USER MANUAL

MODEL:

VS-42UHD
4x2 HDMI Matrix Switcher
VS-42UHD Quick Start Guide

This guide helps you install and use your VS-42UHD for the first time. Go to http://www.kramerav.com/manual/VS-42UHD to download the latest user manual (or scan the QR code) and check if firmware upgrades are available.

Step 1: Check what’s in the box

☑️ VS-42UHD 4x2 HDMI Matrix Switcher
☑️ 1 Power supply (5V DC)
☑️ 4 Rubber feet
☑️ 1 Quick start guide
☑️ Kramer RC-IR3 Infrared Remote Control Transmitter with batteries and user manual

Step 2: Install the VS-42UHD

Attach the rubber feet and place on a table or mount the VS-42UHD in a rack (using an optional RK-T2B rack mount).

Step 3: Connect inputs and outputs

Always switch OFF the power on each device before connecting it to your VS-42UHD. For best results, we recommend that you always use Kramer high-performance cables to connect AV equipment to the VS-42UHD.

Step 4: Connect the power

Connect the 5V DC power adapter to the VS-42UHD and plug the adapter into the mains electricity.
Step 5: Set the DIP-switches:

<table>
<thead>
<tr>
<th>#</th>
<th>Feature</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>HDCP support on inputs</td>
<td>On—Disable HDCP support on all inputs Off—Enable HDCP support which is defined by P3000 commands</td>
</tr>
<tr>
<td>2</td>
<td>Video mode switching Output 1</td>
<td>On—Auto Off—Manual</td>
</tr>
<tr>
<td>3</td>
<td>Last connected/Priority mode Output 1</td>
<td>When DIP-switch 2 is set to Auto (ON) On—Enable Last Connected mode Off—Enable Priority mode where the priority of each input is defined by the input number (1 is the highest priority)</td>
</tr>
<tr>
<td>4</td>
<td>Video mode switching Output 2</td>
<td>On—Auto Off—Manual</td>
</tr>
<tr>
<td>5</td>
<td>Last connected/Priority mode Output 2</td>
<td>When DIP-switch 4 is set to Auto (ON) On—Enable Last Connected mode Off—Enable Priority mode where the priority of each input is defined by the input number (1 is the highest priority)</td>
</tr>
<tr>
<td>6</td>
<td>N/A</td>
<td>—</td>
</tr>
<tr>
<td>7</td>
<td>N/A</td>
<td>—</td>
</tr>
<tr>
<td>8</td>
<td>N/A</td>
<td>—</td>
</tr>
</tbody>
</table>

Step 6: General operation

Switch an Input to an Output:
Press an input button on the top row (To OUT1) to switch that input to Output 1.
Press an input button on the bottom row (To OUT2) to switch that input to Output 2.

To Copy an EDID from an Output to an Input:
1. Press the EDID button.
2. Press the required input button corresponding to either Output 1 or Output 2.
3. Press the EDID button.

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

IR Remote Controller:  RS-232 and Ethernet:  Embedded Web Page:

**RS-232**
Protocol 3000
Baud Rate: 115,200
Data Bits: 8
Stop Bits: 1
Parity: None
Command Format: ASCII

**TCP/IP Parameters**
IP Address: 192.168.1.39
Netmask: 255.255.0.0
Gateway: 0.0.0.0
TCP Port #: 5000
UDP Port #: 50000
Contents

1 Introduction 1

2 Getting Started 2
  2.1 Achieving the Best Performance 2
  2.2 Safety Instructions DC 2
  2.3 Recycling Kramer Products 3

3 Overview 4
  3.1 Using the IR Transmitter 5
  3.2 Defining the VS-42UHD 4x2 HDMI Matrix Switcher 6

4 Connecting the VS-42UHD 8
  4.1 Connecting a Serial Controller via RS-232 9
  4.2 Connecting to the VS-42UHD via Ethernet 9
  4.3 Connecting the Remote Contact-Closure Switches 12

5 Principles of Operation 14
  5.1 Automatic Signal Detection 14
  5.2 Input Switching Modes 14
  5.3 EDID Operation 15
  5.4 Step-in Functionality 15

6 Operating the VS-42UHD 4x2 HDMI Matrix Switcher 16
  6.1 Switching an Input to an Output 16
  6.2 Acquiring an EDID from an Output 16
  6.3 Muting and Unmuting the Outputs 17
  6.4 Locking and Unlocking the Front Panel Buttons 18
  6.5 Generating a Test Pattern 18

7 Configuring and Maintaining the VS-42UHD 19
  7.1 Setting the DIP-Switches 19
  7.2 Resetting the VS-42UHD to Factory Default Settings 20
  7.3 Upgrading the Firmware 20

8 Operating the VS-42UHD Remotely via the Web Pages 21
  8.1 Browsing the VS-42UHD Web Pages 21
  8.2 Routing Page 23
  8.3 EDID Page 27
  8.4 Device Setting Page 29
  8.5 Firmware Upgrade Page 30
  8.6 About Us Page 31

9 Wiring the Twisted Pair RJ-45 Connectors 32

10 Technical Specifications 33

11 Default Communication Parameters 34

12 Default EDID 35

13 Protocol 3000 37
  13.1 Understanding Protocol 3000 38
  13.2 Kramer Protocol 3000 Syntax 40
  13.3 Protocol 3000 Commands 41
Figures

Figure 1: VS-42UHD 4x2 HDMI Matrix Switcher Front 6
Figure 2: VS-42UHD 4x2 HDMI Matrix Switcher Rear 7
Figure 3: Connecting the VS-42UHD 4x2 HDMI Matrix Switcher 9
Figure 4: Local Area Connection Properties Window 10
Figure 5: Internet Protocol Version 4 Properties Window 11
Figure 6: Internet Protocol Properties Window 12
Figure 7: Remote Contact-closure Switch Connections 13
Figure 8: Available Test Patterns 18
Figure 9: The Loading Page 22
Figure 10: The General Info Page 22
Figure 11: The Routing Page 23
Figure 12: The Output Buttons 24
Figure 13: The Input Buttons 24
Figure 14: The Remote Device Control Window 25
Figure 15: Test Pattern Tab 26
Figure 16: The EDID Page 27
Figure 17: The Device Setting Page 29
Figure 18: The Firmware Upgrade Page 30
Figure 19: The About Us Page 31
Figure 20: TP Pinout Wiring 32
Introduction

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

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

Congratulations on purchasing your Kramer VS-42UHD 4x2 HDMI Matrix Switcher. This product, which incorporates HDMI™ technology, is ideal for:

- Conference rooms
- Education
- Hospitality
2 Getting Started

We recommend that you:

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

Go to www.kramerav.com/downloads/VS-42UHD to check for up-to-date user manuals, application programs, and to check if firmware upgrades are available (where appropriate).

2.1 Achieving the Best Performance

To achieve the best performance:

- For optimum range and performance, use the recommended Kramer cables available at www.kramerav.com/product/VS-42UHD
- 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 VS-42UHD away from moisture, excessive sunlight and dust

This equipment is to be used only inside a building. It may only be connected to other equipment that is installed inside a building.

2.2 Safety Instructions DC

Caution: There are no operator serviceable parts inside the unit

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

Warning: Disconnect the power and unplug the unit from the wall before installing
2.3 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/](http://www.kramerav.com/support/recycling/).
3 Overview

The **VS-42UHD** is a high quality, 4x2 matrix switcher for HDMI signals. It reclocks and equalizes the signals and can route any input to either or both outputs simultaneously.

In particular, the **VS-42UHD** features:

- Up to 8.91Gbps data rate (2.97Gbps per graphics channel)
  Suitable for resolutions up to UXGA and 4K x 2K
- Support for HDCP (High Definition Digital Content Protection)
- True video clock detection
- Automatic switching modes (last connected and priority switching)
- I-EDIDPro™ Kramer Intelligent EDID Processing™ – Intelligent EDID handling & processing algorithm ensures Plug and Play operation for HDMI systems
- Programmable step-in functionality when used in conjunction with compatible step-in devices, such as **SID-X3N** and **DIP-31** (using an HDMI cable that supports HEC, the HDMI Ethernet Channel)
- Non-volatile EDID storage
- Kramer reKlocking™ & Equalization Technology that rebuilds the digital signal to travel longer distances
- Static or dynamic DHCP IP addressing
- Embedded Web pages that provide remote configuration and operation
- A lock button to prevent unwanted tampering with the buttons on the front panel
- Support for Kramer Protocol 3000
You can control the **VS-42UHD** using the front panel buttons, or remotely via:

- RS-232 serial commands transmitted by a PC, touch screen system or other serial controller
- The Kramer **RC-IR3** infrared, remote control transmitter
- A PC connected via a LAN to the Ethernet port on the **VS-42UHD**
- An optional, external, remote IR receiver (see Section 3.1)

### 3.1 Using the IR Transmitter

You can use the **RC-IR3** IR transmitter to control the machine via the built-in IR receiver on the front panel or, instead, via an optional external IR receiver (for example, P/N C-A35M/IRR-50). The external IR receiver can be located up to 15m away from the machine. This distance can be extended to up to 60m when used with three extension cables (for example, P/N C-A35M/A35F-50).

Before using the external IR receiver, be sure to arrange for your Kramer dealer to insert the internal IR connection cable (for example, P/N: 505-70434010-S) with the 3.5mm connector that fits into the REMOTE IR opening on the rear panel. Connect the external IR receiver to the REMOTE IR 3.5mm connector.
3.2 Defining the VS-42UHD 4x2 HDMI Matrix Switcher

This section defines the VS-42UHD.

Figure 1: VS-42UHD 4x2 HDMI Matrix Switcher Front

<table>
<thead>
<tr>
<th>#</th>
<th>Feature</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>IR LED</td>
<td>Lights yellow when receiving an IR signal</td>
</tr>
<tr>
<td>2</td>
<td>IR Sensor</td>
<td>Signal receiver for the infrared remote control transmitter</td>
</tr>
<tr>
<td>3</td>
<td>ON LED</td>
<td>Lights green when the device is powered on</td>
</tr>
<tr>
<td>4</td>
<td>INPUT SELECTOR</td>
<td>Press one of the four inputs to switch it to Output 1</td>
</tr>
<tr>
<td></td>
<td>TO OUT 1 1~4</td>
<td>Press the currently selected input button to mute the output</td>
</tr>
<tr>
<td>5</td>
<td>INPUT SELECTOR</td>
<td>Press one of the four inputs to switch it to Output 2</td>
</tr>
<tr>
<td></td>
<td>TO OUT 2 1~4</td>
<td>Press the currently selected input button to mute the output</td>
</tr>
<tr>
<td>6</td>
<td>LOCK Button</td>
<td>Press and hold to lock the front panel buttons. Press and hold again to unlock (see Section 6.4)</td>
</tr>
<tr>
<td>7</td>
<td>MUTE Button</td>
<td>Press to toggle mute of both output signals (see Section 6.3)</td>
</tr>
<tr>
<td>8</td>
<td>EDID Button</td>
<td>Press to capture the EDID (see Section 6.2)</td>
</tr>
<tr>
<td>9</td>
<td>FUNCTION Button</td>
<td>Press to activate the test pattern generator. When the generator is active, press one of the input buttons to select a test pattern (see Section 6.5)</td>
</tr>
</tbody>
</table>
### VS-42UHD - Overview

#### Figure 2: VS-42UHD 4x2 HDMI Matrix Switcher Rear

<table>
<thead>
<tr>
<th>#</th>
<th>Feature</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>INPUT 1~4 HDMI Input Connectors</td>
<td>Connect to up to four HDMI sources (see Section 6.1)</td>
</tr>
<tr>
<td>11</td>
<td>REMOTE IR Opening</td>
<td>Connect to an external IR receiver for controlling the device via an IR remote controller (see Section 3.1). Covered by a cap. The 3.5mm mini jack at the end of the internal IR connection cable fits into this opening.</td>
</tr>
<tr>
<td>12</td>
<td>REMOTE INPUT To OUT 1 4-pin Terminal Block</td>
<td>Connect to up to four remote, contact-closure input selection switches for Output 1 (see Section 4.3)</td>
</tr>
<tr>
<td>13</td>
<td>REMOTE INPUT To OUT 2 4-pin Terminal Block</td>
<td>Connect to up to four remote, contact-closure input selection switches for Output 2 (see Section 4.3)</td>
</tr>
<tr>
<td>14</td>
<td>RS-232 3-pin Terminal Block</td>
<td>Connect to a PC/serial controller (see Section 4.1)</td>
</tr>
<tr>
<td>15</td>
<td>SETUP 8-way DIP-switch</td>
<td>Sets the device configuration (see Section 7.1)</td>
</tr>
<tr>
<td>16</td>
<td>PROG VIA USB Connector</td>
<td>Connect to a PC to upgrade the firmware (see Section 7.3)</td>
</tr>
<tr>
<td>17</td>
<td>PROG VIA RS-232 Upgrade Switch</td>
<td>Press to upgrade the firmware via the RS-232 port, release for normal operation</td>
</tr>
<tr>
<td>18</td>
<td>ETHERNET RJ-45 Connector</td>
<td>Connect to a PC via a LAN (see Section 4.2)</td>
</tr>
<tr>
<td>19</td>
<td>RESET Switch</td>
<td>Press while power-cycling the device to reset to factory default parameters (see Section 7.2)</td>
</tr>
<tr>
<td>20</td>
<td>5V DC Connector</td>
<td>Connect to the power adapter, center pin positive</td>
</tr>
<tr>
<td>21</td>
<td>OUT 1 and OUT 2 HDMI Output Connectors</td>
<td>Connect to up to two HDMI acceptors</td>
</tr>
</tbody>
</table>
4 Connecting the VS-42UHD

Always switch off the power to each device before connecting it to your VS-42UHD. After connecting your VS-42UHD, connect its power and then switch on the power to each device.

You do not have to connect all the inputs and outputs, connect only those that are required.

To connect the VS-42UHD, as illustrated in the example in Figure 3, do the following:

1. Connect up to four HDMI sources, (for example, Blu-ray Disc players) to the HDMI Input connectors.

2. Connect the two OUT HDMI connectors to up to two HDMI acceptors, (for example, LCD displays with built-in speakers).

3. If required, connect a PC/controller to the RS-232 port (see Section 4.1) and/or the Ethernet port (see Section 4.2).

4. Connect the power adapter to the device and plug the power adapter into the mains electricity (not shown in Figure 3).

5. If required, acquire the EDID (see Section 6.1).
4.1 Connecting a Serial Controller via RS-232

To connect a serial controller to the VS-42UHD:

- From the RS-232 9-pin D-sub serial port on the serial controller connect:
  - Pin 2 to the TX pin on the **VS-42UHD** RS-232 terminal block
  - Pin 3 to the RX pin on the **VS-42UHD** RS-232 terminal block
  - Pin 5 to the GND pin on the **VS-42UHD** RS-232 terminal block

4.2 Connecting to the VS-42UHD via Ethernet

You can connect to the **VS-42UHD** via Ethernet using either of the following methods:

- Directly to the PC using a crossover cable (see **Section 4.2.1**)
- Via a network hub, switch, or router, using a straight-through cable (see **Section 4.2.2**)

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**Figure 3: Connecting the VS-42UHD 4x2 HDMI Matrix Switcher**

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VS-42UHD - Connecting the VS-42UHD
**Note:** If you want to connect via a router and your IT system is based on IPv6, speak to your IT department for specific installation instructions.

### 4.2.1 Connecting the Ethernet Port Directly to a PC

You can connect the Ethernet port of the **VS-42UHD** 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-42UHD** with the factory configured default IP address.

After connecting the VS-42UHD 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 4**.

![Figure 4: Local Area Connection Properties Window](image)

5. Click **Properties**.

   The Internet Protocol Properties window appears as shown in **Figure 5**.

![Internet Protocol Version 4 Properties Window](image)

**Figure 5:** Internet Protocol Version 4 Properties Window

6. Select **Use the following IP Address** for static IP addressing and fill in the details as shown in **Figure 6**.

   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.

4.2.2 Connecting the Ethernet Port via a Network Hub or Switch

You can connect the Ethernet port of the VS-42UHD to the Ethernet port on a network hub or using a straight-through cable with RJ-45 connectors.

4.3 Connecting the Remote Contact-Closure Switches

You can connect up to four remote, contact-closure switches per output to control the VS-42UHD remotely. These switches replicate the Input selection buttons on the front panel of the VS-42UHD.
Figure 7 illustrates the wiring of the switch connections to the terminal block.

![Image of switch connections]

Figure 7: Remote Contact-closure Switch Connections
5 Principles of Operation

This section describes the operating theory of the **VS-42UHD** and includes:

- Automatic signal detection (see Section 5.1)
- Input switching modes (see Section 5.2)
- EDID operation (see Section 5.3)

### 5.1 Automatic Signal Detection

The **VS-42UHD** can automatically detect the presence of a video signal on an input based on the presence of a video sync or clock signal.

### 5.2 Input Switching Modes

#### 5.2.1 Manual Mode

In Manual switching mode, routing is performed according to the front panel button selection or according to the remote command selection.

#### 5.2.2 Automatic Mode

Automatic switching can be performed in either of the following ways:

- **Input priority.** Upon detection of an active input, the input with the highest priority is automatically selected. Input priority is from the lowest input number (1) to the highest (4)

- **Last Connected.** The device automatically selects the most recently connected input. Should this source become inactive, the device automatically switches to the last connected input that was active. When turning the device on and more than one input is active, the input with the highest priority is selected

If a manual selection is made when the device is in Automatic mode, the device enters Manual Override mode. The manually selected input remains selected as long as it is active. When a manually selected input becomes inactive, the device returns to Automatic mode.
5.3 EDID Operation

The VS-42UHD has a default EDID (see Section 12) stored on all inputs. This EDID can be exchanged for either:

- A custom EDID which is uploaded to one or more inputs using Protocol 3000 commands (see Section 13.3.5)
  - OR –

- The EDID of a display device connected to an output by using either the front panel buttons (see Section 6.2), a Protocol 3000 command, or the Web pages

The EDID is non-volatile and the last valid EDID is used when the device is powered up.

5.4 Step-in Functionality

The VS-42UHD can function as a step-in switcher when connected to a suitable HDMI transmitter, (for example, the SID-X3N or DIP-31) using the correct HDMI cable with HEC support.

Use the Web pages (see Section 8.2.2) to assign remote device button actions. The default button actions are shown in the following table. Up to three buttons can be active at the same time.

<table>
<thead>
<tr>
<th>Command</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Echo</td>
<td>Allows a connected controller to be programmed to perform a variety of tasks triggered by the user buttons, such as, room control, (lights, screen, and so on)</td>
</tr>
<tr>
<td>Out1</td>
<td>Step in current input to Output 1</td>
</tr>
<tr>
<td>Out2</td>
<td>Step in current input to Output 2</td>
</tr>
</tbody>
</table>
Operating the VS-42UHD 4x2 HDMI Matrix Switcher

This section describes operating the VS-42UHD and consists of:

- Switching an input to an output (see Section 6.1)
- Acquiring an EDID from an output (see Section 6.2)
- Muting and unmuting the outputs (see Section 6.3)
- Locking and unlocking the front panel buttons (see Section 6.4)
- Generating a test pattern (see Section 6.5)

6.1 Switching an Input to an Output

To switch an input to an output, (for example, Input 4 to Output 2):

- Press the Input 4 button in the bottom Output (To OUT 2) row.
  The LED lights red and Input 4 is switched to Output 2

6.2 Acquiring an EDID from an Output

You can acquire the EDID from OUT 1 or OUT 2 and copy it to any or all of the four inputs to be stored in non-volatile memory. You can also reset any or all of the inputs to the default EDID.

To copy the EDID from an Output to one or more Inputs:

1. Press the EDID button to enter the EDID setting mode.
   The EDID button lights.
   Note: If there is no button activity for 10 seconds, the device automatically exits the EDID setting mode to normal operation, the EDID button no longer lights and any changes made are lost.

2. From the To OUT 1 (top) row, press each of the Inputs to which you want to copy the EDID from Output 1.
   Each selected Input LED lights.
3. From the To OUT 2 (bottom) row, press each of the Inputs into which you want to copy the EDID from Output 2.
   Each selected Input LED lights.

4. Press the EDID button.
   The button no longer lights and the EDID changes are saved.

**To copy the default EDID to one or more Inputs:**

1. Press the EDID button to enter the EDID setting mode.
   The EDID button lights.

2. For each Input to which you want to copy the default EDID, press both the To OUT 1 and To OUT 2 buttons simultaneously.
   Both top row and bottom row Input LEDs light.

3. Press the EDID button.
   The button no longer lights and the EDID changes are saved.

6.3 Muting and Unmuting the Outputs

**To mute and unmute both outputs simultaneously:**

1. Press the Mute button.
   The Mute button lights and the outputs are muted.

2. Press the lit Mute button.
   The outputs are unmuted and the button no longer lights.

**To mute and unmute one output:**

1. Press the currently selected (and lit) input button.
   The output is muted and the button flashes.

2. Press the currently muted (and flashing) input button.
   The output is unmuted and the button lights solid.
6.4 Locking and Unlocking the Front Panel Buttons

To lock and unlock the front panel buttons:

1. Press and hold the Lock button.
   The front panel buttons are locked and the button lights.

2. Press and hold the Lock button again.
   The front panel buttons are unlocked and the button no longer lights.

6.5 Generating a Test Pattern

For diagnostic purposes, the **VS-42UHD** can generate a number of test patterns on the outputs. Figure 8 shows the test patterns available.

To generate a test pattern on the outputs:

1. Press the Function button.
   The button lights.

2. Press any of the Input buttons to select a test pattern.
   The selected test pattern is generated on the outputs.

To exit the test pattern generator:

- Press the lit Function button.
  The test pattern generation ceases and the button no longer lights.

![Available Test Patterns](image)

Figure 8: Available Test Patterns
7 Configuring and Maintaining the VS-42UHD

This section describes the configuration and maintenance of the VS-42UHD and consists of:

- Setting the DIP-switches (see Section 7.1)
- Resetting the device to factory default settings (see Section 7.2)
- Upgrading the firmware (see Section 7.3)

7.1 Setting the DIP-Switches

The DIP-switches dictate the behavior of the VS-42UHD.

All DIP-switches are off by default.

<table>
<thead>
<tr>
<th>#</th>
<th>Feature</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>HDCP support on inputs</td>
<td>On—Disable HDCP support on all inputs Off—Enable HDCP support which is defined by P3000 commands</td>
</tr>
<tr>
<td>2</td>
<td>Video mode switching Output 1</td>
<td>On—Auto Off—Manual</td>
</tr>
<tr>
<td>3</td>
<td>Last connected/Priority mode Output 1</td>
<td>When DIP-switch 2 is set to Auto (ON): On—Enable Last Connected mode Off—Enable Priority mode where the priority of each input is defined by the input number, (1 is the highest priority)</td>
</tr>
<tr>
<td>4</td>
<td>Video mode switching Output 2</td>
<td>On—Auto Off—Manual</td>
</tr>
<tr>
<td>5</td>
<td>Last connected/Priority mode Output 2</td>
<td>When DIP-switch 4 is set to Auto (ON): On—Enable Last Connected mode Off—Enable Priority mode where the priority of each input is defined by the input number, (1 is the highest priority)</td>
</tr>
<tr>
<td>6</td>
<td>N/A</td>
<td>—</td>
</tr>
<tr>
<td>7</td>
<td>N/A</td>
<td>—</td>
</tr>
<tr>
<td>8</td>
<td>N/A</td>
<td>—</td>
</tr>
</tbody>
</table>
7.2 Resetting the VS-42UHD to Factory Default Settings

To reset the device to factory default settings:

1. Power the device off.
2. Press and hold down the Reset button on the rear panel.
3. While holding down the Reset button, power on the device.
4. Wait a few seconds and release the button.
   The device is reset to its factory settings.

7.3 Upgrading the Firmware

The VS-42UHD can be upgraded via any of the following:

- Mini USB
- RS-232
- Ethernet

For instructions on upgrading the firmware see “K-Upload Software".
8 Operating the VS-42UHD Remotely via the Web Pages

The **VS-42UHD** can be operated remotely using the embedded Web pages. The Web pages are accessed using a Web browser and an Ethernet connection.

Before attempting to connect:

- Perform the procedures in Section 4.2
- Ensure that your browser is supported (see Section 10)
- Ensure that JavaScript is enabled

There are six Web pages:

- Browsing and General Info (see Section 8.1)
- Routing (see Section 8.2)
- EDID (see Section 8.3)
- Device Setting (see Section 8.4)
- Firmware Update (see Section 8.5)
- About Us (see Section 8.6)

### 8.1 Browsing the VS-42UHD Web Pages

**Note:** In the event that a Web page does not update correctly, clear your Web browser’s cache (by pressing CTRL-F5).

To browse the VS-42UHD Web pages:

1. Open your Internet browser.

2. Type the IP number of the device (see Section 4.2) in the Address bar of your browser.

http://192.168.1.39
The Loading page appears:

![Loading Page](image)

Figure 9: The Loading Page

Immediately after the Loading page, the General Info page appears which displays information related to the device and the Web page version.

![General Info Page](image)

Figure 10: The General Info Page
8.2 Routing Page

The VS-42UHD Routing page lets you perform operational actions, such as, switching inputs/outputs and selecting HDCP support.

![Routing Page Diagram](image)

Figure 11: The Routing Page

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Output Buttons 1 and 2</td>
<td>2 Buttons for output selection, signal identification, and audio and video muting (see Section 8.2.1)</td>
</tr>
<tr>
<td>Inputs Tab</td>
<td>4 Buttons for input selection, and port and signal identification (see Section 8.2.1)</td>
</tr>
<tr>
<td>Patterns Button Tab</td>
<td>4 Buttons for video pattern generation (see Section 8.2.3)</td>
</tr>
</tbody>
</table>
### Figure 12: The Output Buttons

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Output Button Number</td>
<td>Identifies the Output number</td>
</tr>
<tr>
<td>HDCP Indicator</td>
<td>Indicates whether the Output port supports HDCP</td>
</tr>
<tr>
<td>Video Mute Button</td>
<td>Click the button to mute the video</td>
</tr>
<tr>
<td>Signal Indicator</td>
<td>Indicates whether or not there is a device connected to the output</td>
</tr>
<tr>
<td>Mode Indicator</td>
<td>Indicates the switching mode currently employed</td>
</tr>
</tbody>
</table>

### Figure 13: The Input Buttons
### 8.2.1 Switching an Input to an Output

**To switch an Input to an Output, (for example, Input 2 to Output 2):**

1. Click on Output button 2.
   
   The button changes color to purple and the Output is selected.

2. Click on Input button 2.
   
   The button changes color to purple and the output is switched.

### 8.2.2 Controlling a Remote Transmitter

Compatible remote transmitters, (for example, the **SiD-X3N** or **DIP-31**) that are connected to the **VS-42UHD** can be controlled using the Web pages, (see **Section 8.2, Figure 13**).

![Figure 14: The Remote Device Control Window](image)
The **VS-42UHD** allows you to program the general purpose buttons on remote modules. The table shows the functionality defined for each button. The options are:

- **HDMI**—selects one of the four inputs
- **Echo**—allows a connected controller to be programmed to perform a variety of tasked triggered by the user buttons, such as, room control, (lights, screen, and so on)
- **Out 1**—step-in current input to output 1
- **Out 2**—step-in current input to output 2

**Note**: These settings are per input and remain valid even if the remote **SID-X3N** is exchanged for another **SID-X3N**.

Up to three of the Echo, Out 1 and Out 2 buttons can be active at the same time.

### 8.2.3 Using Test Patterns as Video Inputs

You can use one of four built-in, video test patterns as a video Input.

![Routing](image)

Figure 15: Test Pattern Tab
To select a test pattern as an Input for an Output:

1. Click the Patterns tab.
   The four test pattern buttons are shown.

2. Click the required Output to select it.
   The button changes color.

3. Click the required test pattern button.
   The button changes color and the selected test pattern is switched to the Output.

### 8.3 EDID Page

The VS-42UHD EDID page lets you copy EDID data to one or more Inputs from an:

- Output
- Input
- EDID data file

![EDID Page](image)

Figure 16: The EDID Page
**Note:** The display is not updated automatically when the status of an EDID changes on the device due to outputs being exchanged. Click Refresh to update the display.

**To copy EDID data from an Output or Input to one or more inputs:**

1. Click the source button from which to copy the EDID (Output or Input). The button changes color and the EDID summary information reflects the EDID data.

2. Click one or more destination Inputs, or select all Inputs by checking the Inputs check-box. All selected Input buttons change color and the EDID summary information reflects the Input selection(s).

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

4. Click OK.

**To copy EDID data to an Input from an EDID data file:**

1. Click the source Browse button. The Windows Browser opens.

2. Browse to the required file.

3. Select the required file and click Open. The EDID summary information reflects the selection.

4. Click one or more destination Inputs, or select all Inputs by checking the Inputs check-box. All selected Input buttons change color and the EDID summary information reflects the Input selection(s).

5. Click the Copy button. The “EDID was copied” success message is displayed and the EDID data are copied to the selected Input(s).
6. Click OK.

8.4 Device Setting Page

The **VS-42UHD** Device Settings page lets you modify some communication parameters and view others.

![Device Settings](image)

**Figure 17: The Device Setting Page**

**To modify serial or Ethernet communication parameters:**

1. Adjust the parameters as required, either by entering the parameters directly or by using the drop-down list.

2. Click Set.
   
The changes are saved.
8.5 Firmware Upgrade Page

The Firmware Upgrade page lets you perform a firmware upgrade from a firmware file.

To upgrade the firmware:

1. Click the Choose File button.
   The Windows Browser opens.

2. Browse to the required file.

3. Select the required file and click Open.
   The firmware file name is displayed in the Firmware Upgrade page.

4. Click Start Upgrade.
   The firmware file is loaded and a progress bar is displayed.
   Do not interrupt the process or the **VS-42UHD** may be damaged.

5. When the process is complete reboot the device.
   The firmware is upgraded.
8.6 About Us Page

The **VS-42UHD** About Us page displays the Web page version and Kramer Electronics Ltd company details.

![About Us Page](image)

Figure 19: The About Us Page
9 Wiring the Twisted Pair RJ-45 Connectors

Connect/solder the cable shield to the RJ-45 connector shield.

**Do not use a crossed TP cable with this product.**
Using a TP cable that is incorrectly wired may cause permanent damage to the device

**Do not** use unshielded TP cables with this product

The following figure defines the TP pinout using a straight pin-to-pin cable with RJ-45 connectors.

<table>
<thead>
<tr>
<th>EIA /TIA 568B</th>
<th>Wire Color</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Orange / White</td>
</tr>
<tr>
<td>2</td>
<td>Orange</td>
</tr>
<tr>
<td>3</td>
<td>Green / White</td>
</tr>
<tr>
<td>4</td>
<td>Blue</td>
</tr>
<tr>
<td>5</td>
<td>Blue / White</td>
</tr>
<tr>
<td>6</td>
<td>Green</td>
</tr>
<tr>
<td>7</td>
<td>Brown / White</td>
</tr>
<tr>
<td>8</td>
<td>Brown</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Pair</th>
<th>Pins</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pair 1</td>
<td>4 and 5</td>
</tr>
<tr>
<td>Pair 2</td>
<td>1 and 2</td>
</tr>
<tr>
<td>Pair 3</td>
<td>3 and 6</td>
</tr>
<tr>
<td>Pair 4</td>
<td>7 and 8</td>
</tr>
</tbody>
</table>

Figure 20: TP Pinout Wiring
## Technical Specifications

| INPUTS: | 4 HDMI Connectors |
| OUTPUTS: | 2 HDMI Connectors |
| PORTS: | 1 Ethernet on an RJ-45 connector  
1 IR on a 3.5mm mini jack  
8 Remote selection contact-closure switches on 9 terminal block pins  
1 Serial port on a 3-pin terminal block  
1 Program port on a mini USB |
| BANDWIDTH: | Up to 8.91Gbps data rate (2.97Gbps per graphic channel) |
| COMPLIANCE WITH HDMI STANDARD: | HDMI and HDCP |
| RESOLUTION: | Up to UXGA; 4K x 2K |
| SUPPORTED BAUD RATES: | 9600, 115200bps |
| SUPPORTED WEB BROWSERS: | The following operating systems and Web browsers are supported:  
- Windows 7:  
  - Google Chrome v25  
  - FireFox v15  
  - Opera v12  
  - Microsoft Internet Explorer v9  
- Windows XP:  
  - Google Chrome v25  
  - FireFox v15  
- Apple Mac:  
  - Google Chrome v25  
  - FireFox v20  
  - Opera v12.14  
  - Safari v6 |
| POWER CONSUMPTION: | 5V DC, 880mA |
| CONTROLS: | Front panel buttons, infrared remote control transmitter, RS-232, Ethernet, Remote input selection switches |
| OPERATING TEMPERATURE: | 0° to +40°C (32° to 104°F) |
| STORAGE TEMPERATURE: | -40° to +70°C (-40° to 158°F) |
| HUMIDITY: | 10% to 90%, RHL non-condensing |
| POWER CONSUMPTION: | 100-240V AC, 65VA max. |
| DIMENSIONS: | 21.5cm x 16.6cm x 4.4cm (8.46” x 6.54” x 1.73”) W, D, H |
| WEIGHT: | 0.9kg (2.0lbs) approx. |
| SHIPPING DIMENSIONS: | 35.1cm x 21.2cm x 7.2cm (13.8” x 8.4” x 2.8”) W, D, H |
| SHIPPING WEIGHT: | 1.6kg (3.5lbs) approx. |
| INCLUDED ACCESSORIES: | Power supply, RC-IR3 remote control |
| OPTIONS: | External remote IR receiver cable, RK-1 |

Specifications are subject to change without notice  
For the most updated resolution list, go to our Web site at [www.kramerav.com](http://www.kramerav.com)
# Default Communication Parameters

## RS-232

**Protocol 3000**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baud Rate</td>
<td>115,200</td>
</tr>
<tr>
<td>Data Bits</td>
<td>8</td>
</tr>
<tr>
<td>Stop Bits</td>
<td>1</td>
</tr>
<tr>
<td>Parity</td>
<td>None</td>
</tr>
<tr>
<td>Command Format</td>
<td>ASCII</td>
</tr>
</tbody>
</table>

## TCP/IP Parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>IP Address</td>
<td>192.168.1.39</td>
</tr>
<tr>
<td>Netmask</td>
<td>255.255.0.0</td>
</tr>
<tr>
<td>Gateway</td>
<td>0.0.0.0</td>
</tr>
<tr>
<td>TCP Port #</td>
<td>5000</td>
</tr>
<tr>
<td>UDP Port #</td>
<td>50000</td>
</tr>
</tbody>
</table>
12  Default EDID

Monitor
Model name............. VS-42UHD
Manufacturer............ KMR
Plug and Play ID........ KMR1200
Serial number........... 505-709990100
Manufacture date........ 2011, ISO week 255
Filter driver.......... None
------------------------
EDID revision........ 1.3
Input signal type...... Digital
Color bit depth........... Undefined
Display type........... RGB color
Screen size............. 520 x 320 mm (24.0 in)
Power management....... Standby, Suspend, Active off/sleep
Extension blocs......... 1 (CEA-EXT)
------------------------
DDC/CI.................. Not supported
Color characteristics
Default color space..... Non-sRGB
Display gamma........... 2.20
Red chromaticity........ Rx 0.674 - Ry 0.319
Green chromaticity...... Gx 0.188 - Gy 0.706
Blue chromaticity....... Bx 0.148 - By 0.064
White point (default)... Wx 0.313 - Wy 0.329
Additional descriptors... None
Timing characteristics
Horizontal scan range... 30-83kHz
Vertical scan range..... 56-76Hz
Video bandwidth........ 170MHz
CVT standard........... Not supported
GTF standard........... Not supported
Additional descriptors... None
Preferred timing......... Yes
Native/preferred timing.. 1280x720p at 60Hz (16:10)
Modeline................. "1280x720" 74.250 1280 1390 1430 1650 720 725 730 750 +hsync +vsync
Standard timings supported
  720 x  400p at  70Hz - IBM VGA
  720 x  400p at  88Hz - IBM XGA2
  640 x  480p at  60Hz - IBM VGA
  640 x  480p at  67Hz - Apple Mac II
  640 x  480p at  72Hz - VESA
  640 x  480p at  75Hz - VESA
  800 x  600p at  56Hz - VESA
  800 x  600p at  60Hz - VESA
  800 x  600p at  72Hz - VESA
  800 x  600p at  75Hz - VESA
  832 x  624p at  75Hz - Apple Mac II
  1024 x  768i at  87Hz - IBM
  1024 x  768p at  70Hz - VESA
  1024 x  768p at  97Hz - VESA
  1280 x 1024p at  75Hz - VESA
  1152 x  870p at  75Hz - Apple Mac II
  1280 x 1024p at  75Hz - VESA STD
  1280 x 1024p at  85Hz - VESA STD
  1600 x 1200p at  60Hz - VESA STD
  1024 x  768p at  85Hz - VESA STD
  800 x  600p at  85Hz - VESA STD
  640 x  480p at  85Hz - VESA STD
  1152 x  864p at  70Hz - VESA STD
  1280 x  960p at  60Hz - VESA STD
EIA/CEA-861 Information
Revision number......... 3
IT underscan............... Supported
Basic audio............... Supported
YCbCr 4:4:4............... Supported
YCbCr 4:2:2............... Supported
Native formats.......... 1
Detailed timing #1...... 1920x1080p at 60Hz (16:10)
Modeline................ "1920x1080" 148.500 1920 2008 2052 2200 1080 1084 1089 1125 +hsync +vsync
Detailed timing #2.... 1920x1080i at 60Hz (16:10)
Modeline................ "1920x1080" 74.250 1920 2008 2052 2200 1080 1084 1094 1124 interlace +hsync +vsync
Detailed timing #3.... 1280x720p at 60Hz (16:10)
Modeline................ "1280x720" 72.000 720 736 798 858 480 489 495 525 -hsync -vsync
Modeline................ "720x480" 27.000 720 736 798 858 480 489 495 525 -hsync -vsync

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

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

NB: NTSC refresh rate = (Hz*1000)/1001

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

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

Report information
Date generated........... 27/09/2016
Software revision........ 2.90.0.1020
Data source.............. Real-time 0x0071
Operating system......... 6.1.7601.2.Service Pack 1

Raw data
00,FF,FF,FF,FF,FF,FF,FF,FF,00,02,0B,00,12,01,01,01,01,01,FF,15,01,03,80,34,20,78,EA,B3,25,AC,51,30,B4,26,
10,50,54,FF,FF,80,81,8F,81,99,A9,40,61,59,45,59,31,59,71,4A,81,40,01,1D,00,72,51,D0,1E,20,6E,28,
55,00,07,44,21,00,00,1E,00,00,00,00,00,00,00,00,FD,00,38,4C,1E,53,11,00,0A,20,20,20,20,20,20,20,20,1D,
02,03,1B,F1,23,09,07,07,48,10,05,84,03,02,07,16,01,65,03,0C,00,10,00,83,01,00,00,02,3A,80,18,71,
38,2D,40,58,2C,45,00,07,44,21,00,00,1E,01,1D,80,18,71,1C,16,20,58,2C,25,00,07,44,21,00,00,09,0E,01,
1D,00,72,51,D0,1E,20,6E,28,55,00,07,44,21,00,00,1E,8C,0A,D0,8A,20,E0,2D,10,10,3E,96,00,07,44,21,
00,00,18,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,47
13 Protocol 3000

The VS-42UHD can be operated using the Kramer Protocol 3000 serial commands. The command framing varies according to how you interface with the VS-42UHD. For example, 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 SETUP utility](image)

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

- K-Touch Builder (Kramer software):

![Device Code (17) PROPERTIES](image)
• K-Config (Kramer configuration software):

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

You can enter commands directly using terminal communication software (e.g., Hercules) by connecting a PC to the serial or Ethernet port on the VS-42UHD. To enter CR press the Enter key (LF is also sent but is ignored by the command parser).

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

For more information about:

• Understanding Protocol 3000, see Section 13.1
• General syntax used for Protocol 3000 commands, see Section 13.2
• Protocol 3000 commands available for the VS-42UHD, see Section 13.3

13.1 Understanding Protocol 3000

Protocol 3000 commands are structured according to the following:

• Command – A sequence of ASCII letters (A–Z, a–z and –). A command and its parameters must be separated by at least one space.

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

• Message string – Every command entered as part of a message string begins with a message starting character and ends with a message closing character.
A string can contain more than one command. Commands are separated by a pipe (|) character.

The maximum string length is 64 characters.

- **Message starting character:**
  - `#` – For host command/query
  - `~` – For device response

- **Device address** – K-NET Device ID followed by `@` (optional, K-NET only)

- **Query sign** – `?` follows some commands to define a query request

- **Message closing character:**
  - `CR` – Carriage return for host messages (ASCII 13)
  - `CR LF` – Carriage return for device messages (ASCII 13) and line-feed (ASCII 10)

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

Spaces between parameters or command terms are ignored. Commands in the string do not execute until the closing character is entered. A separate response is sent for every command in the chain.
13.2 Kramer Protocol 3000 Syntax

The Kramer Protocol 3000 syntax uses the following delimiters:

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

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

The Protocol 3000 syntax is in the following format:

- **Host Message Format**:

<table>
<thead>
<tr>
<th>Start</th>
<th>Address (optional)</th>
<th>Body</th>
<th>Delimiter</th>
</tr>
</thead>
<tbody>
<tr>
<td>#</td>
<td>Device_id@</td>
<td>Message</td>
<td>CR</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Start</th>
<th>Body</th>
<th>Delimiter</th>
</tr>
</thead>
<tbody>
<tr>
<td>#</td>
<td>Command SP Parameter_1, Parameter_2,…</td>
<td>CR</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Start</th>
<th>Address</th>
<th>Body</th>
<th>Delimiter</th>
</tr>
</thead>
<tbody>
<tr>
<td>#</td>
<td>Device_id@</td>
<td>Command_1 Parameter1_1, Parameter1_2,…</td>
<td>CR</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Command_2 Parameter2_1, Parameter2_2,…</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Command_3 Parameter3_1, Parameter3_2,…</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>……</td>
</tr>
</tbody>
</table>

- **Device Message Format**:

<table>
<thead>
<tr>
<th>Start</th>
<th>Address (optional)</th>
<th>Body</th>
<th>Delimiter</th>
</tr>
</thead>
<tbody>
<tr>
<td>~</td>
<td>Device_id@</td>
<td>Message</td>
<td>CR LF</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Start</th>
<th>Address (optional)</th>
<th>Body</th>
<th>Delimiter</th>
</tr>
</thead>
<tbody>
<tr>
<td>~</td>
<td>Device_id@</td>
<td>Command SP [Param1, Param2 …] result</td>
<td>CR LF</td>
</tr>
</tbody>
</table>
13.3 Protocol 3000 Commands

This section includes the following commands:

- System Commands (see Section 13.3.1)
- Switching/Routing Commands (see Section 13.3.2)
- Video Commands (see Section 13.3.3)
- Communication Commands (see Section 13.3.4)
- EDID Handling Commands (see Section 13.3.5)

13.3.1 System 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>LOCK-FP</td>
<td>Set/get front panel lock</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>Get device firmware version (system mandatory)</td>
</tr>
<tr>
<td>DISPLAY</td>
<td>Get output HPD status (system)</td>
</tr>
<tr>
<td>HDCP-MOD</td>
<td>Set/get HDCP mode (system)</td>
</tr>
<tr>
<td>HDCP-STAT</td>
<td>Get HDCP signal status (system)</td>
</tr>
<tr>
<td>NAME</td>
<td>Set/get machine (DNS) name (system – Ethernet)</td>
</tr>
<tr>
<td>NAME-RST</td>
<td>Reset machine (DNS) name to factory default (system – Ethernet)</td>
</tr>
<tr>
<td>PRIO?</td>
<td>Get priority for an input (system)</td>
</tr>
<tr>
<td>SIGNAL</td>
<td>Get input signal lock status (system)</td>
</tr>
</tbody>
</table>
### 13.3.1.1 #

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

**Description**
Protocol handshaking

**Syntax**

Set:

```
#  
```

Get:

```
-  
```

**Response**

```
~[CR]OK[CR]LF
```

**Parameters**

**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
```

### 13.3.1.2 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: BUILD-DATE?</td>
<td>End User</td>
<td>Public</td>
</tr>
</tbody>
</table>

**Description**
Get device build date

**Syntax**

Set:

```
#BUILD-DATE?
```

Get:

```
BUILD-DATE?
```

**Response**

```
~[CR]date[SP]time[CR]LF
```

**Parameters**

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

**Notes**

**K-Config Example**

```
“#BUILD-DATE?”,0x0D
```
### 13.3.1.3 FACTORY

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

**Description**

Set: Reset device to factory default configuration

**Syntax**

Set: #FACTORY

**Response**

```
~nn@FACTORY SP OK CR LF
```

**Parameters**

**Response Triggers**

**Notes**

This command deletes all user data from the device. The deletion can take some time. Your device may require powering off and powering on for the changes to take effect.

**K-Config Example**

```
"#FACTORY", 0x0D
```

### 13.3.1.4 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: HELP</td>
<td>End User</td>
<td>Public</td>
</tr>
</tbody>
</table>

**Description**

Set: Get command list or help for specific command

**Syntax**

Set: 

1. #HELP

2. #HELP SP COMMAND_NAME

**Response**

1. Multi-line:

```
~nn@Device available protocol 3000 commands: CR LF command, SP command... CR LF
```

2. Multi-line:

```
~nn@HELP SP command: CR LF description: CR LF USAGE: usage CR LF
```

**Parameters**

`COMMAND_NAME` – name of a specific command

**Response Triggers**

**Notes**

To get help for a specific command use: #HELP SP COMMAND_NAME

**K-Config Example**

```
"#HELP", 0x0D
```
### 13.3.1.5 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: Set front panel lock
Get: Get front panel lock state

**Syntax**

Set: Option 1: \#LOCK-FP\rlock_mode\r
Get: Option 1: \#LOCK-FP?\r

**Response**

Set: ~nn@LOCK-FP\r\rlock_mode\r\rOK\r\n
Get: ~nn@LOCK-FP\r\rlock_mode\r\r

**Parameters**

lock_mode - 0/OFF - unlocks the front panel buttons, 1/ON - locks the front panel buttons

**Notes**

Lock the front panel buttons:

“\#LOCK-FP 1”,0x0D
### 13.3.1.6 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**
Syntax

**Response**

```
~nn@MODELSPmodel_nameCR LF
```

**Parameters**

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

**Response Triggers**

**Notes**
This command identifies equipment connected to Step-in master products and notifies of identity changes to the connected equipment. The Matrix saves this data in memory to answer REMOTE-INFO requests

**K-Config Example**

```
“#MODEL?”,0x0D
```

### 13.3.1.7 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**
Syntax

**Response**

```
~nn@PROT-VERSP3000:versionCR LF
```

**Parameters**

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

**Response Triggers**

**Notes**

**K-Config Example**

```
“#PROT-VER?”,0x0D
```
### 13.3.1.8  RESET

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

**Description**

Set: Reset device

**Syntax**

Set: `#RESET` CR

**Response**

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

**Parameters**

`serial_number` – 11 decimal digits, factory assigned

**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
```

---

### 13.3.1.9  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**

Get: Get device serial number

**Syntax**

Get: `#SN?` CR

**Response**

```
~nn@SN serial_number CR 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
```
### 13.3.1.10 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@FIRMWARE_VERSION=firmware_versionCR LF
```

**Parameters**

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

**Response Triggers**

**Notes**

**K-Config Example**

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

### 13.3.1.11 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:</td>
<td>DISPLAY?</td>
<td>End User</td>
</tr>
</tbody>
</table>

**Description**

**Syntax**

Set: -

Get: Get output HPD status

**Response**

```
~nn@DISPLAY=out_id,statusCR LF
```

**Parameters**

`out_id = 1` (HDMI Out)

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

**Response Triggers**

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

**Notes**

**K-Config Example**

Get the output HPD status of HDMI Out:

```
"#DISPLAY? 1",0x0D
```

VS-42UHD - Protocol 3000
### 13.3.1.12 HDCP-MOD

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

#### Description

<table>
<thead>
<tr>
<th>Set:</th>
<th>Get:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Set HDCP mode</td>
<td>Get HDCP mode</td>
</tr>
</tbody>
</table>

#### Syntax

- **Set:** \#HDCP-MOD\inp_id,mode\CR
- **Get:** \#HDCP-MOD?\inp_id\CR

#### Response

**Set / Get:** \~nn\#HDCP-MOD\inp_id,mode\CR

#### Parameters

- **inp_id** – input number: 1 (HDMI In 1), 2 (HDMI In 2), 3 (HDMI In 3), 4 (HDMI In 4)
- **mode** – HDCP mode: 0 (HDCP Off), 3 (Mirror output – MAC mode)

#### Response Triggers

A response is sent to the com port from which the set (before execution) / get command was received

A response is sent to all com ports after command execution if HDCP-MOD was set by any other external control device (device button, device menu or other) or if the HDCP mode changed

#### Notes

- Set HDCP working mode on the device input:
  - HDCP not supported - HDCP Off
  - HDCP support changes following detected sink - MIRROR OUTPUT

#### K-Config Example

Disable HDCP mode on HDMI In 2:

```
"#HDCP-MOD 2,0",0x0D
```
### 13.3.1.13 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

Get HDCP signal status

#### Syntax

- **Set:**
  - - -
- **Get:**
  - Get HDCP signal status

#### Response

```
~nn@HDCP-STAT stage,stage_id,status CR LF
```

#### Parameters

- **stage** – 0 (input), 1 (output)
- **stage_id** – for input stage: 1 (HDMI In 1), 2 (HDMI In 2), 3 (HDMI In 3), 4 (HDMI In 4)
  - for output stage: 1 (HDMI 1 Out), 2 (HDMI 2 Out)
- **status** – signal encryption status: 0 (On), 1 (Off)

#### Response Triggers

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

#### Notes

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

#### K-Config Example

Get the HDCP input signal status of the source device connected to HDMI In 1:
```
"#HDCP-STAT? 0,1",0x0D
```
### 13.3.1.14 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

```plaintext
#NAME machine_name CR
```

Get: Get machine (DNS) name

```plaintext
#NAME? CR
```

**Response**

Set: `~nn@NAME machine_name CR LF`

Get: `~nn@NAME? machine_name CR LF`

**Parameters**

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

**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
```

### 13.3.1.15 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

```plaintext
#NAME-RST CR
```

Get: -

**Response**

```plaintext
~nn@NAME-RST SP OR CR LF
```

**Parameters**

**Notes**

Factory default of machine (DNS) name is "KRAMER_"

**K-Config Example**

Reset the DNS name of the device to the factory default:

```
"#NAME-RST",0x0D
```
### 13.3.1.16 PRIO

<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 PRIO?</td>
<td>Administrator</td>
<td>Public</td>
</tr>
</tbody>
</table>

**Description**

Set: – – –

Get: Get input priority

**Syntax**

Set:

- –

Get:

#PRIO?\[\text{input_id}\]CR

**Response**

\[\text{~nn}@\text{PRIO}\text{input_id,prio}\text{CR LF}\]

**Parameters**

- \text{input_id} - input number: 1 (HDMI In 1), 2 (HDMI In 2), 3 (HDMI In 3), 4 (HDMI In 4)
- \text{prio} - assigned priority (1.. max priority)

**Response triggers**

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

**Notes**

- The PRIO max value may vary for different devices

**K-Config Example**

- Get the input priority of HDMI In 2:
  - “#PRIO? 2″,0x0D
### 13.3.1.17 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: SIGNAL?</td>
<td>End User</td>
<td>Public</td>
</tr>
</tbody>
</table>

#### Description
Get input signal lock status

#### Syntax
- **Set:**
  - 

- **Get:**
  - Get input signal lock status
  - \#SIGNAL?\$inp_idCR

#### Response
\~\inp_id\$SIGNAL\$inp_id,statusCR LF

#### Parameters
- `inp_id` – input number: 1 (HDMI In 1), 2 (HDMI In 2), 3 (HDMI In 3), 4 (HDMI In 4)
- `status` – lock status according to signal validation: 0 (Off), 1 (On)

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

#### Notes

#### K-Config Example
Get the input signal lock status of HDMI In 2:

```
“\#SIGNAL? 2”,0x0D
```
### 13.3.2 Switching/Routing Commands

<table>
<thead>
<tr>
<th>Command</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>MTX-MODE?</td>
<td>Get switch mode</td>
</tr>
<tr>
<td>ROUTE</td>
<td>Set/get layer routing</td>
</tr>
<tr>
<td>VID</td>
<td>Set/get video switch state</td>
</tr>
</tbody>
</table>

#### 13.3.2.1 MTX-MODE

<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>MTX-MODE?</td>
<td>End User</td>
</tr>
</tbody>
</table>

**Description**

**Syntax**

```markdown
Get auto-switch mode
```

**Response**

```
~nn@MTX-MODE6Poutput_id,modeCR
```

**Parameters**

- `output_id`: 1 (Out1), 2 (Out2)
- `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 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).

**K-Config Example**

Get auto switch mode of Out 2:

```
#MTX-MODE? 2,0",0x0D
```
### 13.3.2.2 ROUTE

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

**Description**

### Syntax

**Set:**

Set layer routing

```
#ROUTE SP layer,dest,src CR
```

**Get:**

Get layer routing

```
#ROUTE? SP layer,dest CR
```

**Response**

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

**Parameters**

- **layer** – 1 (video)
- **dest** – for video layer: 1 (HDMI Out 1), 2 (HDMI Out 2)
- **src** – for video layer: 1 (HDMI In 1), 2 (HDMI In 2), 3 (HDMI In 3), 4 (HDMI In 4)

**Response Triggers**

**Notes**

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

**K-Config Example**

Set the remote input switching of HDMI In 3 to HDMI Out 1:

```
"#ROUTE 1,1,3",0x0D
```
13.3.2.3  VID

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

### Description

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

#### Syntax

**Set:**

```
#VID[rin>out]CR
```

**Get:**

```
~r[VID[rin>out]CR]
```

### Response

<table>
<thead>
<tr>
<th>Set:</th>
<th>Get:</th>
</tr>
</thead>
<tbody>
<tr>
<td>~r[VID[rin&gt;out]CR</td>
<td>~r[VID[rin&gt;out]CR</td>
</tr>
</tbody>
</table>

### Parameters

- **in** – input number: 1 (HDMI In 1), 2 (HDMI In 2), 3 (HDMI In 3), 4 (HDMI In 4)
- **>** – connection character between in and out parameters
- **out** – output number: 1 (HDMI Out 1), 2 (HDMI Out 2), * (for all outputs)

### Notes

#### K-Config Example

Set the video switch state from HDMI In 4 to HDMI Out 2:

```
"#VID 4>1",0x0D
```
### 13.3.3 Video Commands

<table>
<thead>
<tr>
<th>Command</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>DEF-RES</td>
<td>Set/get custom defined scaled video output resolution to &quot;VIC&quot; index</td>
</tr>
<tr>
<td>VID-PATTERN</td>
<td>Set/get video test pattern</td>
</tr>
<tr>
<td>VMUTE</td>
<td>Set/get video on output mute</td>
</tr>
</tbody>
</table>

#### 13.3.3.1 DEF-RES

<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>DEF-RES?</td>
<td>End User</td>
</tr>
</tbody>
</table>

**Description**

**Syntax**

**Set:**

- –

**Get:**

- Get custom defined video resolution

```
#DEF-RES? Table_id,stage,stage_id
```

**Response**

```
~nn@DEF-RES SP
Table_id,Width,Height,Htotal,VTotal,HSyncW,HSyncBackPorch,VSyncW,VSyncBackPorch,
FrRate,Interlaced
```

**Parameters**

- `Table_id` – 2 (HDMI)
- `Stage` – 0 (input), 1 (output)
- `Stage_id` – for input stage: 1 (HDMI In 1), 2 (HDMI In 2), 3 (HDMI In 3), 4 (HDMI In 4), for output stage: 1 (HDMI Out 1), 2 (HDMI Out 2)

**Response Triggers**

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

**Notes**

- If a requested custom resolution is not defined, yet is in the device, it returns `ERRSP003` (out of range)
- Only indexes 100-104 are valid for custom defined resolution
- In Get command when sending:
  - index 0 - device replies with detailed info of native resolution
  - index 255 - device replies with detailed info of current resolution

**K-Config Example**

Get the detailed custom defined resolution from HDMI Out 2:

```
“#DEF-RES? 255,0,2”,0x0D
```
### 13.3.3.2 VID-PATTERN

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

**Description**
- **Set:** Set test pattern on output
- **Get:** Get test pattern on output

**Syntax**
- **Set:** #VID-PATTERN\SP output_id,pattern_id\CR
- **Get:** #VID-PATTERN?\SP output_id\CR

**Parameters**
- *output_id* - 1 (HDMI Out 1), 2 (HDMI Out 2)
- *pattern_id* - 1 (Pattern 1: vertical color bars), 2 (Pattern 2: checkerboard), 3 (Pattern 3: gradient), 4 (Pattern 4: white)

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

**Notes**
- **K-Config Example**
  Set HDMI Out 2 to pattern 2 (checkerboard):
  “#VID-PATTERN,2,2”,0x0D

### 13.3.3.3 VMUTE

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

**Description**
- **Set:** Set enable/disable video on output
- **Get:** Get video on output status

**Syntax**
- **Set:** #VMUTE\SP output_id,flag\CR
- **Get:** #VMUTE?\SP output_id\SP CR

**Parameters**
- *output_id* - 1 (HDMI Out)
- *flag* - 0 (disable video on output), 1 (enable video on output), 2 (blank video)

**Response Triggers**

**K-Config Example**
- Disable the video output on HDMI Out:
  “#VMUTE 2,0”,0x0D
13.3.4 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>

### 13.3.4.1 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>

#### Description

Set: Set Ethernet port protocol
Get: Get Ethernet port protocol

#### Syntax

Set:

```
#ETH-PORT SP portType,ETHPort CR
```

Get:

```
#ETH-PORT? SP portType CR
```

#### Parameters

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

#### Notes

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

#### K-Config Example

Set the Ethernet port protocol for TCP to port 12457:
```
"#ETH-PORT TCP,12457",0xD
```
### 13.3.4.2 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>

**Description**

**Syntax**

<table>
<thead>
<tr>
<th>Set:</th>
<th>Get:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Set DHCP mode</td>
<td>Get DHCP mode</td>
</tr>
</tbody>
</table>

**Response**

- \~nn@NET-DHCP$\text{#}{\text{mode}}\text{CR}\text{LF}

**Parameters**

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

**Response Triggers**

**Notes**

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

**K-Config Example**

Enable DHCP mode, if available:

```
"#NET-DHCP 1",0x0D
```
### 13.3.4.3 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**

**Syntax**

Set: `NET-GATE` SP `ip_address` CR  
Get: `NET-GATE?` CR

**Response**

```
~[nn]@NET-GATE[Sp_address]CR LF
```

**Parameters**

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

**Response Triggers**

**Notes**

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

**K-Config Example**

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

---

### 13.3.4.4 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**

**Syntax**

Set: `NET-IP` SP `ip_address` CR  
Get: `NET-IP?` CR

**Response**

```
~[nn]@NET-IP[Sp_address]CR LF
```

**Parameters**

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

**Response Triggers**

**Notes**

Consult your network administrator for correct settings.

**K-Config Example**

Set the IP address to 192.168.1.39:  
“#IP 192.168.001.039”,0x0D
13.3.4.5 NET-MAC

<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>NET-MAC?</td>
<td>End User</td>
</tr>
</tbody>
</table>

**Description**

**Syntax**

Set: #NET-MAC?

Get: Get MAC address

**Response**

~nn@NET-MAC$mac_addressCR

**Parameters**

mac_address – unique MAC address. Format: XX-XX-XX-XX-XX-XX where x is hex digit

**Response Triggers**

**Notes**

K-Config Example

“#NET-MAC?”, 0x0D

13.3.4.6 NET-MASK

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

**Description**

**Syntax**

Set: #NET-MASK$net_maskCR

Get: Get subnet mask

**Response**

~nn@NET-MASK$net_maskCR

**Parameters**

net_mask - format: xxx.xxx.xxx.xxx

**Response Triggers**

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

**Notes**

K-Config Example

Set the subnet mask to 255.255.0.0:

“#NET-MASK 255.255.000.000”, 0x0D
### 13.3.5 EDID Handling Commands

Additional EDID data functions can be performed via the VS-42UHD Web pages or 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>

#### 13.3.5.1 CPEDID

**Functions**

<table>
<thead>
<tr>
<th>Function</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**
  
  ```
  #CPEDID src_type,src_id,dst_type,dest_bitmap
  ```

- **Get:** -

**Response**

```
~rn@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 (HDMI In 1), 2 (HDMI In 2), 3 (HDMI In 3), 4 (HDMI In 4), for output source: 1 (HDMI Out 1), 2 (HDMI Out 2), for default EDID source: 0 (default EDID)
- `dst_type` - EDID destination type (usually input): 0 (input), 1 (output), 2 (default EDID)
- `dest_bitmap` - bitmap representing destination IDs. Format: XXXX…X, where X is hex digit. The binary form of every hex digit represents corresponding destinations. Setting ‘1’ indicates that EDID data is copied to this destination. Setting ‘0’ indicates that EDID data is not copied to this destination.

**Response Triggers**

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

**Notes**

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

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

In this device, if the destination type is input (0), the bitmap size is 3 bits, for example bitmap 0x5 means inputs 1 and 3 are loaded with the new EDID.

**K-Config Example**

- Copy the EDID data from the HDMI Out output (EDID source) to the HDMI In 1 input:
  ```
  "#CPEDID 1,1,0,0x1",0x0D
  ```

- Copy the EDID data from the default EDID source to HDMI In 1 and PC In inputs:
  ```
  "#CPEDID 2,0,0,0x5",0x0D
  ```
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Disconnect the unit from the power supply before opening and servicing

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We welcome your questions, comments, and feedback.

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info@kramerav.com