to the Ethernet port, configure your PC as follows:

1. Click Start > Control Panel > Network and Sharing Center.
2. Click Change Adapter Settings.
3. Highlight the network adapter you want to use to connect to the device and click Change settings of this connection.
   The Local Area Connection Properties window for the selected network adapter appears as shown in Figure 6.

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

![Local Area Connection Properties Window](image)
5. Click **Properties**. The Internet Protocol Properties window relevant to your IT system appears as shown in [Figure 7](#) or [Figure 8](#).

![Figure 7: Internet Protocol Version 4 Properties Window](image1)

![Figure 8: Internet Protocol Version 6 Properties Window](image2)

6. Select **Use the following IP Address** for static IP addressing and fill in the details as shown in [Figure 9](#).

   For TCP/IPv4 you can use any IP address in the range 192.168.1.1 to 192.168.1.255 (excluding 192.168.1.39) that is provided by your IT department.
7. Click **OK**.

8. Click **Close**.

**Connecting the Ethernet Port via a Network Hub or Switch**

You can connect the Ethernet port of the VS-44UHDA to the Ethernet port on a network hub or using a straight-through cable with RJ-45 connectors.

**Control Configuration via the Ethernet Port**

To control several units via Ethernet, connect the Master unit (Device 1) via the Ethernet port to the Ethernet port of your PC. Use your PC provide initial configuration of the settings (see **Connecting VS-44UHDA via the ETHERNET Port** on page 9).
Operating VS-44UHDA via Front Panel Buttons

Press the power switch to power the device. During the 10-second initialization process, the:

- 7-segment display LEDs are on.
- All the front panel buttons illuminate.
- The FPGA/EPLD version (P), the firmware version (F) and the build version (b) appear in succession.

Following initialization, the front panel buttons and 7-segment display enter normal operation:

- The 7-segment display shows the video IN-OUT status.
- The current operation mode button illuminates (VIDEO, by default).
- An illuminated IN (PATTERN) button indicates an active signal connected to the input.
- An illuminated OUT (MUTE) button indicates that an acceptor is connected to the output.

The VS-44UHDA front panel buttons enable performing the following functions:

- **Routing the Signals**, on page 12.
- **Storing and Recalling a Setup**, on page 23.
- **Setting the Switching Mode**, on page 24.
- **Setting the Switching Speed**, on page 25.
- **Setting HDCP**, on page 25.
- **Copying the EDID**, on page 26.

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Routing the Signals

You can switch the video and the audio signals together (AFV) or switch them separately, via the following switching modes:

- **Switching the Video Signal**, on page 13.
- **Routing an Analog Audio Input to HDMI and Analog Audio Outputs**, on page 14.
- **Routing a Digital Audio Input to HDMI and Analog Outputs**, on page 15.
- **Switching the Video and the Audio Signal Simultaneously**, on page 16.
- **Muting/Unmuting an Output**, on page 17.
- **Routing a Pattern to the Output**, on page 18.
- **Operating in ARC Mode**, on page 19.
Switching the Video Signal

The VIDEO button on the VS-44UHDA front panel enables video routing.

To switch a video input to an output:

1. Press VIDEO.  
   The button illuminates and the 7-segment display shows the current IN-OUT video status.

   On the front panel buttons:
   - An illuminated input button means that an active signal is detected on that input.
   - An illuminated output button means that a display is connected to that output.
   - A flashing output button means that a non-HDCP display is connected to that output.
     Note that in the case that an HDCP-encrypted input is routed through the matrix to a non-HDCP screen, the video will not be presented and the non-HDCP screen will turn black.

   On the 7-segment display:
   - A digit (from 1 to 4) shows the input number that is currently routed to the output.
   - “P” under an output number indicates that a pattern is routed to that output.
   - “0” under an output number indicates that the output is muted.

2. Press an OUT (MUTE) button (1 to 4).  
   The 7-segment display LED, under the selected output, flashes.

   Press ALL (instead of an output button) to route the selected input to all the outputs. All the 7-segment display LEDs flash.

3. Press an IN (PATTERN) button (1 to 4).  
   The selected input is switched to the selected output (or to all the outputs if ALL was pressed instead) and the 7-segment display shows the current status.
Routing an Analog Audio Input to HDMI and Analog Audio Outputs

The **A-AUDIO** button on the VS-44UHDA front panel enables to route the analog audio input signals to the balanced stereo analog audio outputs and the HDMI outputs.

The analog audio input can be routed separately to either HDMI or analog outputs only via the embedded web pages see [Switching Audio in Breakaway Mode](#) on page 36.

Generally, analog routing is enabled by pressing **A-AUDIO**:

- When it is illuminated, the analog audio input is the audio source.

To switch an analog audio input signal to HDMI and analog outputs:

1. Press **A-AUDIO**.
   - The button illuminates (analog audio input to HDMI and balanced audio output mode) and the 7-segment display shows the current IN-OUT analog audio status.

On the front panel buttons:

- An illuminated input button means that an active signal is detected on that input.
- An illuminated output button means that a display that supports audio is detected on that output.
- A dark button means either that the display that is connected does not support audio or that a display is not connected at all.

On the 7-segment display:

- “d” under an output number indicates that an HDMI audio input is the current audio source.
- “C” under an output number indicates that ARC audio is routed to that output.
- “0” under an output number indicates that the analog audio output is muted.
- “.” under an output number indicates that the HDMI output port is in ARC mode.
- Any digit shows the analog audio input switching state.

2. While **A-AUDIO** is on, select an output button (for example, 4) and then an input button (for example, 2). Analog audio input 2 is routed to balanced stereo audio output 4 and on the 7-segment display, INPUT 2 appears under OUTPUT 4.

When switching you can also press:

- An output button (1 to 4) and then **OUT (MUTE)** to mute the selected output (turns 0).
- **ALL** (instead of an output button) and then an input button to route the selected input to all the outputs. All the 7-segment display LEDs flash and then display the selected input.
Routing a Digital Audio Input to HDMI and Analog Outputs

The D-AUDIO 7 button on the VS-44UHDA front panel enables to route the HDMI embedded audio input signals 12 to the balanced stereo audio outputs 14 and the HDMI outputs 15.

Generally, digital routing is enabled by pressing D-AUDIO:

- When this button is illuminated, the HDMI input embedded audio is the audio source.

To switch an HDMI audio input to digital and analog outputs:

1. Press D-AUDIO 7.

   The button illuminates (HDMI audio input to HDMI and analog output mode) and the 7-segment display 11 shows the current IN-OUT digital audio status.

On the front panel buttons:

- An illuminated input button means that an active digital audio signal is detected on that input that supports LPCM audio.
- A dark input button means that there is no active digital audio source on that input (or that the source is DVI).
- A flashing input button means that a Dolby digital audio, Dolby-TrueHD audio, or AC-3 audio signal from a DVD-player is detected on that input.
- An illuminated output button means that a display that supports LPCM audio is connected to that output.
- A dark button means either that the display that is connected does not support audio or that a display is not connected at all.
- A flashing output button means that a display is connected that does not support LPCM.

On the 7-segment display:

- “A” under an output number indicates that an analog audio signal is currently routed to that output.
- “0” under an output number indicates that the audio output is muted.
- “.” under an output number indicates that the HDMI output port is in ARC mode.
- Any digit shows the HDMI audio input switching state.

2. While D-AUDIO is on, select an output button (for example, 3) and then an input button (for example, 1). HDMI audio input 1 is routed to HDMI audio output 3 and the balanced stereo audio output 3, and on the 7-segment display, INPUT 1 appears under OUTPUT 3.

When switching you can also press:

- An output button (1 to 4) and then OUT (MUTE) 2 to mute the selected output (turns 0).
- ALL 4 (instead of an output button) and then an input button to route the selected input to all the outputs.

All the 7-segment display LEDs flash and then display the selected input.
Switching the Video and the Audio Signal Simultaneously

You can select the analog or the digital audio signal to switch to the output together with the video signal.

To switch the digital audio and video signals together to an output:

1. Press D-AUDIO and VIDEO simultaneously.
   The buttons illuminate and the 7-segment display shows the current IN-OUT video status.

2. Press an OUT (MUTE) button (1 to 4).
   The 7-segment display LED, under the selected output, flashes.

   Press ALL (instead of an output button) to route the selected input to all the outputs. All the 7-segment display LEDs flash.

3. Press an IN (PATTERN) button (1 to 4).
   The selected audio input is switched to the selected output (or to all the outputs if ALL was pressed instead) and the 7-segment display shows the current status.

To switch the analog audio and video signals together to an output:

1. Press A-AUDIO and VIDEO simultaneously.
   The buttons illuminate and the 7-segment display shows the current IN-OUT video status.

2. Press an OUT (MUTE) button (1 to 4).
   The 7-segment display LED, under the selected output, flashes.

   Press ALL (instead of an output button) to route the selected input to all the outputs. All the 7-segment display LEDs flash.

3. Press an IN (PATTERN) button (1 to 4).
   The selected audio input is switched to the selected output (or to all the outputs if ALL was pressed instead) and the 7-segment display shows the current status.
**Muting/Unmuting an Output**

You can mute/unmute an audio signal and a video signal separately.

To mute/unmute an audio signal:

1. Press **A-AUDIO** or **D-AUDIO**. The buttons illuminate.

2. Press an **OUT (MUTE)** button (1 to 4).

   Press **ALL** (instead of an output button) to mute/unmute all the outputs. All the 7-segment display LEDs flash.

3. Press **MUTE/PATTERN** to mute/unmute the output.
   The muted output appears as “0” on the 7-segment display.

To mute/unmute a video signal:

1. Press **VIDEO**. The button illuminates and the 7-segment display shows the current IN-OUT video status.

2. Press an **OUT (MUTE)** button (1 to 4).
   The 7-segment display LED, under the selected output, flashes.

   Press **ALL** (instead of an output button) to mute/unmute all the outputs. All the 7-segment display LEDs flash.

3. Press **MUTE/PATTERN** to mute/unmute the output.
   The muted output appears as “0” on the 7-segment display.
Routing a Pattern to the Output

VS-44UHDA generates 8 embedded patterns. These patterns can be routed at a resolution of 480p to any of the outputs.

Once a pattern is selected, that same pattern is routed to all the selected outputs.

A pattern is selected by pressing inputs 1 to 4 when in the Pattern mode as follows:

- When MUTE/PATTERN is illuminated, press IN 1 for pattern 1, IN 2 for pattern 2, IN 3 for pattern 3 and IN 4 for pattern 4.
- When MUTE/PATTERN flashes, press IN 1 for pattern 5, IN 2 for pattern 6, IN 3 for pattern 7 and IN 4 for pattern 8.

![Embedded Patterns](image)

To route a pattern:

1. Press MUTE/PATTERN:
   - Once: button illuminates, press IN 1 to IN 4 to select patterns 1 to 4.
   - Twice: button flashes, press IN 1 to IN 4 to select patterns 5 to 8.

On the front panel buttons:

- An illuminated output button means that a display is connected on that output.
- An illuminated input button indicates the current pattern selected.

On the 7-segment display:

- “P” under an output number indicates that a pattern is routed to that output.
- “-” under an output number indicates that a video input is routed to that output.
- “0” under an output number indicates that the output is muted.

2. Press an OUT (MUTE) button (1 to 4).
   The 7-segment display LED, under the selected output, flashes.

   Press ALL (instead of an output button) to route a pattern to all the outputs. All the 7-segment display LEDs flash.

3. Press an input button to select a pattern (see Figure 10).
   The 7-segment display shows the new pattern status.

Press VIDEO, D-AUDIO or A-AUDIO to exit pattern mode.
Operating in ARC Mode

ARC (Audio Return Channel) can be set via the front panel buttons or the embedded webpages (see Switching Audio in Breakaway Mode on page 36 and Setting Input Parameters on page 32).

VS-44UHDA features three types of audio return channels (ARC):
- Routing HDMI Audio Output Signals to the Balanced Audio Outputs on page 19.
- Routing HDMI Audio Output Signals to HDMI Input Ports on page 20.
- Routing Analog Audio Inputs to HDMI Input Ports on page 22.

Routing HDMI Audio Output Signals to the Balanced Audio Outputs

To route an HDMI audio output to a balanced stereo audio output, enable ARC on the HDMI output ports and then route them.

To set an HDMI output to ARC mode:

ARC can be enabled or disabled at any time, regardless of whether a display is connected to the HDMI output or not.

1. Press and hold MUTE/PATTERN and ALL simultaneously until both buttons illuminate and the device enters ARC mode:

On the front panel button:
- A flashing output button means that the audio of that output is set to ARC mode.
- An illuminated Output button means that the output is not in ARC mode.

2. Press one or more output buttons:
   - If the selected button flashes, that output to set to ARC mode.
   - If the selected button stops flashing, ARC mode is disabled for that output.

   The LOCK button flashes.

3. Press LOCK to save changes.
   The LOCK button flashes until the changes are saved. The device exits the ARC mode and returns to Video switching mode.

The ARC can be routed to any of the balanced audio outputs (and to the inputs).
To route an HDMI OUT ARC to a balanced stereo audio output port:

1. Press D-AUDIO and A-AUDIO simultaneously. Both buttons illuminate and the device enters the ARC routing mode (for example, HDMI OUT 1, 2, 3 and 4 are enabled).

On the front panel button:

- An illuminated output button means that the corresponding output port is ARC enabled.
- A dark output button means that the corresponding output port is not ARC enabled.

On the 7-segment display:

- “.” under an output number indicates that arc is enabled on the corresponding output (outputs 1 to 4 in this example).
- “A” under an output number indicates that an analog audio input is routed to that output.
- “d” under an output number indicates that the embedded audio is routed to that output.
- “0” under an output number indicates that the audio output is muted.

2. Press an ARC enabled output button (for example OUT 3). The corresponding 7-segment display LED flashes.

3. Press an output button (for example OUT 2) to select the balanced audio output routing destination. The flashing 7-segment display LED shows the selected output number and ARC (for example, OUT 3) is routed to the selected balanced audio output (for example, OUT 2).

Routing HDMI Audio Output Signals to HDMI Input Ports

To route an HDMI audio output to HDMI input ports, enable ARC on the HDMI output ports and then route them.

To set an HDMI output to ARC mode:

ARC can be enabled or disabled at any time, regardless of whether a display is connected to the HDMI output or not.

1. Press and hold MUTE/PATTERN and ALL simultaneously until both buttons illuminate and the device enters ARC mode:

On the front panel button:

- A flashing output button means that the audio of that output is set to ARC mode.
- An illuminated Output button means that the output is not in ARC mode.
2. Press one or more output buttons:
   - If the selected button flashes, that output to set to ARC mode.
   - If the selected button stops flashing, ARC mode is disabled for that output.

   The LOCK button flashes.

3. Press LOCK to save changes.
   The LOCK button flashes until the changes are saved. The device exits the ARC mode and returns to Video switching mode.

   The ARC can be routed to the inputs and to any of the balanced audio outputs.

To route an HDMI OUT ARC to an HDMI input port:

1. Press D-AUDIO and A-AUDIO simultaneously.
   Both buttons illuminate and the device enters the ARC routing mode (for example, HDMI OUT 1, 2, 3 and 4 are enabled).

2. Press D-AUDIO until it flashes.
   The out HDMI Arc-enabled outputs illuminate, as before.
   The ARC-enabled inputs flash (for example, 1, 2 and 4 are ARC enabled, 3 is illuminated therefore not enabled).

On the front panel button:
   - An illuminated output button means that the corresponding output port is ARC enabled.
   - A dark output button means that the corresponding output port is not ARC enabled.
   - An illuminated input button means that it is a disabled ARC input.
   - A flashing input button means that it is ARC-enabled.

On the 7-segment display:
   - “.” under an output number indicates that arc is enabled on the corresponding output (outputs 1 to 4 in this example).
   - “A” under an output number indicates that an analog audio input is routed to that output.
   - “d” under an output number indicates that the embedded audio is routed to that output.
   - “0” under an output number indicates that the audio output is muted.

3. Press an ARC enabled input button (for example, IN 2) to select the destination port.
   The corresponding 7-segment display LED flashes.

4. Press an output button (for example OUT 4) to select the HDMI audio output that will be routed to the input.
   The flashing 7-segment display LED shows the selected input number and after selecting the HDMI audio OUT the port number appears (4).

   HDMI OUT 4 audio signal is routed to ARC input 2.
Routing Analog Audio Inputs to HDMI Input Ports

To route an analog audio input to an HDMI input, enable ARC on the HDMI input ports and then route them.

To set an HDMI input to ARC mode:

ARC can be enabled or disabled at any time, regardless of whether an amplifier is connected to the HDMI input or not.

Inputs can be set either to the Step-in mode or the ARC mode.

1. Press and hold **EDID** and **ALL** simultaneously until both buttons illuminate and the device enters ARC mode:

On the front panel button:

- A flashing input button means that it is set to ARC mode.
- An illuminated input button means that it is set to Step-in mode.

2. Press one or more output buttons:

- If the selected button flashes, that input to set to ARC mode.
- If the selected button stops flashing, ARC mode is disabled for that input.

The **LOCK** button flashes.

3. Press **LOCK** to save changes.

   The **LOCK** button flashes until the changes are saved. The device exits the ARC mode and returns to Video switching mode.

The analog inputs can be routed to inputs 1 to 4.

To route an analog audio input to an HDMI input port:

1. Press **D-AUDIO** and **A-AUDIO** simultaneously. Both buttons illuminate and the device enters the ARC routing mode (for example, HDMI OUT 1, 2, 3 and 4 are enabled).

2. Press **A-AUDIO** until it flashes.

   The out HDMI Arc-enabled outputs illuminate, as before.

   The ARC-enabled inputs flash (for example, 1, 2 and 4 are ARC enabled, 3 is illuminated therefore not enabled).

On the front panel button:

- An illuminated output button means that the corresponding output port is ARC enabled.
- A dark output button means that the corresponding output port is not ARC enabled.
- An illuminated input button means that it is a disabled ARC input.
- A flashing input button means that it is ARC-enabled.
On the 7-segment display:

- “.” under an output number indicates that arc is enabled on the corresponding output (outputs 1 to 4 in this example).
- “A” under an output number indicates that an analog audio input is routed to that output.
- “d” under an output number indicates that the embedded audio is routed to that output.
- “0” under an output number indicates that the audio output is muted.

3. Press an ARC enabled input button (for example IN 1) to select the input destination port.
   The corresponding 7-segment display LED flashes.

4. Press an input button (for example IN 2) to select the analog audio input that will be routed to the input destination port.
   The flashing 7-segment display LED shows the selected input number and after selecting the HDMI audio IN the port number appears (2).

   Analog audio input 2 is routed to ARC input 1.

---

**Storing and Recalling a Setup**

**VS-44UHDA** can store up to 8 setups. Each setup includes the video and audio current switching state, the output audio volume and balance, the EDID, the ARC/audio mode, and the switch mode and speed.

In Store-Recall mode, OUT 1 corresponds to setup 1, IN 1 corresponds to setup 5, and so on.

---

To store a setup:

1. Press **STO** (5).
   The **STO** button illuminates.

2. Press an **IN** or an **OUT** button (from 1 to 4).
   For example, when pressing IN 4, the current device state is stored to setup 8.

3. Press **STO**.
   The current device state is stored to setup 8 and the **STO** button no longer illuminates.
To recall a setup:

1. Press **RCL**.
   The **RCL** button illuminates.

2. Press an **IN** or **OUT** button to recall the setup stored in that IN/OUT.
   The selected button flashes.

   If a setup is stored in the selected setup button, the corresponding 7-segment display LED flashes. If nothing is stored the 7-segment LED is on.

3. Press **RCL**.
   The recalled setup is applied and the RCL button no longer illuminates.

   You need to press **RCL** within 10 seconds, to apply settings.

**Setting the Switching Mode**

Set the following switching modes separately for each output:

- Manual mode (**IN 1**): inputs are switched to outputs via the front panel buttons.
- Priority mode (**IN 2**): the VS-44UHDA switches the source with the highest priority to the output.
- Last connected mode (**IN 3**): the last detected active source is switched to the output.

To select the switching mode:

1. Press **RCL** and **MUTE/PATTERN** simultaneously. Both buttons illuminate.

2. Press an output button (or press **ALL**).
   The corresponding 7-segment display LEDs flash and **LOCK** button flashes.

3. Press **IN 1**, **IN 2** or **IN 3**.

4. Press **LOCK** to save the settings to that output and exit Switching mode.
Setting the Switching Speed

Set the following switching speed modes separately for each output:

- Ex-Fast switch speed (IN 1).
- Fast switch speed (IN 2).
- Normal switch speed (IN 3).

To select the switching speed:

1. Press **STO** and **MUTE/PATTERN** simultaneously. Both buttons illuminate. The 7-segment display LEDs show the current switch speed for each port.

2. Press an output button (or press **ALL**). The corresponding 7-segment display LEDs flash and **LOCK** button flashes.

3. Press **IN 1**, **IN 2** or **IN 3**.

4. Press **LOCK** to save the settings and exit Speed mode.

Setting HDCP

You can enable or disable HDCP for each of the HDMI inputs.

To set HDCP on or off:

1. Press and hold **EDID** and **RCL** until both buttons illuminate. The IN buttons indicate the HDCP status:
   - HDCP enabled (on): IN button is illuminated.
   - HDCP disabled (off): IN button is off.

2. Press one or more input buttons to change their status. The **LOCK** button flashes.

3. Press **LOCK** to save changes and exit the HDCP mode.
Copying the EDID

You can copy the EDID to an input from a connected output or use the default EDID.

To copy the EDID from a connected output:

1. Press and hold **EDID** and **STO** until both buttons illuminate.
   
   VS-44UHDA enters the EDID mode and the 7-segment display shows the current EDID status:

   On the front panel button:
   - Both input and output buttons are dark.

   On the 7-segment display:
   - “d” under an output number indicates that the input port is set to the default EDID.
   - “L” under an output number indicates that the EDID was uploaded externally from a file via Web page.
   - A digit under an output number indicates the output from which the EDID was copied.

2. Press one or more input buttons (or **ALL**).
   The 7-segment display LEDs of the selected inputs flash.

3. Press an output button (with a connected display) from which to copy the EDID.

4. Press **EDID**.
   Wait for about 5 seconds for the device to copy the EDID from the connected display.

To copy the default EDID:

1. Press and hold **EDID** and **STO** until both buttons illuminate.
   
   VS-44UHDA enters the EDID mode and the 7-segment display shows the current EDID status.

2. Press one or more input buttons (or **ALL**).
   The 7-segment display LEDs of the selected inputs flash.

3. Press a disconnected output button.

4. Press **EDID**.
   Wait for about 5 seconds for the device to copy the default EDID to the selected inputs.
**Firmware Upgrade**

You can upgrade the VS-44UHDA via:

- The Ethernet, using embedded Web pages.
- By USB or RS-232 using Kramer K-UPLOAD tool.

Using the Embedded Web Pages

The Web pages let you control the VS-44UHDA via the Ethernet. The Web pages include all the OSD items and more, and are accessed using a Web browser and an Ethernet connection.

Before attempting to connect:

- Perform the procedures described in Connecting VS-44UHDA via the ETHERNET Port on page 9.
- Ensure that your browser is supported.

The following operating systems and Web browsers are supported:

<table>
<thead>
<tr>
<th>OS</th>
<th>Version</th>
<th>Browser</th>
<th>Version</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>7</td>
<td>IE</td>
<td>11</td>
</tr>
<tr>
<td></td>
<td>7</td>
<td>Firefox</td>
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<td></td>
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<td>Chrome</td>
<td>31.0.1650.59</td>
</tr>
<tr>
<td></td>
<td>7</td>
<td>Safari</td>
<td>5.1.7(7534.57.2)</td>
</tr>
<tr>
<td></td>
<td>8</td>
<td>IE</td>
<td>11</td>
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<td></td>
<td>8</td>
<td>Firefox</td>
<td>47.0.1</td>
</tr>
<tr>
<td></td>
<td>8</td>
<td>Chrome</td>
<td>51.0.2704.106</td>
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</tr>
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<td></td>
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<td>Safari</td>
<td>N/A</td>
</tr>
<tr>
<td></td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
</tbody>
</table>

The VS-44UHDA Web pages enable performing the following:

- **Switching and Setting the Ports** on page 30.
- **Changing Device Settings and Upgrading the Firmware** on page 38.
- **Setting the Timeout** on page 42.
- **Setting Switching Modes** on page 43.
- **Setting Step-in Devices** on page 44.
- **Managing the EDID** on page 46.
- **Viewing the About Us Page** on page 52.
To browse the VS-44UHDA Web pages:

1. Open your Internet browser.

2. Type the IP address of the device in the address bar of your browser. For example, the default IP address:


   The Authentication window appears (if set, security is enabled):

   ![Authentication Required](Authentication Required.png)

   Figure 12: Using the Embedded Web Pages – the Authentication Window

3. Enter the **User Name** and **Password** and click **OK**.
   The Switching page appears:

   ![Switching Page](Switching Page.png)

   Figure 13: Switching Page with Navigation List on Left

4. Click the desired Web page or click the arrow to hide the navigation list.
Switching and Setting the Ports

The Switching Web page enables performing the following functions:

- Viewing and Adjusting the Output Settings on page 30.
- Viewing and Adjusting the Input Settings on page 32.
- Switching an Input to an Output on page 34.
- Switching a Pattern to an Output on page 35.
- Switching Audio in Breakaway Mode on page 36.

Viewing and Adjusting the Output Settings

Each of the VS-44UHDA output buttons lets you view and adjust the status of that input/output.

![Output Button](image)

Figure 14: Switching Page – Output Button

Each output button displays the:

- HDCP status – output supports HDCP ( ) or does not support HDCP ( ).
- Switching speed – normal ( ), fast ( ) or extra-fast ( ).
- Output status – an acceptor is connected ( ) or not connected ( ) to the output.
- AFV current operation mode – AFV ( ) or audio breakaway ( ).

To adjust the output settings:

1. In the Navigation pane, click **Switching**. The Switching page appears.

2. Click the **AFV** tab.

   The adjustment sequence presented here is only an example. You can adjust the output settings in any other order.

3. Click . The output settings window appears:
4. If required, type the label name in the **Label** text box and click ![image](image1.png).

![Figure 15: Switching Page – Editing the Output Button Settings](image1.png)

5. Click **switch speed** dropdown box to set the switching speed (normal, fast or extra-fast).

6. Click ![image](image2.png) to mute or ![image](image3.png) to unmute the video signal.

7. To set the output to:
   - AFV mode, click ![image](image4.png).
   - Breakaway mode, click ![image](image5.png).

   ![image](image6.png) indicates that the device is in the auto-switch mode and AFV status cannot be altered.

   Setting the AFV mode icons to AFV or Breakaway modes reflects the next switching step and not the current status.
**Viewing and Adjusting the Input Settings**

Each of the VS-44UHDA input buttons lets you view and adjust the status of that input/output.

![Input Button](image)

**Figure 17: Switching Page – Input Button**

Each input button displays the:

- Input signal HDCP status – supports HDCP ( ) or does not support HDCP ( ).
- HDCP status – HDCP is enabled ( ) or disabled ( ).
- Input status – a source is connected ( ) or not connected ( ) to the input.

**Setting Input Parameters**

To change input settings:

1. In the Navigation pane, click **Switching**. The Switching page appears.
2. Click the **AFV** tab. Verify that **Inputs** (and not **Patterns**) is selected.
3. Click . The input settings window appears:

![Input Settings Window](image)

**Figure 18: Switching Page – Input 1 Settings Window**

4. If required, type the label name in the **Label** text box and click .
5. Set HDCP **ON** or **OFF**.
6. Click **ARC** to set input to ARC mode or click **Step-in** to set input to step-in mode.
7. In ARC mode click the settings button ( ). The input ARC Settings window appears:

![Input 1 ARC settings](image)

Figure 19: Switching Page – Input ARC Settings Window

8. Select an ARC source for input 1: either from analog inputs IN 1 to IN 4, or from HDMI outputs 1 to 4. The selected port routes its audio signal to HDMI input 1.
Switching an Input to an Output

To switch an input to an output:

1. In the Navigation pane, click **Switching**. The Switching page appears.

2. Click the **AFV** tab.

![Switching Page – AFV Tab](image)

3. Click an output button or check the **Outputs** box. The button turns purple.

4. Click an Input button. The button turns purple.

The selected input is switched to the output.
Switching a Pattern to an Output

To switch a pattern to an output:

1. In the Navigation pane, click **Switching**. The Switching page appears.

2. Click the **AFV** tab. Verify that **Patterns** (and not **Inputs**) is selected. The list of patterns appears.

3. Select an output button or check the **Outputs** box.

4. Select a pattern.

The selected pattern is switched to the selected output.
Switching Audio in Breakaway Mode

In breakaway mode, the HDMI embedded audio is switched separately from the video signal.

The audio breakaway mode is enabled only when Auto Switch Setting is set to Manual mode.

Set the volume and balance of each analog output using the appropriate sliders or mute/unmute the audio signal of an output:

You can switch a digital input to a digital or analog output and an analog input to a digital or analog output. If ARC mode is enabled, you can switch a selected ARC to any of the analog outputs.

To switch an audio input to an audio output:

1. In the Navigation pane, click Switching. The Switching page appears.
2. Click the Audio break away tab.
3. Switch an input to a selected output. For example, switch digital input 4 to analog output 1:
   - Click an HDMI or Analog button (under the Audio Outputs column). The selected button turns purple with a blue frame.
   - Click a Digital or Analog button (under the Inputs column). The selected button turns purple with a blue frame.

Analog Output 1 is switched to D4.

To switch ARC to an output:

1. In the Navigation pane, click Switching. The Switching page appears.
2. Click the Audio break away tab.
3. Check the ARC check boxes to set these outputs that are set to ARC mode. (under the Audio Outputs column).
   For example, output 1 is set to ARC mode so the output 1 audio signal returns to the
input and can be switched to any analog output. Once an output is set to the ARC mode, the Inputs ARC button (on the right) is enabled and changes from gray to white.

Figure 23: Switching Page – Output 1 Set to ARC Mode

4. Switch an ARC input to a selected output. For example, switch ARC 4 to output 3:
   - Click an analog output button A3.
   - Click an ARC button 4.

   Analog Output 3 is switched to ARC 4.
Changing Device Settings and Upgrading the Firmware

The Device Settings Web page shows the device details, such as name, MAC address and firmware version and also enables performing the following functions:

- Changing the Ethernet Settings on page 38.
- Performing a Factory Reset on page 39.
- Performing Firmware Upgrade on page 39.

Changing the Ethernet Settings

To change the Ethernet settings:

1. In the Navigation pane, click Device Settings. The Device Settings page appears:

![Device Settings Page](image)

Figure 24: Device Settings Page

2. Uncheck/check the DHCP check box.

3. If DHCP is unchecked, change any of the parameters (IP Address, Netmask and/or Gateway).

4. Click Save Changes.

Note that:
- After changing the IP number, reload the Web page with the new IP address.
- After changing the Subnet mask you need to turn the VS-44UHDA power off and then on again.
- If DHCP is checked, reload the Web page with the new IP address.
Performing a Factory Reset

To reset the device to its factory default values:

1. In the Navigation pane, click **Device Settings**. The Device Settings page appears (Figure 24).

2. Click **Reset**. The following window appears:

   ![Figure 25: Device Settings Page – Factory Reset](image)

3. Click **OK** to start factory reset and follow the instructions on-screen.

Performing Firmware Upgrade

To perform firmware upgrade:

1. In the Navigation pane, click **Device Settings**. The Device Settings page appears (Figure 24).

2. Click **BROWSE** and select the new firmware file.

3. Click **START UPGRADE** and follow the instructions on-screen.

Managing Web Page Security

Use the Security page to set Web access permission:

Setting Web Page Access Permission

To define access to the Web pages In the Navigation pane, click **Password Settings**. The Password Settings page appears displaying the current status (password protected or free access).

To access Web pages without using the password:

1. Check the current security settings.

![Figure 26: Password Settings Page – Password Protected](image)
2. Set **Activate Security** to **OFF**.
   The following message appears:
   
   ![Password Settings Page – Deactivating the Security](image)
   
   Figure 27: Password Settings Page – Deactivating the Security

3. Click **OK**.
   The Web page reloads.

   To access Web pages using the password:

   1. Check the current security status.
   
   ![Password Settings Page – Security Deactivated](image)
   
   Figure 28: Password Settings Page – Security Deactivated

   2. Set **Activate Security** to **ON** for Web page password protection. The following message appears:
   
   ![Password Settings Page – Security Activation Message](image)
   
   Figure 29: Password Settings Page – Security Activation Message

   3. Click **OK**.
   The connection is interrupted and authentication is required to access Web pages.
   
   ![Password Settings Page – Security Log In](image)
   
   Figure 30: Password Settings Page – Security Log In
4. Type the User Name (Admin, by default) and Password (left empty by default).

![Authentication Required](image1.png)

Figure 31: Password Settings Page – Password Protection

5. Click **Log In**.

6. Select **Password** from the Navigation pane.

![Password Settings](image2.png)

Figure 32: Password Settings Page – Setting the Admin Password

7. Type the new Admin password twice in both **Admin password** text boxes.

![Password Settings](image3.png)

Figure 33: Password Settings Page – Entering the Admin Password

8. Click **OK**. The following message appears:

![Password Warning](image4.png)

Figure 34: Password Settings Page – Password Warning
9. Click **OK**.
The page is reloaded and can be accessed by entering the password.
The top right side of the Web page displays the security icon:

![Admin Icon](image)

**Figure 35: Password Settings Page – Admin Icon**

---

**Setting the Timeout**

Use the **Timeout Settings** Web page to set the time delay to shut down if no input signal is detected for each output and also to set the auto switching time.

Always set the 5V cut-off (Disable 5V) time delay to be longer than the video signal loss timer delay.

**To set the timeout:**

1. In the Navigation pane, click **Timeout Settings**. The Timeout Settings page appears.

![Timeout Settings](image)

**Figure 36: Timeout Settings Page**

2. Set the specific output delay time.

   If you do not want a specific output to shut down if an input signal is not detected, check the **Never** box next to the desired output.

![Timeout Settings](image)

3. Set audio support **ON** if you want shutdown to occur only if an audio signal is lost.

   **Support audio only** can be used if the video and audio signals routed to an output, come from separate sources.

   If Support audio only is set to:
• **ON** – The audio signal routed to the output remains active when the video source (coming from a different input) is deactivated.

• **OFF** – The audio signal routed to the output is deactivated together with the deactivation of the video source (coming from a different input).

To set the video lost timer (when in auto-switching mode):

1. In the Navigation pane, click **Timeout Settings**. The Timeout Settings page appears.

2. Set the video lost timer.

The adjustment sequence presented here is only an example. You can adjust the output settings in any other order.

If the video is lost when in the auto switching mode (Priority or Last connected) you can set the time the device waits before it switches to the next source.

**Setting Switching Modes**

Use the **Auto Switch Settings** page to set the switching mode per output.

Setting to priority or last connected mode forces **VS-44UHDA** to operate in AFV mode.

To set the switching mode:

1. In the Navigation pane, click **Auto Switch Settings**. The Auto Switch Settings page appears.

![Auto Switch Settings Page](image.png)

Figure 37: Auto Switch Settings Page
2. Select an output and set the switching mode to **Manual**, **Priority** or **Last connected**:

- In the Manual mode (see Figure 37), the outputs are switched manually to the selected output.

- In the Priority mode, drag and drop the inputs from the highest to the lowest priority. The inputs are then switched according to the set priority to the selected output:

![Auto Switch Settings Page – Setting the switching Priority](image)

- In the Last connected mode, select the inputs that are included in the last connected scan that will be switched to the selected output:

![Auto Switch Settings Page – Last Connected Mode](image)

### Setting Step-in Devices

Use the Step-In Settings page to manage Step-in devices (for example, Kramer DIP-31).

If a step-in device is not connected to VS-44UHDA, the following page appears:
To manage a step-in device:

1. Connect the HDMI output of a step-in device (for example, DIP-31) to an HDMI input on the VS-44UHDA.

2. In the Navigation pane, click **Step-In Settings**. The Step-In Settings page appears and the input button/s to which the step-in device/s is connected appears purple. The DIP-31 Inputs list and the VS-44UHDA outputs to which the DIP-31 input is routed are displayed:

3. Select a DIP-31 input (HDMI IN 1, HDMI IN 2 or VGA). The respective button on DIP-31 illuminates.

   You can also press an input button on the DIP-31. The selected input will be displayed on the Web page.

4. Check the outputs to which the inputs will be routed.
5. Press the **STEP-IN** button on DIP-31.
   The selected step-in button is routed to all the checked outputs.

   Any time the output Step-in configuration changes, press the STEP-IN button on the Step-In device to update the configuration.

   Selecting Echo sends an instruction via VS-44UHDA RS-232 port.

---

**Managing the EDID**

The EDID Management page lets you read the EDID from:

- Any of the outputs,
- The default EDID
- Any of the inputs,
- A file in your PC (Browse).

The selected EDID can be copied to the selected input/s.

To copy an EDID from an output to an input:

1. In the Navigation pane, click **EDID Management**. The EDID Management page appears.
Figure 42: EDID Management Page – Select an EDID Source
2. Select the EDID source: a connected output.

When reading from an output, make sure that the output is connected to an acceptor.

![Figure 43: EDID Management Page – Select an EDID output](image)

3. Select an input (or all the inputs) to which the EDID is copied.

![Figure 44: EDID Management Page – Select an Input](image)
4. Click **COPY**.
The EDID message appears.

![EDID Copy Message](image)

Figure 45: EDID Page – EDID Copy Message

5. Click **OK**. The following message appears:

![Message](image)

Figure 46: EDID Management Page – Loading the EDID from Output to Input

6. Click **OK**.

To read the EDID from the default EDID:

1. In the Navigation pane, click **EDID Management**. The EDID Management page appears.
2. Click **DEFAULT**.
3. Click **OK** and follow the instructions on-screen.
To read the EDID from an input to another input/s:

1. In the Navigation pane, click **EDID Management**. The EDID Management page appears.
2. Select an input from the list (on the left).
3. If required, check the options under Inputs **Capabilities**.
4. Click **COPY** and follow the instructions on-screen.

The EDID is loaded to the selected inputs.
To read the EDID from a file:

1. In the Navigation pane, click **EDID Management**. The EDID Management page appears.

2. Click **File BROWSE** and open the EDID file.

3. Select one or more inputs
4. Click **UPLOAD**. The following message appears:

![Figure 50: EDID Management Page – EDID Message](image)

5. Click **OK**.

6. Follow the instructions on-screen.

> When viewing the 7-segment display in the EDID mode, the input with EDID read from a file will display “L”

### Viewing the About Us Page

The VS-44UHDA About Us page lets you view the Web page version and Kramer Electronics Ltd details.

![Figure 51: About Page](image)
Technical Specifications

<table>
<thead>
<tr>
<th>Inputs</th>
<th>4 HDMI</th>
<th>On female HDMI connectors</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>4 Stereo Analog Unbalanced Audio</td>
<td>On 3.5mm mini jacks</td>
</tr>
<tr>
<td>Outputs</td>
<td>4 HDMI</td>
<td>On female HDMI connectors</td>
</tr>
<tr>
<td></td>
<td>4 Stereo Balanced Audio</td>
<td>On 5-pin terminal blocks (+4dBu nominal)</td>
</tr>
<tr>
<td>Ports</td>
<td>1 USB</td>
<td>On a female USB-A connector</td>
</tr>
<tr>
<td></td>
<td>1 RS-232</td>
<td>On a 3-pin terminal block for serial link extension</td>
</tr>
<tr>
<td></td>
<td>1 Ethernet</td>
<td>On an RJ-45 female connector for device control</td>
</tr>
<tr>
<td></td>
<td>1 USB</td>
<td>On a female USB-A connector for powering another device</td>
</tr>
<tr>
<td>Video</td>
<td>Max. Resolution: 4K@60Hz (4:2:0) and 4K@30Hz (4:4:4)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Compliance: Supports HDMI 1.4 and HDCP 1.4</td>
<td></td>
</tr>
<tr>
<td>Control</td>
<td>Front Panel</td>
<td>Front panel buttons</td>
</tr>
<tr>
<td></td>
<td></td>
<td>7-segment display</td>
</tr>
<tr>
<td>Power</td>
<td>Consumption: 42VA</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Source: 100-240V AC, 50/60Hz</td>
<td></td>
</tr>
<tr>
<td>Environmental Conditions</td>
<td>Operating Temperature: 0° to +40°C (32° to 104°F)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Storage Temperature: -40° to +70°C (-40° to 158°F)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Humidity: 10% to 90%, RH non-condensing</td>
<td></td>
</tr>
<tr>
<td>General</td>
<td>Net Dimensions (W, D, H): 19&quot;, 7.2&quot;, 1U, rack mountable</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Shipping Dimensions (W, D, H): 52.5cm x 33cm x 10.7cm (20.7&quot; x 13&quot; x 4.2&quot;)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Net Weight: 1.85kg (4.08lbs) approx.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Shipping Weight: 2.9kg (6.39lbs) approx.</td>
<td></td>
</tr>
<tr>
<td>Accessories</td>
<td>Included</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Rack ears, power cord</td>
<td></td>
</tr>
</tbody>
</table>

Specifications are subject to change without notice at www.kramerav.com

Default Communication Parameters

<table>
<thead>
<tr>
<th>RS-232/Ethernet</th>
<th>115,200</th>
<th>None</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baud Rate</td>
<td>8</td>
<td>ASCII Protocol 3000</td>
</tr>
<tr>
<td>Data Bits</td>
<td>1</td>
<td>Command Format:</td>
</tr>
<tr>
<td>Stop Bits</td>
<td></td>
<td>Number of TCP ports: 8</td>
</tr>
<tr>
<td>Example (Route input 1 to output 1):</td>
<td>#VID1&gt; 1&lt;cr&gt;</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Ethernet Parameters</th>
<th>192.168.1.39</th>
<th>5000</th>
</tr>
</thead>
<tbody>
<tr>
<td>IP Address</td>
<td>255.255.0.0</td>
<td>Default UDP Port #:</td>
</tr>
<tr>
<td>Subnet Mask</td>
<td>Default TCP Port #:</td>
<td></td>
</tr>
<tr>
<td>Default Gateway</td>
<td>192.168.0.0</td>
<td>50000</td>
</tr>
<tr>
<td>Default Gateway</td>
<td>Number of TCP ports: 8</td>
<td></td>
</tr>
<tr>
<td>Number of web clients: 5</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Full Factory Reset

| Front Panel Buttons: | Power off the device, press and hold the LOCK, EDID and STO buttons simultaneously for about 3 seconds while powering the device, and then release. Until all front panel buttons illuminate |
| Protocol 3000:       | "#factory" command. |
| Web Pages:           | In the Device Settings page, click Reset. |
## Default Parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Protocol:</td>
<td>K3000</td>
</tr>
<tr>
<td>K3000 Model Name:</td>
<td>V', 'S', ',', '4', '4', 'U', 'H', 'D', 'A'</td>
</tr>
<tr>
<td>K3000 Serial Number:</td>
<td>0000000000000000</td>
</tr>
</tbody>
</table>

- **Model name and serial number will not change back to the default status after a factory reset.**

| TCP/IP address:                 | 192.168.1.39                                                          |
| TCP/IP port:                    | 5000                                                                  |
| UDP port:                       | 50000                                                                |
| Mask number:                    | 255.255.0.0                                                           |
| Gateway number:                 | 192.168.0.1                                                           |
| DHCP enable:                    | Disable(OFF)                                                          |
| EDID status:                    | Default, all input ports use the default EDID data.                  |
| Input port HDCP:                | All ON, support HDCP.                                                |
| Step-In button setting:         | Default, all the output checked for an input.                        |
| Video status:                   | Output 1 to 4 route to input 1 to 4 separately.                      |
| Audio status:                   | Output 1 to 4 route to digital input 1 to 4 separately.               |
| Output audio volume:            | Default, 50.                                                          |
| Output audio balance:           | Default, 50.                                                          |
| All setups:                     | All empty. No preset status.                                          |
| EDID data:                      | All input ports use the default EDID data.                            |
| V-mute:                         | Open the video.                                                       |
| Mute:                           | Open the audio.                                                       |
| Switch mode:                    | Manual                                                                |
| Switch speed:                   | Ex-fast switch                                                        |
| ARC or de-embedded:             | De-embedded                                                           |
| Video Priority settings:        | Lower input index has higher priority.                               |
| Auto Switching mode:            | Priority: Priority order is Highest for 1 and lowest for 4           |
| Auto Switching settings:        | All video inputs are routed to each of the video outputs             |
| Default switching mode - manual/auto | Manual, IN1 to OUT1, etc for 2,3,4                                  |
| Default EDID                    | Kramer default EDID with "monitor name"= "VS-44UHDA"                 |
| Lock EDID state                 | Not locked                                                            |
| HDCP mode                       | ENABLED                                                               |
| Video Signal loss timeout (no 5V)| 0                                                                    |
| Video Signal loss timeout (5V is on)| 10 sec                                                             |
| New video signal gain timeout   | 0                                                                    |
| Audio Signal loss timeout (no 5V)| 0                                                                  |
| Output inactivity timeout       | 15 min                                                               |
| Apply switch mode configuration on startup | 10                                                                  |
Protocol 3000

The VS-44UHDA 4x4 UHD Matrix Switcher can be operated using the Kramer Protocol 3000 serial commands. The command framing varies according to how you interface with the VS-44UHDA.

Generally, a basic video input switching command that routes a layer 1 video signal to HDMI out 1 from HDMI input 2 (ROUTE 1, 1, 2), is entered as follows:

- Terminal communication software, such as Hercules:

![Hercules software example]

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

- K-Touch Builder (Kramer software):

![K-Touch Builder example]

- K-Config (Kramer configuration software):

![K-Config software example]

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 VS-44UHDA. To enter press the Enter key (\n 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 Protocol 3000 commands, see:

- Understanding Protocol 3000 on page 56
- Kramer Protocol 3000 Syntax on page 57
- Protocol 3000 Commands on page 58

**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.

- **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.
### 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**

```markdown
Start | Address (optional) | Body | Delimiter
#    | Device_id@         | Message | CR
```

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

```markdown
Start | Body | Delimiter
#    | Command [SP] Parameter_1,Parameter_2,… | CR
```

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

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

```

- **Device Message Format**

```markdown
Start | Address (optional) | Body | Delimiter
~    | Device_id@         | Message | CR LF
```

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

```markdown
Start | Address (optional) | Body | Delimiter
~    | Device_id@         | Command [SP] [Param1,Param2 …] result | CR LF
```
Protocol 3000 Commands

This section includes the following commands:

- **Common Commands** on page 58
- **System Commands** on page 63
- **Authentication Commands** on page 67
- **EDID Handling Commands** on page 69
- **Switch Commands** on page 70
- **Switching Commands** on page 74
- **Audio Commands** on page 76
- **Communication Commands** on page 78

### Common Commands

<table>
<thead>
<tr>
<th>Command</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>#</td>
<td>Protocol handshaking (system mandatory)</td>
</tr>
<tr>
<td>BUILD-DATE</td>
<td>Get device build date (system mandatory)</td>
</tr>
<tr>
<td>FACTORY</td>
<td>Reset to factory default configuration</td>
</tr>
<tr>
<td>HELP</td>
<td>Get command list (system mandatory)</td>
</tr>
<tr>
<td>MODEL?</td>
<td>Get device model (system mandatory)</td>
</tr>
<tr>
<td>PROT-VER?</td>
<td>Get device protocol version (system mandatory)</td>
</tr>
<tr>
<td>RESET</td>
<td>Reset device (system mandatory)</td>
</tr>
<tr>
<td>SN?</td>
<td>Get device serial number (system mandatory)</td>
</tr>
<tr>
<td>VERSION?</td>
<td>Read device firmware version</td>
</tr>
<tr>
<td>IDV</td>
<td>Set visual indication from device</td>
</tr>
<tr>
<td>LOCK-FP</td>
<td>Lock/get front panel</td>
</tr>
<tr>
<td>NAME</td>
<td>Set/get machine (DNS) name</td>
</tr>
<tr>
<td>NAME-RST</td>
<td>Reset machine name to factory default (DNS)</td>
</tr>
</tbody>
</table>

### Functions

<table>
<thead>
<tr>
<th>#</th>
<th>Functions</th>
<th>Permission</th>
<th>Transparency</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Set:</td>
<td>End User</td>
<td>Public</td>
</tr>
<tr>
<td></td>
<td>Get:</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

### Description

**Set:**
Protocol handshaking

**Get:**

### Syntax

Set: Protocol handshaking

### Response

```
~nn@SP=kCR LF
```

### Notes

Validates the Protocol 3000 connection and gets the machine number. Step-in master products use this command to identify the availability of a device.

### K-Config Example

```
"#", 0x0D
```
### BUILD-DATE

<table>
<thead>
<tr>
<th>Functions</th>
<th>Permission</th>
<th>Transparency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Set:</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Get:</td>
<td>BUILD-DATE?</td>
<td>End User</td>
</tr>
</tbody>
</table>

**Description**

Get device build date

**Syntax**

`#BUILD-DATE?

**Response**

```
~nn@BUILD-DATE
#date#time
```

**Parameters**

- `date` - Format: `YYYY/MM/DD` where `YYYY = Year, MM = Month, DD = Day`
- `time` - Format: `hh:mm:ss` where `hh = hours, mm = minutes, ss = seconds`

**K-Config Example**

```
“#BUILD-DATE?”,0x0D
```

### FACTORY

<table>
<thead>
<tr>
<th>Functions</th>
<th>Permission</th>
<th>Transparency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Set:</td>
<td>FACTORY</td>
<td>End User</td>
</tr>
<tr>
<td>Get:</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Description**

Reset device to factory default configuration

**Syntax**

`#FACTORY

**Response**

```
~nn@FACTORY
#OK
```

**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
```

### HELP

<table>
<thead>
<tr>
<th>Functions</th>
<th>Permission</th>
<th>Transparency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Set:</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Get:</td>
<td>HELP</td>
<td>End User</td>
</tr>
</tbody>
</table>

**Description**

Get command list or help for specific command

**Syntax**

`#HELP

**Response**

```
Multi-line:
~nn@Device available protocol 3000 commands:CR LFcommand,SE
command...
```

**Parameters**

- `COMMAND_NAME` – name of a specific command

**Notes**

To get help for a specific command use: `HELP SE COMMAND_NAME CR LF`

**K-Config Example**

```
“#HELP”,0x0D
```

Kramer Electronics Ltd.
### MODEL

<table>
<thead>
<tr>
<th>Functions</th>
<th>Permission</th>
<th>Transparency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Set: -</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Get: MODEL?</td>
<td>End User</td>
<td>Public</td>
</tr>
</tbody>
</table>

**Description**
Set: -
Get: Get device model

**Response**
```
~nn@MODEL? model_name CR LF
```

**Parameters**
model_name – String of up to 19 printable ASCII chars

**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
```

### PROT-VER

<table>
<thead>
<tr>
<th>Functions</th>
<th>Permission</th>
<th>Transparency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Set: -</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Get: PROT-VER?</td>
<td>End User</td>
<td>Public</td>
</tr>
</tbody>
</table>

**Description**
Set: -
Get: Get device protocol version

**Response**
```
~nn@PROT-VER 3000:version CR LF
```

**Parameters**
version - XX.XX where X is a decimal digit

**K-Config Example**
```
"#PROT-VER?", 0x0D
```

### RESET

<table>
<thead>
<tr>
<th>Functions</th>
<th>Permission</th>
<th>Transparency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Set: RESET</td>
<td>Administrator</td>
<td>Public</td>
</tr>
<tr>
<td>Get: -</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

**Description**
Set: Reset device
Get: -

**Response**
```
~nn@RESET OK CR LF
```

**Notes**
To avoid locking the port due to a USB bug in Windows, disconnect USB connections immediately after running this command. If the port was locked, disconnect and reconnect the cable to reopen the port.

**K-Config Example**
```
"#RESET", 0x0D
```
### SN?

<table>
<thead>
<tr>
<th>Functions</th>
<th>Permission</th>
<th>Transparency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Set:</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Get:</td>
<td>SN?</td>
<td>End User</td>
</tr>
</tbody>
</table>

**Description**

**Syntax**

**Set:**  

**Get:** Get device serial number

**Response**

```
~nn@SN?serial_numberCR LF
```

**Parameters**

`serial_number` – 11 decimal digits, factory assigned

**Notes**

This device has a 14 digit serial number, only the last 11 digits are displayed.

**K-Config Example**

```
"#SN?",0x0D
```

### VERSION?

<table>
<thead>
<tr>
<th>Functions</th>
<th>Permission</th>
<th>Transparency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Set:</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Get:</td>
<td>VERSION?</td>
<td>End User</td>
</tr>
</tbody>
</table>

**Description**

**Syntax**

**Set:**  

**Get:** Get firmware version number

**Response**

```
~nn@VERSION?firmware_versionCR LF
```

**Parameters**

`firmware_version` – XX.XX.XXXX where the digit groups are: major.minor.build version

**K-Config Example**

```
"#VERSION?",0x0D
```

### IDV

<table>
<thead>
<tr>
<th>Functions</th>
<th>Permission</th>
<th>Transparency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Set:</td>
<td>IDV</td>
<td>End User</td>
</tr>
<tr>
<td>Get:</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

**Description**

**Syntax**

**Set:** Set visual indication from device

**Get:**  

**Response**

```
~nn@IDVOKCR LF
```

**Notes**

Using this command, some devices can light a sequence of buttons or LEDs to allow identification of a specific device from similar devices.

**K-Config Example**

```
"#IDV",0x0D
```
### LOCK-FP

<table>
<thead>
<tr>
<th>Functions</th>
<th>Permission</th>
<th>Transparency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Set: LOCK-FP</td>
<td>End User</td>
<td>Public</td>
</tr>
<tr>
<td>Get: LOCK-FP?</td>
<td>End User</td>
<td>Public</td>
</tr>
</tbody>
</table>

**Description**

- **Set:** Lock front panel
- **Get:** Get front panel lock state

**Syntax**

- Set: #LOCK-FP lock_mode CR
- Get: #LOCK-FP

**Parameters**

- lock_mode – 0 (Off, unlock the front panel buttons), 1 (On, lock the front panel buttons)

**K-Config Example**

Unlock front panel:
"#LOCK-FP 0", 0x0D

### NAME

<table>
<thead>
<tr>
<th>Functions</th>
<th>Permission</th>
<th>Transparency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Set: NAME</td>
<td>Administrator</td>
<td>Public</td>
</tr>
<tr>
<td>Get: NAME?</td>
<td>End User</td>
<td>Public</td>
</tr>
</tbody>
</table>

**Description**

- **Set:** Set machine (DNS) name
- **Get:** Get machine (DNS) name

**Syntax**

- Set: #NAME machine_name CR
- Get: #NAME?

**Parameters**

- machine_name – String of up to 14 alpha-numeric characters (can include hyphens but not at the beginning or end)

**Notes**

The machine name is not the same as the model name. The machine name is used to identify a specific machine or a network in use (with DNS feature on).

**K-Config Example**

Set the DNS name of the device to "room-442":
"#NAME room-442", 0x0D

### NAME-RST

<table>
<thead>
<tr>
<th>Functions</th>
<th>Permission</th>
<th>Transparency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Set: NAME-RST</td>
<td>Administrator</td>
<td>Public</td>
</tr>
<tr>
<td>Get: -</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

**Description**

- **Set:** Reset machine (DNS) name to factory default
- **Get:** -

**Syntax**

- Set: #NAME-RST CR
- Get: -

**Notes**

Factory default of machine (DNS) name is “KRAMER_” + 4 last digits of device serial number

**K-Config Example**

Reset the machine name (S/N last digits are 0102):
"#NAME-RST KRAMER_0102", 0x0D
# System Commands

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<td>Get input signal lock status</td>
</tr>
<tr>
<td>PRST-VID?</td>
<td>Get video connections from saved preset</td>
</tr>
<tr>
<td>PRST-STO</td>
<td>Store current connections to preset</td>
</tr>
<tr>
<td>PRST-RCL</td>
<td>Recall saved preset list</td>
</tr>
<tr>
<td>BAUD</td>
<td>Set/get protocol serial port baud rate</td>
</tr>
<tr>
<td>HDCP-STAT?</td>
<td>Get HDCP signal status</td>
</tr>
<tr>
<td>HDCP-MOD</td>
<td>Set/get HDCP mode</td>
</tr>
<tr>
<td>FPGA-VER?</td>
<td>Get current FPGA version</td>
</tr>
<tr>
<td>LABEL?</td>
<td>Get input/output label</td>
</tr>
</tbody>
</table>

## SIGNAL

<table>
<thead>
<tr>
<th>Functions</th>
<th>Permission</th>
<th>Transparency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Set:</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Get:</td>
<td>SIGNAL?</td>
<td>End User</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Public</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Description</th>
<th>Syntax</th>
</tr>
</thead>
<tbody>
<tr>
<td>Set:</td>
<td>-</td>
</tr>
<tr>
<td>Get:</td>
<td>Get input signal lock status</td>
</tr>
</tbody>
</table>

### Response

```
#SIGNAL$inp_id$CR
```

### Parameters

- **inp_id** – input number: 1 (Input)
- **status** – signal 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

### K-Config Example

Get the input signal lock status of IN 1:
```
"#SIGNAL? 1",0x0D
```
### PRST-VID?

<table>
<thead>
<tr>
<th>Functions</th>
<th>Permission</th>
<th>Transparency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Set:</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Get: PRST-VID?</td>
<td>End User</td>
<td>Public</td>
</tr>
</tbody>
</table>

**Description**

Set: Get video connections from saved preset

Get: #PRST-VID? SP preset, out CR
     #PRST-VID? SP preset, * CR

**Response**

- nn@PRST-VID SP preset, in>out CR LF
- nn@PRST-VID SP preset, in, in, in, > CR LF

**Parameters**

- preset – preset number
- in – input number or '0' if output disconnected
- > – connection character between in and out parameters
- out - output number or '*' for all outputs

**Notes**

In most units, video and audio presets with the same number are stored and recalled together by commands #PRST-STO and #PRST-RCL.

**Examples**

- Store current audio and video connections, volumes and modes to preset 5: 
  #PRST-STO 5 CR
  ~PRST-STO 5 CR LF
- Recall audio and video connections from preset 3:
  #PRCL 3 CR
  ~PRST-RCL 3 CR LF
- Show source of video output 2 from preset 3:
  #PRST-VID? 3, 2 CR
  ~PRST-VID? 3, 4>2 CR LF

**K-Config Example**

Get video connections from preset 3 for all outputs:

```
"#PRST-VID? 3,*",0x0D
```

### PRST-STO

<table>
<thead>
<tr>
<th>Functions</th>
<th>Permission</th>
<th>Transparency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Set: PRST-STO</td>
<td>End User</td>
<td>Public</td>
</tr>
<tr>
<td>Get: -</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

**Description**

Set: Store current connections, volumes and modes in preset

Get: #PRST-STO SP preset CR

**Response**

- nn@PRST-STO SP preset CR LF

**Parameters**

- preset – preset number: 1 (OUT 1)... 4 (OUT 4); 5 (IN 1)... 8 (IN 4)

**K-Config Example**

Store preset 1:

```
"#PRST-STO 1",0x0D
```
### PRST-RCL

<table>
<thead>
<tr>
<th>Functions</th>
<th>Permission</th>
<th>Transparency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Set:</td>
<td>PRST-RCL</td>
<td>End User</td>
</tr>
<tr>
<td>Get:</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

**Description**

- **Syntax**

  - **Set:** Recall saved preset list
    - \#PRST-RCL
    - preset
    - CR

  - **Get:** -

**Response**

- \~nn\#PRST-RCL
  - preset
  - CR
  - LF

**Parameters**

- **preset** — preset number: 1(OUT 1)...4(OUT 84); 5(IN 1)...8(IN 4)

**K-Config Example**

- **Recall preset 1:**
  - "\#PRST-RCL 1",0x0D

### BAUD

<table>
<thead>
<tr>
<th>Functions</th>
<th>Permission</th>
<th>Transparency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Set:</td>
<td>BAUD</td>
<td>Administrator</td>
</tr>
<tr>
<td>Get:</td>
<td>BAUD?</td>
<td>Administrator</td>
</tr>
</tbody>
</table>

**Description**

- **Syntax**

  - **Set:** Set protocol serial port baud rate
    - \#BAUD
    - baud_rate
    - CR

  - **Get:** Get protocol serial port baud rate
    - (for current baud rate)
    - \#BAUD?
    - CR

**Response**

- \~nn\#BAUD
  - baud_rate
  - CR
  - LF

- \~nn\#BAUD
  - current_baud_rate
  - CR
  - LF

**Parameters**

- **baud_rate** — 9600, 115200, else (new baud rate to set)
- **current_baud_rate** — 9600, 115200, else (current protocol serial port baud rate)

**Notes**

- The new defined baud rate is stored in the EEPROM and used when powering up.
- Default baud rate is 115200 (on factory reset).
- Only works with devices supporting this command (if **ERR 002** is returned, the default baud rate is used).

**K-Config Example**

- Set the baud rate to 9600:
  - "\#BAUD 9600",0x0D
HDCP-STAT

<table>
<thead>
<tr>
<th>Functions</th>
<th>Permission</th>
<th>Transparency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Set:</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Get:</td>
<td>HDCP-STAT?</td>
<td>End User</td>
</tr>
</tbody>
</table>

Description

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>#HDCP-STAT? stage,stage_id</td>
<td>status</td>
</tr>
</tbody>
</table>

Response

Response is sent to the com port from which the Set (before execution) / Get command was received. Response is sent to all com ports after execution if HDCP-STAT was set by any other external control device (button press, device menu and similar) or HDCP mode changed.

Notes

On output – sink status.
On input – signal status.

K-Config Example

Get the output HDCP-STATUS of IN 1 (HDCP Off):

“#HDCP-STAT? 0,1”,0x0D

HDCP-MOD

<table>
<thead>
<tr>
<th>Functions</th>
<th>Permission</th>
<th>Transparency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Set:</td>
<td>HDCP-MOD</td>
<td>Administrator</td>
</tr>
<tr>
<td>Get:</td>
<td>HDCP-MOD?</td>
<td>End User</td>
</tr>
</tbody>
</table>

Description

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Parameters</th>
</tr>
</thead>
<tbody>
<tr>
<td>#HDCP-MOD inp_id,mode</td>
<td></td>
</tr>
</tbody>
</table>

Response

Set/get: 

Response is sent to the com port from which the Set (before execution) / Get command was received. Response is sent to all com ports after execution if HDCP-MOD was set by any other external control device (button press, device menu and similar) or HDCP mode changed.

Notes

Set HDCP working mode on the device input:

- HDCP supported – HDCP_ON (default)
- HDCP not supported – HDCP OFF

HDCP supports changes following a detected sink - MIRROR OUTPUT

K-Config Example

Get the input HDCP-MODE of IN 1 (HDCP Off):

“#HDCP-MOD? 1,0”,0x0D
FPGA-VER

<table>
<thead>
<tr>
<th>Functions</th>
<th>Permission</th>
<th>Transparency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Set:</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Get:</td>
<td>FPGA-VER?</td>
<td>End User</td>
</tr>
</tbody>
</table>

**Description**

**Syntax**

Set: Get current FPGA version

**Response**

```
~nn#FPGA-VER id,expected_ver,actual_ver CR LF
```

**Parameters**

- id - FPGA ID
- expected_ver - expected FPGA version for current firmware
- actual_ver - actual FPGA version

**K-Config Example**

Get current FPGA version (1):

```
"#FPGA-VER? 1",0x0D
```

### Authentication Commands

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<th>Command</th>
<th>Description</th>
</tr>
</thead>
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<td>LOGIN</td>
<td>Set/get protocol permission</td>
</tr>
<tr>
<td>LOGOUT</td>
<td>Cancel current permission level</td>
</tr>
<tr>
<td>PASS</td>
<td>Set/get password for login level</td>
</tr>
<tr>
<td>SECUR</td>
<td>Set/get current security state</td>
</tr>
</tbody>
</table>

#### LOGIN

<table>
<thead>
<tr>
<th>Functions</th>
<th>Permission</th>
<th>Transparency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Set:</td>
<td>LOGIN</td>
<td>Not Secure</td>
</tr>
<tr>
<td>Get:</td>
<td>LOGIN?</td>
<td>Not Secure</td>
</tr>
</tbody>
</table>

**Description**

**Syntax**

Set: Get current protocol permission level

**Response**

```
~nn#LOGIN login_level,password CR
```

or

```
~nn#LOGIN ERR SP 0x4 CR LF (if bad password entered)
```

**Parameters**

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

**Notes**

When the permission system is enabled, LOGIN enables running commands with the User or Administrator permission level.

When set, login must be performed upon each connection.

The permission system works only if security is enabled with the SECUR command. It is not mandatory to enable the permission system in order to use the device.

**K-Config Example**

Set the protocol permission level to Admin (when the password defined in the PASS command is 33333):

```
"#LOGIN Admin,33333",0x0D
```
### LOGOUT

<table>
<thead>
<tr>
<th>Functions</th>
<th>Permission</th>
<th>Transparency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Set:</td>
<td>LOGOUT</td>
<td>Not Secure</td>
</tr>
<tr>
<td>Get:</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

**Description**
- **Set:** Cancel current permission level
  
  ```
  #LOGOUT
  CR
  ```

**Response**
- ~nn@LOGOUT SPok CR LF

**Notes**
- Logs out from User or Administrator permission levels.

**K-Config Example**
- "#LOGOUT", 0x0D

### PASS

<table>
<thead>
<tr>
<th>Functions</th>
<th>Permission</th>
<th>Transparency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Set:</td>
<td>PASS</td>
<td>Administrator</td>
</tr>
<tr>
<td>Get:</td>
<td>PASS?</td>
<td>Administrator</td>
</tr>
</tbody>
</table>

**Description**
- **Set:** Set password for login level
  
  ```
  #PASS login_level,password
  CR
  ```

- **Get:** Get password for login level
  
  ```
  #PASS? login_level
  CR
  ```

**Parameters**
- login_level – level of login to set: User, Admin
- password – password for the login_level. Up to 15 printable ASCII chars.

**Notes**
- The default password is an empty string.

**K-Config Example**
- Set the password for the Admin protocol permission level to 33333:
  
  "#PASS Admin,33333", 0x0D

### SECUR

<table>
<thead>
<tr>
<th>Functions</th>
<th>Permission</th>
<th>Transparency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Set:</td>
<td>SECUR</td>
<td>Administrator</td>
</tr>
<tr>
<td>Get:</td>
<td>SECUR?</td>
<td>Not Secure</td>
</tr>
</tbody>
</table>

**Description**
- **Set:** Start/stop security
  
  ```
  #SECUR security_mode
  CR
  ```

- **Get:** Get current security state
  
  ```
  #SECUR?
  CR
  ```

**Parameters**
- security_mode – 1 (On / enable security), 0 (Off / disable security)

**Notes**
- The permission system works only if security is enabled with the SECUR command.

**K-Config Example**
- Enable the permission system:
  
  "#SECUR 0", 0x0D
EDID Handling Commands

Additional EDID data functions can be performed via a compatible EDID management application, such as Kramer EDID Designer (see [www.kramerav.com/product/EDID%20Designer](http://www.kramerav.com/product/EDID%20Designer)).

<table>
<thead>
<tr>
<th>Command</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPEDID</td>
<td>Copy EDID data from the output to the input EEPROM</td>
</tr>
</tbody>
</table>

**CPEDID**

<table>
<thead>
<tr>
<th>Functions</th>
<th>Permission</th>
<th>Transparency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Set: CPEDID</td>
<td>End User</td>
<td>Public</td>
</tr>
<tr>
<td>Get: -</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

**Description**

Set: Copy EDID data from the output to the input EEPROM

Syntax:

```cpp
#CPEDID src_type,src_id,dst_type,dest_bitmap CR
```

Get: -

Response:

```cpp
~nn @CPEDID src_type,src_id,dst_type,dest_bitmap CR LF
```

**Parameters**

- `src_type` – EDID source type (usually output): 0 (Input), 1 (Output), 2 (Default EDID)
- `src_id` – for input source: 1 (Input), for output source: 0 (Default EDID source), 1 (Output 1), 2 (Output 2)
- `dst_type` – EDID destination type (usually input): 0 (Input)
- `dest_bitmap` – bitmap representing destination IDs. Format: XXXX...X, where X is hex digit. The binary form of every hex digit represents corresponding destinations. Setting ‘1’ indicates that EDID data is copied to this destination. Setting ‘0’ indicates that EDID data is not copied to this destination.

**Response Triggers**

Response is sent to the com port from which the Set was received (before execution)

**Notes**

Destination bitmap size depends on device properties (for 64 inputs it is a 64-bit word)

Example: bitmap 0x0013 means inputs 1, 2 and 5 are loaded with the new EDID.

In this device, if the destination type is input (0), the bitmap size is 8 bit, for example bitmap 0x81 means the inputs 1 and 8 are loaded with the new EDID.

**K-Config Example**

Copy the EDID data from the Output 1 (EDID source) to the Input:

```
"#CPEDID 1,1,0,0x1",0x0D
```

Copy the EDID data from the default EDID source to the Input:

```
"#CPEDID 2,0,0,0x1",0x0D
```
Switch Commands

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<th>Description</th>
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<td>Switch audio and video</td>
</tr>
<tr>
<td>VID</td>
<td>Set video switch state</td>
</tr>
<tr>
<td>VID-PATTERN</td>
<td>Select output pattern</td>
</tr>
<tr>
<td>AUD</td>
<td>Switch audio only</td>
</tr>
<tr>
<td>DISPLAY?</td>
<td>Read if output is valid</td>
</tr>
<tr>
<td>INFO-IO?</td>
<td>Get number of inputs/outputs in the unit</td>
</tr>
<tr>
<td>INFO-PRST</td>
<td>Get maximum number of video/audio presets in the unit</td>
</tr>
<tr>
<td>PRST-AUD?</td>
<td>Get audio connections from saved preset</td>
</tr>
</tbody>
</table>

**AV Functions**

<table>
<thead>
<tr>
<th>Description</th>
<th>Syntax</th>
</tr>
</thead>
<tbody>
<tr>
<td>Set: AV</td>
<td>End User</td>
</tr>
<tr>
<td>Get: -</td>
<td>-</td>
</tr>
</tbody>
</table>

**Response**

Set: \#AV SP in>out, in>out,.. CR

Get: -

**Parameters**

in – input number: 1 (IN 1), 2 (IN 2), 3 (IN 3), 4 (IN 4), 0 (output disconnected)
> – connection character between in and out parameters
out – output number: 1 (OUT 1), 2 (OUT 2), 3 (OUT 3), 4 (OUT 4), * (all outputs)

**K-Config Example**

Switch IN 1 to OUT 4:
“#AV 1>4”, 0x0D

**VID Functions**

<table>
<thead>
<tr>
<th>Description</th>
<th>Syntax</th>
</tr>
</thead>
<tbody>
<tr>
<td>Set: VID</td>
<td>End User</td>
</tr>
<tr>
<td>Get: VID?</td>
<td>End User</td>
</tr>
</tbody>
</table>

**Response**

Set: \#VID SP in>out CR

Get: \#VID?SP out CR

**Parameters**

in – input number: 1 (IN 1), 2 (IN 2), 3 (IN 3), 4 (IN 4), 5 (pattern selection), 0 (output disconnected)
> – connection character between IN and OUT parameters
out – output number: 1 (OUT 1), 2 (OUT 2), 3 (OUT 3), 4 (OUT 4), * (all outputs)

**K-Config Example**

Switch IN 1 to OUT 3:
“#VID 1>3”, 0x0D
### VID-PATTERN

<table>
<thead>
<tr>
<th>Functions</th>
<th>Permission</th>
<th>Transparency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Set: VID-PATTERN</td>
<td>End User</td>
<td>Public</td>
</tr>
<tr>
<td>Get: VID-PATTERN?</td>
<td>End User</td>
<td>Public</td>
</tr>
</tbody>
</table>

**Description**

**Set:** Select output pattern

#VID-PATTERNSPout,pattern_idCR

**Get:** Get current pattern selected

#VID-PATTERN?SPoutCR

**Response**

Set:

~nn@VID-PATTERNSPout,pattern_idCR LF

Get:

~nn@VID-PATTERNSPoutCR LF

**Parameters**

- **out** – output number: 1 (OUT 1), 2 (OUT 2), 3 (OUT 3), 4 (OUT 4)
- **pattern_id** – select Pattern: 1 (Pattern 1), 2 (Pattern 2), 3 (Pattern 3), 4 (Pattern 4), 5 (Pattern 5), 6 (Pattern 6), 7 (Pattern 7), 8 (Pattern 8)

**K-Config Example**

Switch PATTERN 1 to OUT 3:

“#VID-PATTERN 3,1”,0x0D

### AUD

<table>
<thead>
<tr>
<th>Functions</th>
<th>Permission</th>
<th>Transparency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Set: AUD</td>
<td>End User</td>
<td>Public</td>
</tr>
<tr>
<td>Get: AUD?</td>
<td>End User</td>
<td>Public</td>
</tr>
</tbody>
</table>

**Description**

**Set:** Set audio switch state

#AUDSPin>out, in>out,CR

**Get:** Get audio switch state

#AUD?SPoutCR

**Response**

Set:

~nn@AUDSPin>outCR LF

~nn@AUDSPin>outCR LF

Get:

~nn@AUDSPin>1, in>2, CR LF

~nn@AUDSPin1, in>2, CR LF

**Parameters**

- **In** – input number: 1 (HDMI IN 1), 2 (HDMI IN 2), 3 (HDMI IN 3), 4 (HDMI IN 4), 5 (Analog IN 1), 6 (Analog IN 2), 7 (Analog IN 3), 8 (Analog IN 4), 0 (output disconnected)
- **out** – output number: 1 (HDMI OUT 1), 2 (HDMI OUT 2), 3 (HDMI OUT 3), 4 (HDMI OUT 4), 5 (Analog OUT 1), 6 (Analog OUT 2), 7 (Analog OUT 3), 8 (Analog OUT 4), * (all outputs)

**Notes**

When AFV switching mode is active, this command also switches video and unit replies with command ~AV.

**K-Config Examples**

Switch embedded audio HDMI IN 1 to HDMI OUT 3:

“#AUD 1>3”,0x0D

Switch Analog IN 4 to HDMI OUT 4:

“#AUD 8>4”,0x0D

Switch Analog IN 3 to analog out 1:

“#AUD 7>5”,0x0D
**DISPLAY**

<table>
<thead>
<tr>
<th>Functions</th>
<th>Permission</th>
<th>Transparency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Set: -</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Get: DISPLAY?</td>
<td>End User</td>
<td>Public</td>
</tr>
</tbody>
</table>

**Description**

**Syntax**

Set: -

Get: Get output HPD status

#DISPLAY?S\_out_id\_statusCR

**Response**

~nnDISPLAY\_S\_out_id, statusCR\_LF

**Parameters**

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

**Response Triggers**

A response is sent to the com port from which the Get was received, after command execution and:
- After every change in output HPD status from On to Off (0)
- After every change in output HPD status from Off to On (1)
- After every change in output HPD status from Off to On and all parameters (new EDID, etc.) are stable and valid (2)

**K-Config Example**

Get the output HPD status of Output 1: 

“#DISPLAY? 1”,0x0D

**INFO-IO**

<table>
<thead>
<tr>
<th>Functions</th>
<th>Permission</th>
<th>Transparency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Set: -</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Get: INFO-IO?</td>
<td>End User</td>
<td>Public</td>
</tr>
</tbody>
</table>

**Description**

**Syntax**

Set: -

Get: Get in/out count

#INFO-IO?CR

**Response**

~nnINFO-IO\_IN\_inputs_count, \_OUT\_outputs_countCR\_LF

**Parameters**

- inputs_count – 4 (number of inputs in the unit)
- outputs_count – 4 (number of outputs in the unit)

**K-Config Example**

Get inputs count:

“#INFO-IO?”,0x0D
INFO-PRST

<table>
<thead>
<tr>
<th>Functions</th>
<th>Permission</th>
<th>Transparency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Set:</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Get:</td>
<td>INFO-PRST?</td>
<td>End User</td>
</tr>
</tbody>
</table>

Description

Syntax

Set:          -
Get:          -

Response

Parameters

preset_video_count – maximum number of video presets in the unit
preset_audio_count – maximum number of audio presets in the unit

Notes

In most units, video and audio presets with the same number are stored and recalled together by commands #PRST-STO and #PRST-RCL.

K-Config Example

Get number of video and audio presets:

“#INFO-PRST?”, 0x0D

PRST-AUD

<table>
<thead>
<tr>
<th>Functions</th>
<th>Permission</th>
<th>Transparency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Set:</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Get:</td>
<td>PRST-AUD?</td>
<td>End User</td>
</tr>
</tbody>
</table>

Description

Syntax

Set:          -
Get:          -

Response

Parameters

preset – preset number
n – input number: 1 (IN 1), 2 (IN 2), 3 (IN 3), 4 (IN 4), 0 (output disconnected)
> – Connection character between in and out parameters
out – Output number: 1 (OUT 1), 2 (OUT 2), 3 (OUT 3), 4 (OUT 4), * (all outputs)

Notes

In most units, video and audio presets with the same number are stored and recalled together by commands #PRST-STO and #PRST-RCL.

K-Config Example

Get audio connection IN 1 to OUT 3 from saved preset 1:

“#PRST-AUD? 1”, 0x0D
## Switching Commands

<table>
<thead>
<tr>
<th>Command</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>MTX-MODE</td>
<td>Set/get to auto-switch mode</td>
</tr>
<tr>
<td>VMUTE</td>
<td>Set/get video on output status</td>
</tr>
<tr>
<td>ROUTE</td>
<td>Set/get layer routing</td>
</tr>
</tbody>
</table>

### MTX-MODE

<table>
<thead>
<tr>
<th>Functions</th>
<th>Permission</th>
<th>Transparency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Set:</td>
<td>MTX-MODE</td>
<td>End User</td>
</tr>
<tr>
<td>Get:</td>
<td>MTX-MODE?</td>
<td>End User</td>
</tr>
</tbody>
</table>

**Description**

**Set:**

```
Set: MTX-MODE
```

**Syntax**
```
#MTX-MODE SP output_id,mode CR
```

**Get:**

```
Get: MTX-MODE?
```

**Syntax**
```
#MTX-MODE? SP output_id CR
```

**Response**
```
~nn@MTX-MODE SP output_id,mode CR
```

**Parameters**

- `output_id` - 1 (OUT 1), 2 (OUT 2), 3 (OUT 3), 4 (OUT 4)
- `mode` - 0 (manual), 1 (auto priority), 2 (auto last connected)

**Response Triggers**

- After execution, a response is sent to the com port from which the Set/Get was received
- After execution, a response is sent to all com ports if MTX-MODE was set by any other external control device (button press, WEB, device menu and similar)

**Notes**

Not recommended for new devices.

**K-Config Example**

Set output to last connected:
```
"#MTX-MODE 1,2",0x0D
```
## ROUTE

<table>
<thead>
<tr>
<th>Functions</th>
<th>Permission</th>
<th>Transparency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Set: ROUTE</td>
<td>End User</td>
<td>Public</td>
</tr>
<tr>
<td>Get: ROUTE?</td>
<td>End User</td>
<td>Public</td>
</tr>
</tbody>
</table>

### Description

#### Syntax
- Set: `ROUTE layer,dest,src CR`
- Get: `ROUTE? layer,dest CR`

### Response

- `~nn@ROUTE layer,dest,src CR LF`

### Parameters

- **layer** - 1 (video), 2 (audio)
- **dest** - 1 (HDMI OUT 1), 2 (HDMI OUT 2), 3 (HDMI OUT 3), 4 (HDMI OUT 4), 5 (Analog OUT 1), 6 (Analog OUT 2), 7 (Analog OUT 3), 8 (Analog OUT 4), * (all outputs)
- **src** - 1 (HDMI IN 1), 2 (HDMI IN 2), 3 (HDMI IN 3), 4 (HDMI IN 4), 5 (Analog IN 1), 6 (Analog IN 2), 7 (Analog IN 3), 8 (Analog IN 4), 0 (output disconnected)

### Notes

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

### K-Config Examples

- Route video HDMI IN 2 to video HDMI OUT 4:
  
  `"#ROUTE 1,4,2",0x0D`

- Route audio analog IN 1 to HDMI OUT 1:
  
  `"#ROUTE 2,1,5",0x0D`

- Route audio analog IN 1 to Analog OUT 4:
  
  `"#ROUTE 2,8,5",0x0D`

## VMUTE

<table>
<thead>
<tr>
<th>Functions</th>
<th>Permission</th>
<th>Transparency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Set: VMUTE</td>
<td>End User</td>
<td>Public</td>
</tr>
<tr>
<td>Get: VMUTE?</td>
<td>End User</td>
<td>Public</td>
</tr>
</tbody>
</table>

### Description

#### Syntax
- Set: `VMUTE output_id,flag CR`
- Get: `VMUTE? output_id CR`

### Response

- `~nn@VMUTE output_id,flag CR LF`

### Parameters

- **output_id** - 1 (OUT 1), 2 (OUT 2), 3 (OUT 3), 4 (OUT 4)
- **flag** - 0 (disable video on output), 1 (enable video on output), 2 (blank video)

### K-Config Example

- Disable the video output on OUT 2:
  
  `"#VMUTE 2,0",0x0D`
Audio Commands

<table>
<thead>
<tr>
<th>Command</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>BALANCE</td>
<td>Set/get balance level</td>
</tr>
<tr>
<td>MUTE</td>
<td>Set/get audio mute</td>
</tr>
<tr>
<td>AUD-LVL</td>
<td>Set audio level in specific amplifier stage</td>
</tr>
<tr>
<td>AUD-SIGNAL?</td>
<td>Get audio input signal status</td>
</tr>
</tbody>
</table>

### BALANCE

**Functions**

<table>
<thead>
<tr>
<th>Set:</th>
<th>BALANCE</th>
<th>End User</th>
<th>Public</th>
</tr>
</thead>
<tbody>
<tr>
<td>Get:</td>
<td>BALANCE?</td>
<td>End User</td>
<td>Public</td>
</tr>
</tbody>
</table>

**Description**

**Syntax**

Set:  

```
#BALANCE SP channel,balance level CR
```

Get:  

```
#BALANCE? SP channel CR
```

**Response**

```
~nn@BALANCE SP channel,balance_level CR LF
```

**Parameters**

- `channel` – output number: 1 (OUT 1), 2 (OUT 2), 3 (OUT 3), 4 (OUT 4)
- `balance level` – audio parameter in Kramer units, minus sign precedes negative values
  - `++` increase current value
  - `--` decrease current value

**K-Config Example**

Set output audio balance to 50 (0dB):

```
"#BALANCE 1,50",0x0D
```

### MUTE

**Functions**

<table>
<thead>
<tr>
<th>Set:</th>
<th>MUTE</th>
<th>End User</th>
<th>Public</th>
</tr>
</thead>
<tbody>
<tr>
<td>Get:</td>
<td>MUTE?</td>
<td>End User</td>
<td>Public</td>
</tr>
</tbody>
</table>

**Description**

**Syntax**

Set:  

```
#MUTE SP channel,mute_mode CR
```

Get:  

```
#MUTE? SP channel CR
```

**Response**

```
~nn@MUTE SP channel,mute_mode CR LF
```

**Parameters**

- `channel` – 1 (OUT 1), 2 (OUT 2), 3 (OUT 3), 4 (OUT 4)
- `mute_mode` – 0 (mute mode off), 1 (mute mode on)

**K-Config Example**

Mute OUT 1 audio:

```
"#MUTE 1,1",0x0D
```
### AUD-LVL

<table>
<thead>
<tr>
<th>Functions</th>
<th>Permission</th>
<th>Transparency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Set: AUD-LVL</td>
<td>End User</td>
<td>Public</td>
</tr>
<tr>
<td>Get: AUD-LVL?</td>
<td>End User</td>
<td>Public</td>
</tr>
</tbody>
</table>

**Description**

**Syntax**

```plaintext
Set: #AUD-LVL SP stage, channel, volume CR
Get: #AUD-LVL? SP stage, channel CR
```

**Response**

```plaintext
~ nn #AUD-LVL SP stage, channel, volume CR LF
```

**Parameters**

- **stage** – 2 (audio output)
- **channel** – output channel number of selected stage: 1 (Audio Out)
- **volume** – audio parameter percentage: 0-100 (percent value), ++ (increase current value by 1 percent), -- decrease current value by 1 percent

**Notes**

All values are in percentages.
A minus sign precedes negative values.

**K-Config Example**

Set the volume of the Audio Out (1) output to 75%:
```
"#AUD-LVL 2,1,75",0x0D
```

### AUD-SIGNAL

<table>
<thead>
<tr>
<th>Functions</th>
<th>Permission</th>
<th>Transparency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Set: -</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Get: AUD-SIGNAL?</td>
<td>End User</td>
<td>Public</td>
</tr>
</tbody>
</table>

**Description**

**Syntax**

```plaintext
Set: -
Get: #AUD-SIGNAL? SP inp_id CR
```

**Response**

```plaintext
~ nn #AUD-SIGNAL SP inp_id, status CR LF
```

**Parameters**

- **inp_id** – audio input number: 1 (Audio In)
- **status** – 0 (Off / no signal), 1 (On / signal present)

**Response Triggers**

After execution, a response is sent to the com port from which the get command was received
A response is sent to all com ports if the audio status was changed on any input

**K-Config Example**

```
"#AUD-SIGNAL? 1",0x0D
```
Communication Commands

<table>
<thead>
<tr>
<th>Command</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ETH-PORT</td>
<td>Set/get Ethernet port protocol</td>
</tr>
<tr>
<td>NET-DHCP</td>
<td>Set/get DHCP mode</td>
</tr>
<tr>
<td>NET-GATE</td>
<td>Set/get gateway IP</td>
</tr>
<tr>
<td>NET-IP</td>
<td>Set/get IP address</td>
</tr>
<tr>
<td>NET-MAC</td>
<td>Get MAC address</td>
</tr>
<tr>
<td>NET-MASK</td>
<td>Set/get subnet mask</td>
</tr>
</tbody>
</table>

**ETH-PORT**

<table>
<thead>
<tr>
<th>Functions</th>
<th>Permission</th>
<th>Transparency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Set: ETH-PORT</td>
<td>Administrator</td>
<td>Public</td>
</tr>
<tr>
<td>Get: ETH-PORT?</td>
<td>End User</td>
<td>Public</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Description</th>
<th>Syntax</th>
</tr>
</thead>
<tbody>
<tr>
<td>Set: Set Ethernet port protocol</td>
<td>#ETH-PORT&lt;portType,ETHPort&gt;CR</td>
</tr>
<tr>
<td>Get: Get Ethernet port protocol</td>
<td>#ETH-PORT?&lt;portType&gt;CR</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Response</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>~nn@ETH-PORT&lt;portType,ETHPort&gt;CR LF</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Parameters</th>
</tr>
</thead>
<tbody>
<tr>
<td>portType – 0 (TCP)=, 1 (UDP)</td>
</tr>
<tr>
<td>ETHPort = 0–65534 (TCP / UDP port number)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>If the port number you enter is already in use, an error is returned.</td>
</tr>
<tr>
<td>The port number must be within the following range: 2000-(2^16-1).</td>
</tr>
</tbody>
</table>

K-Config Example

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

**NET-DHCP**

<table>
<thead>
<tr>
<th>Functions</th>
<th>Permission</th>
<th>Transparency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Set: NET-DHCP</td>
<td>Administrator</td>
<td>Public</td>
</tr>
<tr>
<td>Get: NET-DHCP?</td>
<td>End User</td>
<td>Public</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Description</th>
<th>Syntax</th>
</tr>
</thead>
<tbody>
<tr>
<td>Set: Set DHCP mode</td>
<td>#NET-DHCP&lt;mode&gt;CR</td>
</tr>
<tr>
<td>Get: Get DHCP mode</td>
<td>#NET-DHCP?CR</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Response</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>~nn@NET-DHCP&lt;mode&gt;CR LF</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Parameters</th>
</tr>
</thead>
<tbody>
<tr>
<td>mode – 0 (do not use DHCP. Use the IP address set by the factory or the NET-IP command), 1 (try to use DHCP. If unavailable, use the IP address set by the factory or the NET-IP command)</td>
</tr>
</tbody>
</table>

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

K-Config Example

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

<table>
<thead>
<tr>
<th>Functions</th>
<th>Permission</th>
<th>Transparency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Set: NET-GATE</td>
<td>Administrator</td>
<td>Public</td>
</tr>
<tr>
<td>Get: NET-GATE?</td>
<td>End User</td>
<td>Public</td>
</tr>
</tbody>
</table>

**Description**

- **Set:** Set gateway IP
  
  ```
  SET NET-GATE ip_address CR
  ```

- **Get:** Get gateway IP
  
  ```
  GET NET-GATE? CR
  ```

**Response**

```nn@NET-GATE ip_address CR LF```

**Parameters**

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

**Notes**

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

**K-Config Example**

Set the gateway IP address to 192.168.0.1:

```
"#NET-GATE 192.168.000.001",0x0D
```

### NET-IP

<table>
<thead>
<tr>
<th>Functions</th>
<th>Permission</th>
<th>Transparency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Set: NET-IP</td>
<td>Administrator</td>
<td>Public</td>
</tr>
<tr>
<td>Get: NET-IP?</td>
<td>End User</td>
<td>Public</td>
</tr>
</tbody>
</table>

**Description**

- **Set:** Set IP address
  
  ```
  SET NET-IP ip_address CR
  ```

- **Get:** Get IP address
  
  ```
  GET NET-IP? CR
  ```

**Response**

```nn@NET-IP ip_address CR LF```

**Parameters**

- `ip_address` - IP address, in the following format: `xxx.xxx.xxx.xxx`

**Notes**

Consult your network administrator for correct settings.

**K-Config Example**

Set the IP address to 192.168.1.39:

```
"#NET-IP 192.168.001.039",0x0D
```

### NET-MAC

<table>
<thead>
<tr>
<th>Functions</th>
<th>Permission</th>
<th>Transparency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Set: NET-MAC</td>
<td>Administrator</td>
<td>Public</td>
</tr>
<tr>
<td>Get: NET-MAC?</td>
<td>End User</td>
<td>Public</td>
</tr>
</tbody>
</table>

**Description**

- **Set:** Get MAC address
  
  ```
  GET NET-MAC? CR
  ```

**Response**

```nn@NET-MAC mac_address CR LF```

**Parameters**

- `mac_address` - unique MAC address. Format: `XX-XX-XX-XX-XX-XX` where `X` is hex digit

**K-Config Example**

```
"#NET-MAC?",0x0D
```

VS-44UHDA - Protocol 3000
## NET-MASK

<table>
<thead>
<tr>
<th>Functions</th>
<th>Permission</th>
<th>Transparency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Set: NET-MASK</td>
<td>Administrator</td>
<td>Public</td>
</tr>
<tr>
<td>Get: NET-MASK?</td>
<td>End User</td>
<td>Public</td>
</tr>
</tbody>
</table>

**Description**

**Syntax**

Set: Set subnet mask

Get: Get subnet mask

**Response**

```
~nn@NET-MASK$SP\text{net\_mask}\text{CR}F
```

**Parameters**

net_mask – format: xxx.xxx.xxx.xxx

**Response Triggers**

The subnet mask limits the Ethernet connection within the local network
Consult your network administrator for correct settings

**K-Config Example**

Set the subnet mask to 255.255.0.0:

```
"^\text{#NET-MASK 255.255.000.000},0x0D
```
The warranty obligations of Kramer Electronics Inc. ("Kramer Electronics") for this product are limited to the terms set forth below:

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

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

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

How Long this Coverage Lasts
The standard limited warranty for Kramer products is seven (7) years from the date of original purchase, with the following exceptions:

1. All Kramer VIA products are covered by a standard three (3) year warranty for VIA hardware and a standard one (1) year warranty for firmware and software updates. (An extended software warranty plan for an additional 2 years can be purchased separately).
2. All Kramer fiber optic cables and adapters, active cables, cable retractors, all Kramer speakers and Kramer touch panels are covered by a standard one (1) year warranty.
3. All Kramer Cobra products, all Kramer Calibre products, all Kramer Minicom digital signage products, all HighSecLabs products, all streaming, and all wireless products are covered by a standard three (3) year warranty.
4. All Sierra Video MultiViewers are covered by a standard five (5) year warranty.
5. Sierra switchers & control panels are covered by a standard seven (7) year warranty (excluding power supplies and fans that are covered for three (3) years).
6. K-Touch software is covered by a standard one (1) year warranty for software updates.
7. All Kramer passive cables are covered by a ten (10) year warranty.

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

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

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

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

How to Obtain a Remedy Under This Limited Warranty
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SAFETY WARNING

Disconnect the unit from the power supply before opening and servicing

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