KRAMER

USER MANUAL

www.kramerAV.com

VS-211UHD Quick Start Guide

This guide helps you install and use your **VS-211UHD** for the first time.
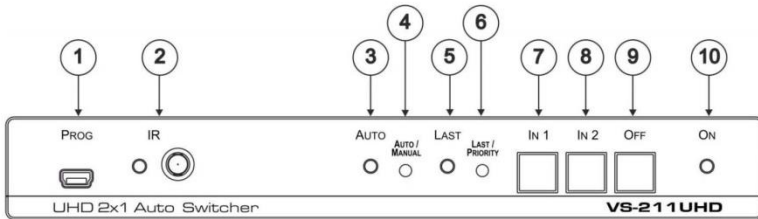
Go to **www.kramerav.com/downloads/VS-211UHD** to download the latest user manual and check if firmware upgrades are available.

Scan for full manual

Step 1: Check what's in the box

- ☑ **VS-211UHD** UHD 2x1 Auto Switcher
- ☑ 1 Power supply (5V DC)
- ☑ 4 Rubber feet
- ☑ 1 Quick start guide
- ☑ 1 Bracket set
- ☑ IR remote control transmitter with batteries

Step 2: Get to know your VS-211UHD

#	Feature	Function
1	*PROG* USB Connector	Connects to a PC to upgrade the firmware
2	*IR* Sensor and LED	Receives and indicates IR signals from a remote control (flashes during valid IR activity)
3	*AUTO* LED	Lights when auto switching is active, off for manual switching
4	*AUTO/MANUAL* Button	Press to select between auto-switching or manual switching mode
5	*LAST* LED	Lights when last connected input is active, off for highest priority
6	*LAST/PRIORITY* Button	When in the AUTO mode, the switch selects switching to a priority or last connected device
7	*IN 1* Button	Press to route HDMI source 1 to the output (dim when active video connected, lit when selected)
8	*IN 2* Button	Press to route HDMI source 2 to the output (dim when active video connected, lit when selected)
9	*OFF* Button	Press to mute the video output (lit when muted)
10	*ON* LED	Lights when power is connected to the unit
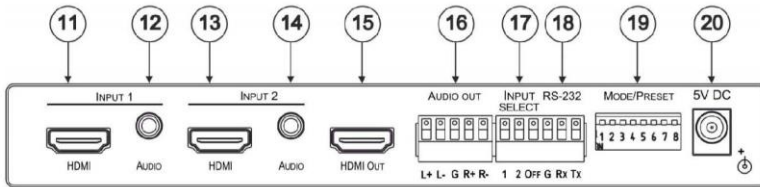
| #	Feature	Function
11	*INPUT 1 HDMI* Connector	Connects to HDMI source 1
12	*INPUT 1 AUDIO* 3.5mm Connector	Connects to unbalanced stereo audio source 1
13	*INPUT 2 HDMI* Connector	Connects to HDMI source 2
14	*INPUT 2 AUDIO* 3.5mm Connector	Connects to unbalanced stereo audio source 2
15	*HDMI OUT* Connector	Connects to an HDMI acceptor
16	*AUDIO OUT* Terminal Block	Connects to a balanced stereo audio acceptor
17	*INPUT SELECT* Contact Closure Terminal Block	Connects to external contact closure switches
18	*RS-232* Terminal Block	Connects to an RS-232 source
19	*MODE/PRESET* DIP-Switches	Use to set EDID, audio and delay settings (see Step 6)
20	*5V DC* Connector	Connects to a power supply for the unit

Step 3: Install the VS-211UHD

Attach the rubber feet and place on a table or mount the **VS-211UHD** in a rack (using an optional **RK-T2B** rack mount).

A Kramer TOOLS™ can also be mounted on a desk top, wall or similar area. Fasten a bracket on each side of the TOOLS using the two M3x8 screws (supplied). Use the flat-head screws (supplied) to fix the TOOLS to the mounting surface or enable it to slide in place.
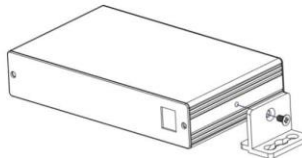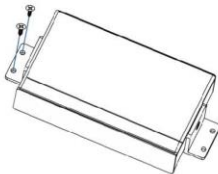
Step 4: Connect the inputs and outputs

Always switch OFF the power on each device before connecting it to your **VS-211UHD**. For best results, we recommend that you always use Kramer high-performance cables to connect AV equipment to the **VS-211UHD**.
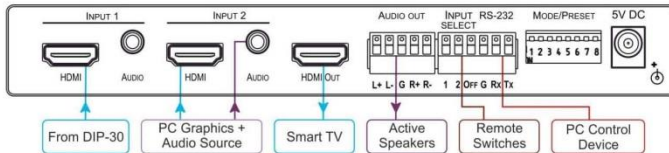
Step 5: Connect the power

Connect the 5V DC power adapter to the **VS-211UHD** and plug it into the mains electricity.

Step 6: Set the DIP-switches

Set the DIP-switches as shown in the following table:

DIP	Function	Off (Up)	On (Down)
1	Audio EDID	Pass audio EDID of sink	Limit to 2-CH LPCM
2	Color EDID	Pass deep color parameter of sink	Limit to RGB 8bpp
3	Lock EDID	Pass EDID of sink	Lock current display EDID and the current settings of DIPs 1 and 2 (The settings of DIPs 1 and 2 cannot be changed when DIP 3 is locked) This state also allows copying the default EDID or an EDID file to the inputs when using EDID Designer. (If using EDID Designer, refresh after copying)
4	HDCP	Enable HDCP support When On, if the output supports HDCP, the input declares HDCP support. It then handles HDCP on the output and input actively. If the output does not support HDCP then the input does not support HDCP.	Disable HDCP support When Off, the device does not support HDCP on its input, even if HDCP is detected on the output.
5	Auto Embedding Port 1	Embed analog audio only if the video is DVI	Always embed analog audio input
6	Auto Embedding Port 2		
7	Audio From	Source	ARC
8	Output Off Delay Settings	15sec default (configurable)	15min

Step 7: Operation

Manual Switch Mode

In Manual switch mode, the **VS-211UHD** does not automatically switch to another channel even if an input signal is not detected on the manual input.

To select Manual switch mode:

- Press the AUTO button to turn the Auto LED off.

To select an input in Manual switch mode:

- Press the IN1 or IN2 button to route this input to the HDMI output. The keys respond as follows:

  Input LED bright: input selected
  Input LED dim: input active and not selected
  Input LED off: input is not active and not selected

Auto Switch Mode

In Auto switch mode, the **VS-211UHD** automatically switches one of two HDMI inputs to a predefined or the last connected input whenever the currently active video signal is interrupted or whenever a higher-priority video signal is detected.

To select Auto switch mode:

1. Press the AUTO/MANUAL button to turn the Auto LED on.

2. Press the LAST/PRIORITY button to select an auto switch mode:

Last connected (LAST LED on) – The device always switches to a newly detected active video source. When the device is powered on, the output switches to the highest priority input

Priority (LAST LED off) – The device always switches to the highest priority input source. The default priority is Input 1 then Input 2.

Manual Override Mode

Auto switch mode can be overridden by a manual command, such as pressing an input button or sending a control command. In such a case, the system switches to the manually selected source. If this manually selected source is not active, the system waits a set amount of time (10 seconds, default) and then switches back to auto mode. Manual override selection is not stored in non-volatile memory.

Step 8: Technical specifications

INPUTS:	2 HDMI connectors, 2 unbalanced stereo audio on 3.5mm mini jack
ANALOG AUDIO UNBALANCED INPUT:	Nominal level: 316mVRMS, maximum level: 1VRMS, impedance: 10kΩ
OUTPUTS:	1 HDMI connector, 1 balanced stereo audio on 5-pin terminal block
ANALOG AUDIO BALANCED OUTPUT:	Nominal level: 316mVRMS, maximum level: 1VRMS, impedance: 150Ω
PORTS:	1 RS-232 on a 3-pin terminal block, 1 mini USB for programming
HDMI SUPPORT:	HDMI 1.4, Deep Color, 3D, ARC, up to 7.1 uncompressed audio channels
SUPPORTED RESOLUTIONS:	Up to UXGA, 4K x 2K, 4K @60 4:2:0
CONTROLS:	Front panel buttons, contact closure, IR, RS-232 Protocol 3000
SOFTWARE SUPPORT:	Protocol 3000, EDID Designer, K-Upload
POWER CONSUMPTION:	5V DC, 520mA
OPERATING TEMPERATURE:	0° to +40°C (32° to 104°F)
STORAGE TEMPERATURE:	-40° to +70°C (-40° to 158°F)
HUMIDITY:	10% to 90%, RHL non-condensing
DIMENSIONS:	18.8cm x 11.5cm x 2.5cm (7.4" x 4.5" x 1.0") W, D, H
WEIGHT:	0.425kg (0.9lbs) approx.
SHIPPING DIMENSIONS:	35.1cm x 16.5cm x 5.2cm (13.8" x 6.5" x 2.0") W, D, H
SHIPPING WEIGHT:	0.56kg (1.2lbs) approx.
INCLUDED ACCESSORIES:	Power adapter, IR remote control
OPTIONS:	RK-T2B 19" rack adapter

Contents

Figures

1 Introduction

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

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

Congratulations on purchasing your Kramer **VS-211UHD** UHD Auto Switcher. This product, which incorporates HDMI™ technology, is ideal for:

- Education, entertainment, corporate and any other AV installation that requires selecting and switching between two HDMI sources automatically.

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-211UHD 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-211UHD.

- 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-211UHD** away from moisture, excessive sunlight and dust.

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

2.2 Safety Instructions

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

Warning: Use only the 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/*.

3   Overview

The **VS-211UHD** is an automatic switcher for 4K@60Hz (4:2:0) HDMI and analog audio signals. The unit automatically switches one of two HDMI inputs to a predefined or the last connected input whenever the currently active video signal is interrupted or whenever a higher-priority video signal is detected. It also supports Kramer's Step-in over HDMI technology.

The unit can embed analog audio to an HDMI signal and can extract the audio from either an input HDMI signal or an output Audio Return Channel (ARC) HDMI signal. The **VS-211UHD** can output an analog audio source on the HDMI output even when an HDMI source is not connected and enters sleep mode when no input is detected.

The **VS-211UHD** features:

- Maximum data rate 8.91Gbps (2.97Gbps per graphic channel)
- Resolution support for up to 4K@60Hz (4:2:0) UHD
- Support of Kramer Step-In over HDMI technology
- HDTV compatible
- Active switching – selectable manual or fast auto switching according to last connected or preset priority
- HDMI, HDCP and DVI compliant
- HDMI 1.4 support for Deep Color, 3D, ARC, up to 7.1 uncompressed audio channels
- HDMI 1 input support for CEC and ARC
- HDMI ARC de-embedding from output to balanced stereo audio line out, uncompressed
- DVI 1.0 supported
- Automatic video input detection and selection
- Auto-power off when no HDMI input is detected (selectable timeout)
- HDCP handling

- EDID configuration options

- Default EDID

- Contact closure for remote manual switching override

- Audio embedding/de-embedding

- Analog audio input per port

- Firmware upgrade over RS-232, mini-USB

- Support for Protocol 3000, EDID Designer, K-Upload via RS-232

- Varied control options – front panel buttons, contact closure, IR, RS-232 Protocol 3000

3.1 Defining the VS-211UHD UHD Auto Switcher

This section defines the **VS-211UHD**.
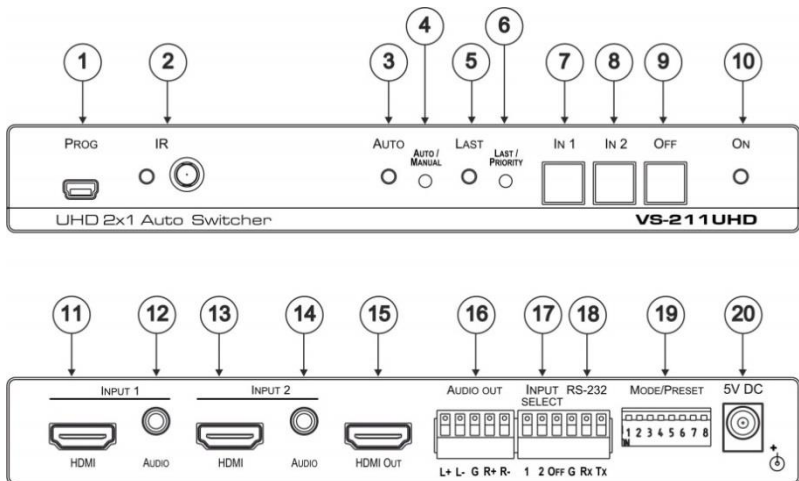
Figure 1: VS-211UHD 2x1 Auto Switcher

#	Feature	Function
1	*PROGRAM* USB Connector	Connects to a PC to upgrade the firmware
2	*IR* Sensor and LED	Receives and indicates IR signals from a remote control (flashes during valid IR activity)
3	*AUTO* LED	Lights when auto switching is active, off for manual switching
4	*AUTO/MANUAL* Button	Press to select between auto-switching or manual switching mode
5	*LAST* LED	Lights when last connected input is active, off for highest priority
6	*LAST/PRIORITY* Button	When in the AUTO mode, switch toggles to select switching to a priority or last connected device
7	*IN 1* Button	Press to route HDMI source 1 to the output (dim when active video connected, lit when selected)
8	*IN 2* Button	Press to route HDMI source 2 to the output (dim when active video connected, lit when selected)
9	*OFF* Button	Press to mute the video output (lit when muted)
10	*ON* LED	Lights when power is connected to the unit
11	*INPUT 1* HDMI Connector	Connects to HDMI source 1
12	*INPUT 1* AUDIO 3.5mm Connector	Connects to unbalanced stereo audio source 1
13	*INPUT 2* HDMI Connector	Connects to HDMI source 2
14	*INPUT 2* AUDIO 3.5mm Connector	Connects to unbalanced stereo audio source 2
15	*HDMI OUT* Connector	Connects to an HDMI acceptor
16	*AUDIO OUT Terminal Block*	Connects to a balanced stereo audio acceptor
17	*INPUT SELECT* Contact Closure Terminal Block	Connects to external contact closure input switches (see Section 6)
18	*RS-232* Terminal Block	Connects to a local RS-232 source (see Section 4.1)
19	*MODE/PRESET* DIP-Switches	Use to set EDID, audio and delay settings (see Section 4.2)
20	*5V DC* Connector	Connects to a power supply for the unit

4 Connecting the VS-211UHD

Always switch off the power to each device before connecting it to your **VS-211UHD**. After connecting your **VS-211UHD**, 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-211UHD**, as illustrated in the example in Figure 2, do the following:

1. Connect HDMI source 1 (for example, a Kramer **DIP-31**) to the INPUT1 HDMI connector.

2. Connect an unbalanced stereo audio source 1 to the INPUT 1 AUDIO 3.5mm mini jack (not shown in this example).

3. Connect HDMI source 2 (for example, a laptop) to the INPUT 2 HDMI connector.

4. Connect an unbalanced stereo audio source 2 to the INPUT 2 AUDIO 3.5mm mini jack (audio from the PC).

5. Connect the HDMI OUT connector to an HDMI acceptor (for example, a smart TV).

6. Connect the AUDIO OUT terminal block to a balanced stereo audio acceptor (for example, active speakers).

7. If required for remote switching, connect the INPUT SELECT terminal block to contact closure switches.

8. Connect the RS-232 terminal block to a controller (for example, a PC).

9. Connect a power cord to the device and plug it into the mains electricity (not shown in Figure 2).
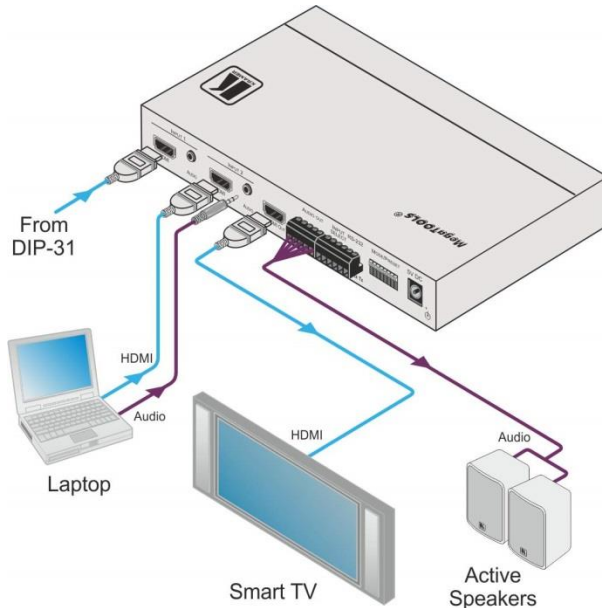
Figure 2: Connecting the VS-211UHD UHD Auto Switcher

4.1 Connecting a Serial Controller to the VS-211UHD via RS-232

The **VS-211UHD** operates at two baud rates – 9600 (default) and 115,200 (see all communication parameters in <u>Section 8</u>).

To connect a serial controller to the VS-211UHD:

- From the RS-232 9-pin D-sub serial port on the serial controller connect:

  - Pin 2 to the TX pin on the **VS-211UHD** RS-232 terminal block

  - Pin 3 to the RX pin on the **VS-211UHD** RS-232 terminal block

  - Pin 5 to the GND pin on the **VS-211UHD** RS-232 terminal block

4.2 Setting the DIP-Switches

The Setup DIP-switches dictate the behavior of the **VS-211UHD**.

All DIP-switches are off by default.

DIP	Function	Off (Up)	On (Down)
1	Audio EDID	Pass audio EDID of sink	Limit to 2-CH LPCM
2	Color EDID	Pass deep color parameter of sink	Limit to RGB 8bpp
3	Lock EDID	Pass EDID of sink	Lock current display EDID and the current settings of DIPs 1 and 2 (The settings of DIPs 1 and 2 cannot be changed when DIP 3 is locked) This state also allows copying the default EDID or an EDID file to the inputs when using EDID Designer. (If using EDID Designer, refresh after copying)
4	HDCP	Enable HDCP support When On, if the output supports HDCP, the input declares HDCP support. It then handles HDCP on the output and input actively. If the output does not support HDCP then the input does not support HDCP.	Disable HDCP support When Off, the device does not support HDCP on its input, even if HDCP is detected on the output.
5	Auto Embedding Port 1	If embedded audio is present (HDMI), embedded audio is passed	Always embed analog audio input
6	Auto Embedding Port 2	If no embedded audio is present (DVI), the analog audio input is used	
7	Audio From	Source	ARC
8	Output Off Delay Settings	15sec default (configurable)	15min

4.3 Upgrading the Firmware

The **VS-211UHD** can be upgraded via USB or RS-232.

For instructions on upgrading the firmware, see "*K-Upload Software User Guide*" (http://k.kramerav.com/support/download.asp?f=39700).

5   Operating the VS-211UHD

This section describes how to operate the **VS-211UHD**.

5.1   Switching – Manual and Auto

Switching can be performed automatically or manually using the front panel buttons, remote control, or control commands. This section describes using the buttons to select Auto or Manual switch modes.

The same procedure can also be used for controlling switching via the remote control. For information about switching via control commands, see Section 9.3.3.

5.1.1   Manual Switch Mode

In Manual switch mode, the **VS-211UHD** does not automatically switch to another channel even if an input signal is not detected on the manual input.

To select the Manual switch mode:

1. Press the AUTO button to turn the Auto LED off.

2. Press the IN1 or IN2 button to route this input to the HDMI output.
   The keys respond as follows:

   - Input LED bright: input selected

   - Input LED dim: input active and not selected

   - Input LED off: input is not active and not selected

5.1.2   Auto Switch Mode

In Auto switch mode, the **VS-211UHD** automatically switches one of two HDMI inputs to a predefined or the last connected input whenever the currently active video signal is interrupted or whenever a higher-priority video signal is detected.

To select Auto switch mode:

1. Press the Auto/Manual button to turn the Auto LED on.

2. Press the Last/Priority button to select an auto switch mode:

    ▪ Last connected (LAST LED on) – The device always switches to a newly detected active video source. When the device is powered on, the output switches to the highest priority input

    ▪ Priority (LAST LED off) – The device always switches to the highest priority input source. The default priority is Input 1 then Input 2.

5.1.3 Manual Override Mode

Auto switch mode can be overridden by a manual command, such as pressing an input button or sending a control command. In such a case, the system switches to the manually selected source. If this manually selected source is not active, the system waits a set amount of time (10 seconds, default) and then switches back to auto mode. Manual override selection is not stored in non-volatile memory.

5.2 Setting the Switching Speed

The **VS-211UHD** supports setting normal and fast (default) switching speeds.

To set switching speed modes:

1. Disconnect device power.

2. Press and hold one of the following buttons together with the OFF button:

    ▪ IN 1 button – for setting fast switching speed mode.

    ▪ IN 2 button – for setting normal switching speed mode.

3. Power the device on.
   The device switching speed is modified.

5.3 Muting the Output

- Press the OFF button to mute the audio and video outputs

5.4   Copying the EDID

The EDID is a data structure transmitted by the display that enables the **VS-211UHD** to recognize the display connected to the output. The **VS-211UHD** acquires and stores the EDID to make reconnection to the display effortless.

When the device is first powered on, it has default EDID loaded. The device automatically reads and saves the first read EDID. Use DIP-switches 1-3 to set EDID functionality (see Section 4.2).

While copying EDID data, the input port's HPD function changes from Low to High which may affect the channel's auto-switching.

> The device automatically recognizes EDID differences between input and output channels based on parts of the EDID data, including manufacturer, serial number, and first block check-sum information. EDID data is not copied when no difference is recognized.

5.5   Setting the 5V Output Time Delay

Use DIP-switch 8 to set the delay time. Off (Up) delays 15 seconds, On (Down) delays 15 minutes. A P3K command can modify the delay time.

When there is no signal clock or 5V input on both inputs for the set delay, the device shuts down the 5V output.

5.6   Setting HDCP Capability

The **VS-211UHD** supports HDCP communication automatically, by default. When HDCP is detected in the input signal, it is enabled in the output signal. You can also disable HDCP support using DIP-switch 4 (see Section 4.2). Enabling or disabling HDCP support is universal for both inputs.

5.7 Setting Audio Output

The **VS-211UHD** enables customizing the audio output by embedding audio in HDMI, de-embedding HDMI ARC from output to the balanced stereo (uncompressed) audio line out, or routing the HDMI / analog inputs to the balanced stereo audio line out.

Note: Sending compressed audio on ARC causes noise on the analog audio output.

5.7.1 Embedding Audio in HDMI

The **VS-211UHD** can output audio to the HDMI Out port from the original HDMI input or the Analog unbalanced 3.5mm audio input, by embedding it in the HDMI input signal. The **VS-211UHD** enables setting the audio output separately for each input using DIP-switches 5 and 6 (see Section 4.2).

An Input 1 analog audio signal can only be embedded in the Input 1 HDMI signal.

An Input 2 analog audio signal can only be embedded in the Input 2 HDMI signal.

5.7.2 Outputting Audio from ARC or Device Inputs

The **VS-211UHD** can output audio to the balanced stereo Audio Out terminal block from the following input sources:

- ARC – In this mode, the device does not enable embedding audio in the HDMI signal.

- HDMI inputs / Analog unbalanced 3.5mm audio inputs – In this mode, the balanced stereo Audio Out terminal block and the HDMI Out port both output audio. The Audio Out terminal block mutes the audio when the input audio signal is not LPCM.

Use DIP-switch 7 to set output to ARC / device inputs (see Section 4.2).

5.8   Using the Remote Control

You can use the **RC-IR3** wireless remote control to control the **VS-211UHD** via the built-in IR receiver on the front panel. For more information, see www.kramerav.com/Product/RC-IR3.

5.9   Step-In Support

The **VS-211UHD** supports programmable step-in functionality when used in conjunction with compatible step-in devices, such as the **SID-X3N** and **DIP-30** (using an HDMI cable that supports HEC, the HDMI Ethernet Channel).

When ARC mode is enabled, Input 1 step-in mode is disabled. If you require step-in mode on Input 1, set the audio output to the device inputs (see Section 5.7.2).

6 Controlling the VS-211UHD

The **VS-211UHD** can be controlled via the:

- Front panel buttons (see Section 6.1)

- Terminal block connector (see Section 6.2)

- RC-3IR remote control transmitter (see Section 6.3)

- RS-232 port (see Section 6.4)

6.1 Using the Front Panel Buttons

The **VS-211UHD** includes the following front panel buttons:

- Front panel INPUT buttons (see Section 5.1.1)

- The AUTO button, toggling between the auto and the manual mode
  (see Section 5.1.2)

- The LAST button, toggling between set priorities or last connected modes
  (see Section 5.1.2)

- The OFF button to disconnect the output from the inputs

The front panel button LEDs behave as follows:

- Input LED bright: input selected

- Input LED dim: input active and not selected

- Input LED off: input is not active and not selected
  If a non-active signal is selected, the display appears black.

6.2 Switching via the Terminal Block Connector

The INPUT SELECT terminal block connector includes three input pins and a G pin for selecting an input:

- 1 – Switch to Input 1
- 2 – Switch to Input 2
- OFF – Mute the HDMI output

The contact closure remote control pins operate in a similar way to the input buttons (see Section 5.1.1). Using the contact closure remote control (also known as push-to-make momentary contact) you can select any of the inputs. To do so, momentarily connect the required input pin (1 or 2) to the G (Ground) pin of the INPUT SELECT terminal block connector, as Figure 3 illustrates.

Do not connect more than one input pin to the G pin at the same time.
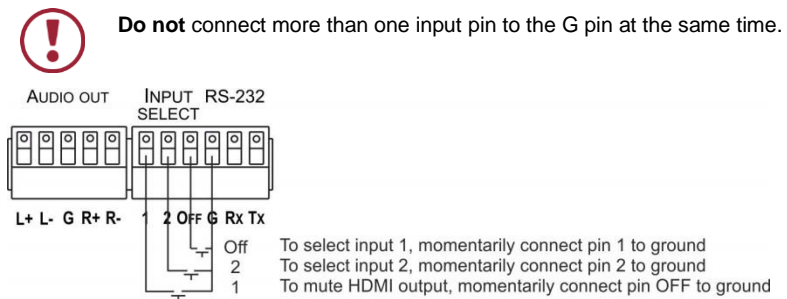
Figure 3: Connecting the Contact Closure Remote Control Pins

6.3 Using the RC-IR3 Remote Control Transmitter

You can control the **VS-211UHD** via the Kramer **RC-IR3** Remote Control Transmitter.

To switch an input to the output:

- Press key 1 to switch INPUT 1 to the output
- Press key 2 to switch INPUT 2 to the output

To mute audio and video on the output:

- Press the OFF key to disconnect the output

The IR LED behaves as follows:

- When the device is powered on, the IR LED turns on for a short time and then turns off

- Before finding the sink, the LED is off

- After finding the sink, the LED is on

- When receiving information, the LED flashes

6.4   Connecting to the VS-211UHD via RS-232

Connect the RS-232 Terminal block connector on the product to the RS-232 9-pin D-sub port on your PC/controlled device to control the **VS-211UHD**, as shown in Figure 4:

Connect this PIN on the terminal block connector	To this PIN on the 9-pin D-sub Connector
Tx	PIN 2
Rx	PIN 3
GND	PIN 5
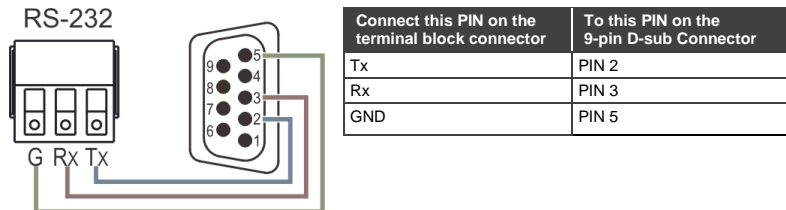
Figure 4: RS-232 Pinout

6.5   Performing a Factory Reset

Factory reset returns all the parameters of the device to their factory default settings.

To perform a factory reset:

1. Disconnect device power.

2. Press and hold IN 1 while reconnecting device power.
   All indicators flash while resetting to the factory default parameters.

3. When all the lights turn off the reset is complete.

7   Technical Specifications

INPUTS:	2 HDMI connectors, 2 unbalanced stereo audio on 3.5mm mini jack
ANALOG AUDIO UNBALANCED INPUT:	Nominal level: 316mVRMS Maximum level: 1VRMS Impedance: 10kΩ
OUTPUTS:	1 HDMI connector, 1 balanced stereo audio on 5-pin terminal block
ANALOG AUDIO BALANCED OUTPUT:	Nominal level: 316mVRMS Maximum level: 1VRMS Impedance: 150Ω
PORTS:	1 RS-232 on a 3-pin terminal block, 1 mini USB for programming
COMPLIANCE WITH HDMI STANDARD:	HDMI 1.4, Deep Color, 3D, ARC, up to 7.1 uncompressed audio channels, CEC
SUPPORTED RESOLUTIONS:	Up to UXGA, 4K x 2K, 4K @60 4:2:0
CONTROLS:	Front panel buttons, contact closure, IR, RS-232 Protocol 3000
SOFTWARE SUPPORT:	Protocol 3000, EDID Designer, K-Upload
POWER CONSUMPTION:	5V DC, 520mA
OPERATING TEMPERATURE:	0° to +40°C (32° to 104°F)
STORAGE TEMPERATURE:	-40° to +70°C (-40° to 158°F)
HUMIDITY:	10% to 90%, RHL non-condensing
DIMENSIONS:	18.8cm x 11.5cm x 2.5cm (7.4" x 4.5" x 1.0") W, D, H
WEIGHT:	0.425kg (0.9lbs) approx.
SHIPPING DIMENSIONS:	35.1cm x 16.5cm x 5.2cm (13.8" x 6.5" x 2.0") W, D, H
SHIPPING WEIGHT:	0.56kg (1.2lbs) approx.
INCLUDED ACCESSORIES:	Power adapter, IR remote control
OPTIONS:	RK-T2B 19" rack adapter
Specifications are subject to change without notice at www.kramerav.com	

8 Default Settings

VS-211UHD has the following default settings for communication, first power on and EDID.

8.1 Default Communication Settings

RS-232	
Protocol 3000 (Default)	
Baud Rate	9600 (default),115200
Data Bits	8
Stop Bits	1
Parity	None
Command Format	ASCII

8.2 First Power On Default Settings

The first power on of the device automatically loads the default EDID and all default settings as follows:

Parameter	Value
Out HDCP mode	Follow
Communication format	KMR3000(KMR device)
Current input source port	Input port 1
Manual/Auto switch mode	Auto mode
Pr/Lc switch mode	Priority mode
ARC/ HDMI IN Audio Out	HDMI audio out
Input port HDCP	All ON
Kramer 3000'SN	xxxx xxxx xxxx xx
Kramer 3000' MODEL NAME	V', 'S', '-', '2', '1', '1', 'U', 'H', 'D'
EDID	default
USB for Virtual Com	virtual Com (VCOM)
Switch speed	Fast switch mode

8.3   Default EDID

Monitor
 Model name............... VS-211UHD
 Manufacturer............. KMR
 Plug and Play ID......... KMR03ED
 Serial number............ 295-883450100
 Manufacture date........ 2015, ISO week 20

 EDID revision............ 1.3
 Input signal type........ Digital
 Color bit depth.......... Undefined
 Display type............. Monochrome/grayscale
 Screen size.............. 520 x 320 mm (24.0 in)
 Power management......... Standby, Suspend, Active off/sleep
 Extension blocs.......... 1 (CEA-EXT)

 DDC/CI................... n/a

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

Timing characteristics
 Horizontal scan range.... 30-83kHz
 Vertical scan range...... 56-76Hz
 Video bandwidth.......... 170MHz
 CVT standard............. Not supported
 GTF standard............. Not supported
 Additional descriptors... None
 Preferred timing......... Yes
 Native/preferred timing.. 1280x720p at 60Hz (16:10)
  Modeline............... "1280x720" 74.250 1280 1390 1430 1650 720 725 730 750 +hsync +vsync

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

VS-211UHD - Default Settings

EIA/CEA-861 Information
  Revision number.......... 3
  DTV underscan............ Supported
  Basic audio.............. Supported
  YCbCr 4:4:4.............. Not supported
  YCbCr 4:2:2.............. Not supported
  Native formats........... 1
  Detailed timing #1....... 1920x1080p at 60Hz (16:10)
    Modeline.............. "1920x1080" 148.500 1920 2008 2052 2200 1080 1084 1089 1125 +hsync +vsync
  Detailed timing #2....... 1920x1080i at 60Hz (16:10)
    Modeline.............. "1920x1080" 74.250 1920 2008 2052 2200 1080 1084 1094 1124 interlace +hsync +vsync
  Detailed timing #3....... 1280x720p at 60Hz (16:10)
    Modeline.............. "1280x720" 74.250 1280 1390 1430 1650 720 725 730 750 +hsync +vsync
  Detailed timing #4....... 720x480p at 60Hz (16:10)
    Modeline.............. "720x480" 27.000 720 736 798 858 480 489 495 525 -hsync -vsync

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

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

CE vendor specific data (VSDB)
  IEEE registration number. 0x000C03
  CEC physical address..... 0.1.0.0
  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.......... 2016-12-7
  Software revision........ 2.41.0.818
  Operating system......... 5.1.2600.2.Service Pack 3

Raw data
00 FF FF FF FF FF FF 00 2D B2 ED 03 01 00 00 00 00 14 19 01 03 80 34 20 78 E2 B3 25 AC 51 30 B4 26 10
50 54 FF FF 80 81 8F 81 99 A9 40 61 59 45 59 31 59 71 4A 81 40 01 1D 00 72 51 D0 1E 20 6E 28 55 00 07
44 21 00 00 1E 00 00 00 FF 00 32 39 35 2D 38 38 33 34 35 30 31 30 30 00 00 00 FC 00 56 53 2D 32 31 31
55 48 44 00 00 00 00 00 00 00 FD 00 38 4C 1E 53 11 00 0A 20 20 20 20 20 20 01 43 02 03 1B C1 23 09 07
07 48 10 05 84 03 02 07 16 01 65 03 0C 00 10 00 83 01 00 00 02 3A 80 18 71 38 2D 40 58 2C 45 00 07 44
21 00 00 1E 01 1D 80 18 71 1C 16 20 58 2C 25 00 07 44 21 00 00 9E 01 1D 00 72 51 D0 1E 20 6E 28 55 00
07 44 21 00 00 1E 8C 0A D0 8A 20 E0 2D 10 10 3E 96 00 07 44 21 00 00 18 00 00 00 00 00 00 00 00 00 00
00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 77

9 Protocol 3000

The **VS-211UHD** can be operated using the Kramer Protocol 3000 serial commands. The command framing varies according to how you interface with the **VS-211UHD**. 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:
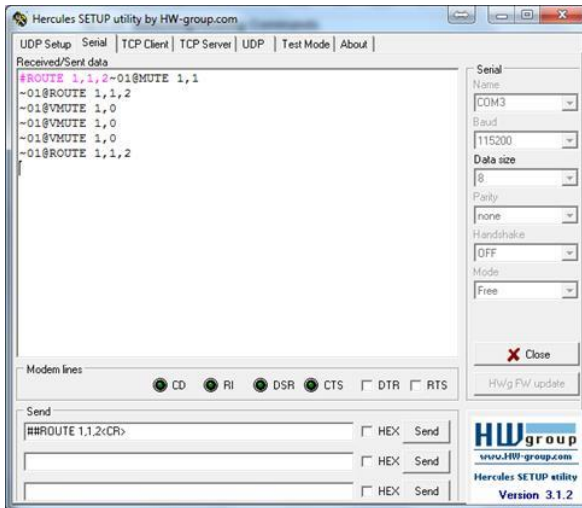
 The framing of the command varies according to the terminal communication software.

- K-Touch Builder (Kramer software):

- K-Config (Kramer configuration software):

Command Syntax	Display Command as	○ Hex	○ Decimal	● ASCII

"#ROUTE 1,1,2",0x0D   **Set**   **Clear**

> 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-211UHD**. To enter `CR` press the Enter key (`LF` is also sent but is ignored by the command parser).

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

For more information about:

- Using Protocol 3000 commands, see

- General syntax used for Protocol 3000 commands, see

- Protocol 3000 commands available for the **VS-211UHD**, see

9.1 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.

9.2 Kramer Protocol 3000 Syntax

The Kramer Protocol 3000 syntax uses the following delimiters:

- CR = Carriage return (ASCII 13 = 0x0D)

- LF = Line feed (ASCII 10 = 0x0A)

- SP = Space (ASCII 32 = 0x20)

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

The Protocol 3000 syntax is in the following format:

- Host Message Format:

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

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

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

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

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

- Device Message Format:

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

- Device Long Response – Echoing command:

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

9.3 Protocol 3000 Commands

This section includes the following commands:

- System Commands (see Section 9.3.1)

- Communication Commands (see Section 9.3.2)

- Switching/Routing Commands (see Section 9.3.3)

- EDID Handling Commands (see Section 9.3.4)

9.3.1 System Commands

All devices running Protocol 3000 use these commands.

Command	Description	Type
#	Protocol handshaking	System-mandatory
BUILD-DATE	Get device build date	System-mandatory
FACTORY	Reset to factory default configuration	System-mandatory
HDCP-STAT?	Get HDCP signal status	System
HELP	Get command list	System-mandatory
IDV	Set visual indication from device	System
INFO-IO	Get in/out count	System
MODEL	Get device model	System-mandatory
NAME	Set/get machine (DNS) name	System – Ethernet
PROT-VER	Get device protocol version	System-mandatory
RESET	Reset device	System-mandatory
SIGNAL?	Get input signal lock status	System
SN	Get device serial number	System-mandatory
VERSION	Get device firmware version	System-mandatory
AV-SW-TIMEOUT	Set/get auto switching timeout	System

9.3.1.1

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

9.3.1.2 BUILD-DATE

Functions		Permission	Transparency
Set:	**-**	-	-
Get:	**BUILD-DATE?**	End User	Public
Description		**Syntax**	
Set:	-	-	
Get:	Get device build date	#**BUILD-DATE?**CR	
Response			
~nn@**BUILD-DATE**SP*date*SP*time*CR LF			
Parameters			
date – Format: YYYY/MM/DD where YYYY = Year, MM = Month, DD = Day *time* – Format: hh:mm:ss where hh = hours, mm = minutes, ss = seconds			
Response Triggers			
Notes			
K-Config Example			
Read the device build date: "#BUILD-DATE?",0x0D			

9.3.1.3   FACTORY

Functions		Permission	Transparency
Set:	**FACTORY**	End User	Public
Get:	-	-	-

Description		Syntax	
Set:	Reset device to factory default configuration	#**FACTORY**CR	
Get:	-	-	

Response
~nn@**FACTORY**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
Reset the device to its factory default configuration: "#FACTORY",0x0D

9.3.1.4 HDCP-STAT

Functions		Permission	Transparency
Set:	-	-	-
Get:	`HDCP-STAT?`	End User	Public

Description		Syntax
Set:	-	-
Get:	Get HDCP signal status	#**HDCP-STAT?** SP *stage,stage_id* CR

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

Parameters
stage – 0 (input), 1 (output) *stage_id* – for input stage: 1 (Input 1 HDMI), 2 (Input 2 HDMI), for output stage: 1 (HDMI Out) *actual_status* – HDCP signal encryption status: 0 (Off), 1 (On), 2 (Follow input), 3 (Mirror output – MAC mode)

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 Input 1 HDMI: "#HDCP-STAT? 0,1",0x0D

9.3.1.5　HELP

Functions		Permission	Transparency
Set:	-	-	-
Get:	`HELP`	End User	Public
Description		**Syntax**	
Set:	-	-	
Get:	Get command list or help for specific command	1. `#HELP`CR 2. `#HELP`SP`COMMAND_NAME`CR	
Response			
1. Multi-line: `~`nn`@Device available protocol 3000 commands:`CR LF`command,`SP `command...`CR LF 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`CR LF			
K-Config Example			
`"#HELP",0x0D`			

9.3.1.6　IDV

Functions		Permission	Transparency
Set:	**IDV**	End User	Public
Get:	-	-	-
Description		**Syntax**	
Set:	Set visual indication from device	**#IDV**CR	
Get:	-	-	
Response			
`~`nn`@`**IDV**SP`OK`CR LF			
Parameters			
Response Triggers			
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`			

9.3.1.7 INFO-IO

Functions		Permission	Transparency
Set:	**-**	-	-
Get:	**INFO-IO?**	End User	Public
Description		**Syntax**	
Set:	-	-	
Get:	Get in/out count	`#INFO-IO?`CR	
Response			
~nn@**INFO-IO?** SP IN SP inputs_count,OUT SP outputs_count CR LF			
Parameters			
inputs_count – Number of inputs in the device outputs_count – Number of outputs in the device			
Response Triggers			
Notes			
K-Config Example			
"#INFO-IO?",0x0D			

9.3.1.8 MODEL

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

9.3.1.9   NAME

Functions		Permission	Transparency
Set:	**NAME**	Administrator	Public
Get:	**NAME?**	End User	Public
Description		**Syntax**	
Set:	Set machine (DNS) name	#**NAME**SP*machine_name*CR	
Get:	Get machine (DNS) name	#**NAME?**CR	
Response			
Set: ~nn@**NAME**SP*machine_name*CR LF Get: ~nn@**NAME?**SP*machine_name*CR LF			
Parameters			
machine_name - String of up to 14 alpha-numeric characters (can include hyphens but not at the beginning or end)			
Response Triggers			
Notes			
The machine name is not the same as the model name. The machine name is used to identify a specific machine or a network in use (with DNS feature on).			
K-Config Example			
Set the DNS name of the device to "room-442": "#NAME room-442",0x0D			

9.3.1.10   PROT-VER

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

9.3.1.1   RESET

Functions		Permission	Transparency
Set:	**RESET**	Administrator	Public
Get:	**-**	-	-

Description		Syntax	
Set:	Reset device	#**RESET**`CR`	
Get:	-	-	

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

Parameters

Response Triggers

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

K-Config Example
Reset the device: "#RESET",0x0D

9.3.1.1 SIGNAL

Functions		Permission	Transparency
Set:	–	–	–
Get:	**SIGNAL?**	End User	Public

Description		Syntax	
Set:	-	-	
Get:	Get input signal lock status	#**SIGNAL?** `SP` *inp_id* `CR`	

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

Parameters
inp_id - input number *status* - lock status according to signal validation: 0 (LPCM 2CH) 1 (LPCM 6CH) 2 (LPCM 8CH) 3 (Bitstream) 4 (HD)

Response Triggers
After execution, a response is sent to the com port from which the Get was received Response is sent after every change in input signal status ON to OFF, or OFF to ON

Notes

K-Config Example
Get input signal lock status of input 1 `"#SIGNAL? 1",0x0D`

9.3.1.2   SN

Functions		Permission	Transparency
Set:	-	-	-
Get:	**SN?**	End User	Public
Description		**Syntax**	
Set:	-	-	
Get:	Get device serial number	#**SN?**`CR`	
Response			
~`nn`@**SN**`SP`*serial_number*`CR LF`			
Parameters			
serial_number – 11 decimal digits, factory assigned			
Response Triggers			
Notes			
This device has a 14 digit serial number, only the last 11 digits are displayed			
K-Config Example			
Get device serial number: "#SN?",0x0D			

9.3.1.3   VERSION

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

9.3.1.1 AV-SW-TIMEOUT

Functions		Permission	Transparency
Set:	`AV-SW-TIMEOUT`	End User	Public
Get:	`AV-SW-TIMEOUT?`	End User	Public
Description		**Syntax**	
Set:	Set auto switching timeout	`#AV-SW-TIMEOUT`SP`action,time_out`CR	
Get:	Get auto switching timeout	`#AV-SW-TIMEOUT?`SP`action`CR	
Response			
~nn@**AV-SW-TIMEOUT**SP`action,time_out`CR			
Parameters			
`action` – event that triggers the auto switching timeout: `0` (video signal lost) `2` (audio signal lost) `4` (disable 5V on video output if no input signal detected) `5` (video cable unplugged) `6` (audio cable unplugged) `timeout` – timeout in seconds: `0-60000`			
Response Triggers			
Notes			
The timeout must not exceed 60000 seconds. The timeout for video and audio signal lost (0, 2) events must not be less than 5 seconds. The timeout for video and audio cable unplugged (5, 6) events must not exceed the timeout for the disable 5V on video output if no input signal detected (4) event. The timeout for the disable 5V on video output if no input signal detected (4) event must not be less than the timeout for video and audio cable unplugged (5, 6) events. The timeout for the disable 5V on video output if no input signal detected (4) event overlaps with the timeouts for all other events (0, 2, 5, 6).			
K-Config Example			
Set the auto switching timeout to 5 seconds in the event of video signal lost: "#AV-SW-TIMEOUT 0,5",0x0D			

9.3.2　Communication Commands

Command	Description	Type
UART	Set/get com port configuration	Communication

9.3.2.1　UART

Functions		Permission	Transparency
Set:	**UART**	Administrator	Public
Get:	**UART?**	End User	Public
Description		**Syntax**	
Set:	Set com port configuration	#**UART**SP*COM_Num,baud_rate,data_bit, parity,stop_bit*CR	
Get:	Get com port configuration	#**UART?**SP*COM_Num*CR	
Response			
Set: ~nn@**UART**SP*COM_Num,baud_rate,data_bit,parity,stop_bit*CR LF **Get:** ~nn@**UART**SP*COM_Num,baud_rate,data_bit,parity,stop_bit,serial1_type,*CR LF			
Parameters			
COM_Num – 1 (RS-232 Terminal Block) *baud_rate* – 9600,115200 *data_bit* – 7,8 *parity* – N (No), O (Odd), E (Even), M (Mark), S (Space) *stop_bit* – 1,2 *serial1_type* – 232			
Response Triggers			
Notes			
If Serial1 is configured when RS-485 is selected, the RS-485 UART port is automatically changed			
K-Config Example			
Set the RS-232 Terminal Block to 115200 baud rate, 8 data bits, no parity, 1 stop bit: "#UART 1,115200,8,N,1",0x0D			

9.3.3 Switching Commands

Command	Description	Type
DISPLAY	Get output HPD status	Switching
MTX-MODE	Set/get auto-switch mode	Switching
VID	Set/get video switch state	Switching

9.3.3.1 DISPLAY

Functions		Permission	Transparency
Set:	-	-	-
Get	**DISPLAY?**	End User	Public
Description		**Syntax**	
Set:	-	-	
Get:	Get output HPD status	#**DISPLAY?**SP*out_id*CR	
Response			
~nn@**DISPLAY**SP*out_id,status*CR LF			
Parameters			
out_id – 1 (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			

9.3.3.2 MTX-MODE

Functions		Permission	Transparency
Set:	**MTX-MODE**	End User	Public
Get:	**MTX-MODE?**	End User	Public
Description		**Syntax**	
Set:	Set auto-switch mode	#**MTX-MODE**SP*output_id,mode*CR	
Get :	Get auto-switch mode	#**MTX-MODE?**SP*output_id*CR	
Response			
~nn@**MTX-MODE**SP*output_id,mode*CR			
Parameters			
output_id – 1 (HDMI Out) *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 the auto switch mode of HDMI Out to last connected input: "#MTX-MODE 1,2", 0x0D			

9.3.3.3 VID

Functions		Permission	Transparency
Set:	**VID**	End User	Public
Get:	**VID?**	End User	Public
Description		**Syntax**	
Set:	Set video switch state	#**VID**SP*in>out*CR
Get:	Get video switch state	#**VID?**SP*out*CR
Response			
Set: ~nn@**VID**SP*in>out*CR LF Get: ~nn@**VID**SP*in>out*CR LF			
Parameters			
in – 0 (disconnect output), 1 (Input 1 HDMI), 2 (Input 2 HDMI) > – Connection character between in and out parameters *out* – 1 (HDMI Out), * (all outputs)			
Response Triggers			
Notes			
The GET command identifies input switching on Step-in clients New Step-in modules support the ROUTE command			
K-Config Example			
Set the video switch state of HDMI Out to Input 1 HDMI: "#VID 1>1",0x0D			

9.3.4 EDID Handling Commands

Command	Description	Type
CPEDID	Copy EDID data from the output to the input EEPROM	EDID Handling
GEDID	Set/get EDID data	EDID Handling
LDEDID	Load EDID data	EDID Handling

9.3.4.1 CPEDID

Functions		Permission	Transparency
Set:	`CPEDID`	End User	Public
Get:	-	-	-

Description		Syntax	
Set:	Copy EDID data from the output to the input EEPROM	#**CPEDID**SP*src_type,src_id,dst_type,* *dest_bitmap*CR	
Get:	-	-	

Response
~nn@**CPEDID**SP*src_type,src_id,dst_type,dest_bitmap*CR LF

Parameters
src_type – EDID source type (usually output): 1 (output), 2 (default EDID) *src_id* – for output source: 1 (HDMI Out), for default EDID source: 1 (default EDID) *dst_type* – EDID destination type (usually input): 0 (input) *dest_bitmap* – destination input to which the EDID data is copied: 1 (Input 1 HDMI), 2 (Input 2 HDMI), 3 (Input 1 HDMI and Input 2 HDMI)

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

Notes

K-Config Example
Copy the EDID data from the HDMI Out output (EDID source) to the Input 1 HDMI: "#CPEDID 1,1,0,1",0x0D Copy the EDID data from the default EDID source to Input 1 HDMI and Input 2 HDMI: "#CPEDID 2,1,0,3",0x0D

Command - **GEDID**		Command Type - EDID Handling	
Command Name		**Permission**	**Transparency**
Set:	**GEDID**	Administrator	Public
Get:	**GEDID?**	End User	Public
Description		**Syntax**	
Set:	Set EDID data from device	#**GEDID** `SP` *stage, stage_id* `CR`	
Get:	Get EDID support on certain input/output	#**GEDID?** `SP` *stage, stage_id* `CR`	
Response			
Set: Multi-line response: ~`nn`@**GEDID**`SP`*stage,stage_id,size*`CR LF` EDID_data `CR LF` ~`nn`@**GEDID**`SP`*stage,stage_id*`SP`**OK**`CR LF` Get: ~`nn`@**GEDID**`SP`*stage,stage_id,size*`CR LF`			
Parameters			
stage - input/output 0 (input) 1 (output) 2 (default EDID) 3 (custom EDID) *stage_id* - number of chosen stage (1.. max number of inputs/outputs) *size* - EDID data size. For Set, size of data to be sent from device, for Get, 0 means no EDID support			
Response Triggers			
Response is sent to the com port from which the Set (before execution) / Get command was received			
Notes			
For Get, size=0 means EDID is not supported			
For old devices that do not support this command, ~`nn`@ERR 002 `CR LF` is received			
K-Config Example			
Set the EDID data (size x) from the HDMI Out 1: "#GEDID 1,1,x",0x0D			

Command - **LDEDID**		Command Type - EDID Handling	
Command Name		**Permission**	**Transparency**
Set:	**LDEDID**	End User	Public
Get:	-	-	-
Description		**Syntax**	
Set:	Write EDID data from external application to device	Multi-step syntax (see following steps)	
Get:	–	–	
Communication Steps (Command and Response)			
Step 1: #**LDEDID**[SP]*dst_type, dest_bitmask, size, safe_mode*[CR] Response 1: ~[nn]@**LDEDID**[SP]*dst_type, dest_bitmask, size, safe_mode*[SP]**READY**[CR LF] or 　　　　~[nn]@**LDEDID**[SP]**ERRnn**[CR LF] Step 2: If **ready** was received, send [EDID_DATA] Response 2: ~[nn]@**LDEDID**[SP]*dst_type, dest_bitmask, size, safe_mode*[SP]**OK**[CR LF] or 　　　　~[nn]@**LDEDID**[SP]**ERRnn**[CR LF]			
Parameters			
dst_type - EDID destination type (usually input) 0 (input) 1 (output) 2 (default EDID) 3 (custom EDID) *dest_bitmask* - bitmap representing destination IDs. Format: 0x********, where * is ASCII presentation of hex digit. The binary presentation of this number is a bit mask for destinations. Setting '1' means EDID data has to be copied to this destination *size* - EDID data size *safe_mode* - 0 - Device accepts the EDID as is without trying to adjust 　　　　　　　1 - Device tries to adjust the EDID [EDID_DATA] - data in protocol packets (see [Section 9.2](#))			
Response Triggers			
Response is sent to the com port from which the **Set** (before execution)			
Notes			
When the unit receives the **LDEDID** command it replies with **READY** and enters the special EDID packet wait mode. In this mode the unit can receive only packets and not regular protocol commands. If the unit does not receive correct packets for 30 seconds or is interrupted for more than 30 seconds before receiving all packets, it sends timeout error ~[nn]@**LDEDID**[SP]**ERR01**[CR LF] and returns to the regular protocol mode. If the unit received data that is not a correct packet, it sends the corresponding error and returns to the regular protocol mode. See Protocol Packet reference in [Section](#) **Error! Reference source not found.**			
K-Config Example			
Write the EDID data (size x) to the HDMI Out 1, adjust for safe mode: "#LDEDID 1,1,x,1",0x0D			

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