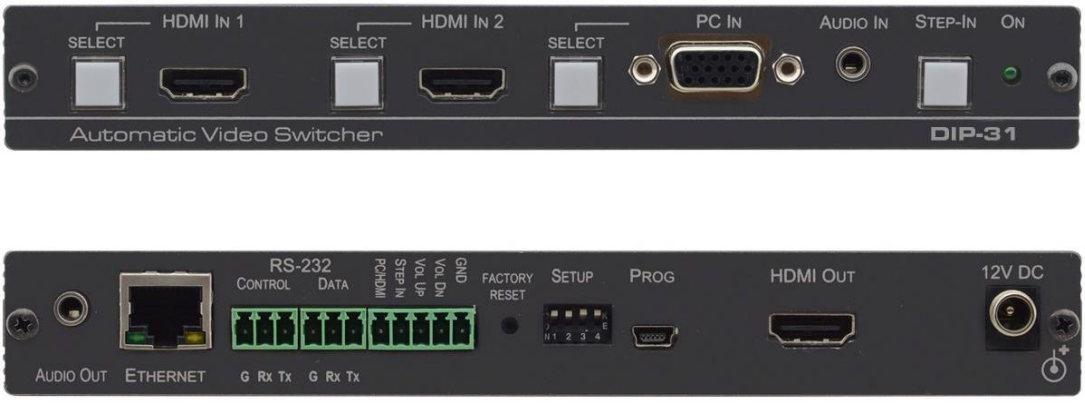
KRAMER

USER MANUALs

MODEL:

DIP-31
Automatic Video Switcher



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Introduction

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

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/DIP-31 to check for up-to-date user manuals, application programs, and to check if firmware upgrades are available (where appropriate).

Achieving the Best Performance

- Use only good quality connection cables (we recommend Kramer high-performance, high-resolution cables) to avoid interference, deterioration in signal quality due to poor matching, and elevated noise levels (often associated with low quality cables).
- Do not secure the cables in tight bundles or roll the slack into tight coils.
- Avoid interference from neighboring electrical appliances that may adversely influence signal quality.
- Position your Kramer **DIP-31** away from moisture, excessive sunlight and dust.

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

Safety Instructions

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

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

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

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

Recycling Kramer Products

The Waste Electrical and Electronic Equipment (WEEE) Directive 2002/96/EC aims to reduce the amount of WEEE sent for disposal to landfill or incineration by requiring it to be collected and recycled. To comply with the WEEE Directive, Kramer Electronics has made arrangements with the European Advanced Recycling Network (EARN) and will cover any

costs of treatment, recycling and recovery of waste Kramer Electronics branded equipment on arrival at the EARN facility. For details of Kramer's recycling arrangements in your particular country go to our recycling pages at www.kramerav.com/support/recycling.

Overview

Congratulations on purchasing your Kramer **DIP-31 Automatic Video Switcher**. **DIP-31** is a high-performance multi-format switcher of 4K video signals. Offering intelligent Maestro automation, with priority and last−connected switching options, it automatically switches and operates the room according to the selected switching scheme based on active video signal detection.

The **DIP-31** Automatic Video Switcher features:

- Simple and Powerful Maestro Room Automation – Intuitive user interface enables you to fully automate your meeting room elements. Configure lights, shades, devices and more to be activated by an extensive range of triggers, including input/output connectivity, routing, and button pressing. By minimizing user intervention, Maestro room automation saves meeting prep time and minimizes human error before presentations.
- BYOD Plug & Play Auto Switcher – Automatically plays the switched user device source signal on the connected display according to user-configured preferences, such as priority or last-connected input. When the user manually switches, by pressing a button, the auto switching is overridden.
- Simple Switching Operation – Local buttons or remotely connected contact-closure buttons for flexible user input selection and switching control.
- HDMI™ Signal Switching – HDCP compliant, supporting deep color, x.v.Color™, lip sync, HDMI uncompressed audio channels, Dolby TrueHD, DTS-HD, 2K, 4K, and 3D as specified in HDMI 2.0.
- I-EDIDPro™ Kramer Intelligent EDID Processing™ – Intelligent EDID handling, processing, locking and pass-through algorithm ensures plug & play operation for HDMI source and display systems.
- Multi-channel Audio Switching – Up to 32 channels of digital stereo uncompressed signals for supporting studio-grade surround sound.
- Audio Embedding – An auto-detected analog stereo audio input, per user selection, is converted into a digital signal and embedded in the output HDMI signal, replacing the source HDMI audio input signal. This enables, for example, a presenter to temporarily override the playing source audio with speech description.
- Audio De-embedding – The digital audio signal passing-through to the output, is de-embedded, converted to an analog signal and sent to the stereo analog audio output. This enables playing the audio on locally connected speakers, in parallel to playing it on the speakers connected to the AV acceptor device (such as TVs with speakers).
- Cost-effective Maintenance – Status LED indicators for HDMI, and VGA ports facilitate easy local maintenance and troubleshooting. Remote IP-driven device management via built-in web pages and RS–232 connection. Local and remote firmware upgrade via RS–232 or Ethernet connection tool ensure lasting, field-proven deployment.
- Easy Installation – Compact MegaTOOLS® fan–less enclosure for flexible table mounting.

Typical Applications

DIP-31 is ideal for the following typical applications:

- Table-mounted switcher in lecture halls, training rooms, auditoriums and hospitality applications.
- User accessible switcher for huddle rooms and within any AV distribution system
- Multimedia and presentation source selection in various corporate applications.

About Maestro

DIP-31 showcases Maestro, Kramer's easy to configure, single-trigger room automation software that creates customized meeting room environments with minimal end-user intervention.

Maestro creates a series of actions based on a pre-defined event, or trigger, such as plugging in a laptop or turning a display off. These events can trigger actions such as turning on computers (via Wake-on-LAN) and turning on and off lights, projectors, displays, video sources, and HVAC.

Integrated with Kramer's dynamic database of device drivers, there is no end to the types of actions Maestro can perform. Maestro enables automated control over a variety of port types: RS-232, Ethernet, GPIO, relay, and IR.

Maestro makes meeting rooms environmentally-friendly by ensuring that lights and devices are automatically turned off. The solution turns a device or series of devices on or off based on triggers, e.g., removing inputs, time, etc. This helps create a greener workplace, and over time, saves significant energy costs.

Defining Automatic Video Switcher

Figure 1 defines the front panel of the **DIP-31**.

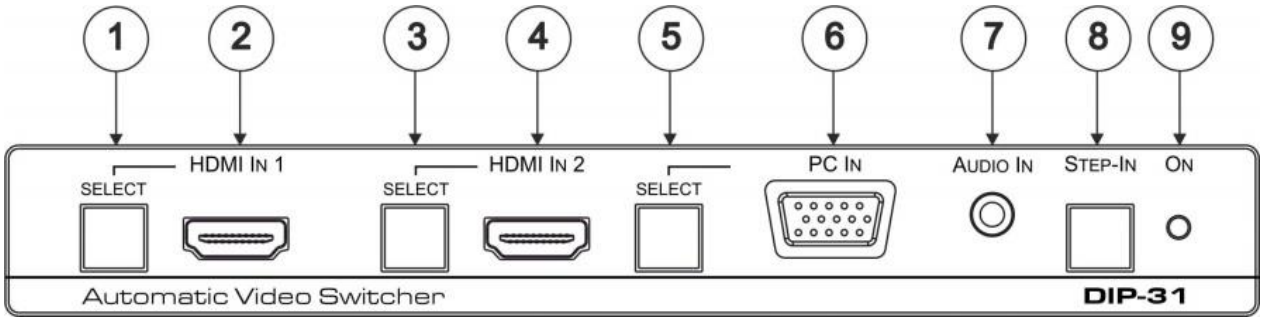


Figure 1: DIP-31 Front Panel

#	Feature		Function
1	HDMI IN 1	SELECT Button	Press to select the HDMI In 1 input. When HDMI In 1 is selected, the button: • Lights red when external audio is selected. • Lights green when HDMI In 1 is selected.
2		HDMI 1 Connector	Connect to the first HDMI source.
3	HDMI IN 2	SELECT Button	Press to select the HDMI In 2 input. When HDMI In 2 is selected, the button: • Lights red when external audio is selected. • Lights green when HDMI In 2 is selected.
4		HDMI 2 Connector	Connect to the second HDMI source.
5	PC IN	SELECT Button	Press to select the PC graphics input. When PC graphics is selected, the button: • Lights red when external audio is selected. • Lights green when the PC input selected.
6		PC Graphics 15-pin HD Connector	Connect to the PC graphics source, (for example, a laptop).
7	AUDIO IN 3.5mm Mini Jack		Connect to the unbalanced, stereo audio source, (for example, the audio output of the laptop).
8	Step-In Button		Press to take control of the input that this device is connected to on a compatible switcher.
9	ON LED		Lights green when the device is powered on.

Figure 2 defines the rear panel of the **DIP-31**.

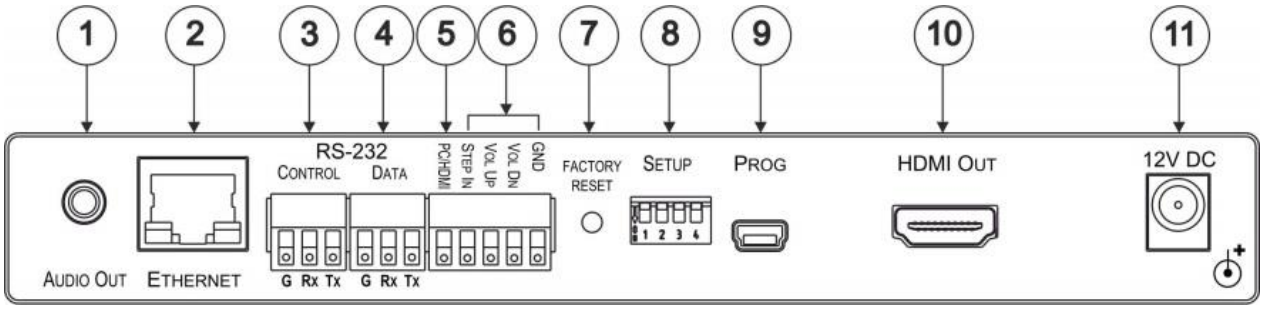


Figure 2: DIP-31 Rear Panel

#	Feature		Function
1	AUDIO OUT 3.5mm Mini Jack		Connect to the unbalanced, stereo audio acceptor, (for example, active speakers).
2	ETHERNET RJ-45 Connector		Connect to the LAN, (Ethernet traffic or PC controller).
3	RS-232	CONTROL 3-pin Terminal Block	Connect to a serial controller or PC.
4		DATA 3-pin Terminal Block	Connect to a serial data acceptor.
5	PC/HDMI Remote Toggle Switch Terminal Block		Connect to a remote momentary switch to toggle between the PC graphics and HDMI inputs.
6	Remote Contact-closure 4-pin Terminal Block		Connect to remote momentary switches to control step-in and audio volume.
7	FACTORY RESET Button		Short press to reboot, long press to reset the device to factory default parameters.
8	SETUP 4-way DIP-switch		Switches for setting the device behavior, (see Setting Configuration DIP-switch on page 13).
9	PROG Mini USB Connector		Connect to a PC to perform a firmware upgrade.
10	HDMI OUT Connector		Connect to a compatible HDMI display.
11	12V DC Connector		Connect to the supplied power adapter.

Mounting DIP-31

This section provides instructions for mounting **DIP-31**. Before installing, verify that the environment is within the recommended range:

- Operation 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.

Caution:

- Mount **DIP-31** before connecting any cables or power.

Warning:

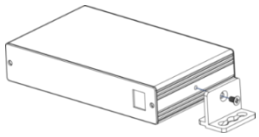
- Ensure that the environment (e.g., maximum ambient temperature & air flow) is compatible for the device.
- Avoid uneven mechanical loading.
- Appropriate consideration of equipment nameplate ratings should be used for avoiding overloading of the circuits.
- Reliable earthing of rack-mounted equipment should be maintained.
- Maximum mounting height for the device is 2 meters.

To mount the DIP-31 on a rack

Mount the unit in a rack using the recommended rack adapter (see www.kramerav.com/product/DIP-31)

To mount the DIP-31 on a table or shelf

- Attach the rubber feet and place the unit on a flat surface.
- Fasten a bracket (included) on each side of the unit and attach it to a flat surface.



For more information go to www.kramerav.com/downloads/DIP-31

Connecting DIP-31 Automatic Video Switcher

Always switch off the power to each device before connecting it to your **DIP-31**. After connecting your **DIP-31**, connect the power to each of them and then switch on the power to each device.

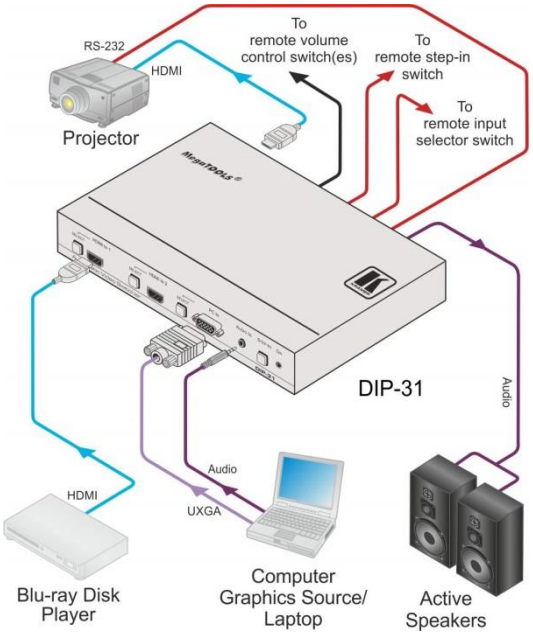


Figure 3: Connecting the DIP-31

To connect the DIP-31 as illustrated in Figure 3:

1. Connect an HDMI source, (for example, a Blu-ray disk player) to the HDMI IN 1 input.
2. Connect a PC graphics source, (for example, a laptop) to the PC In input.
3. Connect an unbalanced stereo audio source, (for example, the audio output from the laptop) to the AUDIO IN 3.5mm mini jack.
4. Connect the HDMI OUT connector on the rear panel of the **DIP-31** to an HDMI compatible switcher, display or projector.
5. Connect the DATA RS-232 3-pin terminal block on the rear panel of the **DIP-31** to an RS-232 controlled device (for example, a projector) or an RS-232 controller.
6. Connect the AUDIO OUT 3-pin terminal block on the rear panel of the **DIP-31** to the unbalanced, stereo audio acceptor, (for example, active speakers).
7. Connect the STEP IN 2-way terminal block to a momentary, contact-closure switch, (see Connecting Remote Control Switches on page 9).
8. Connect the PC/HDMI 2-way terminal block to a momentary, contact-closure switch for input selection, (see Connecting Remote Control Switches on page 9).
9. Connect the Vol Up/Vol Down 3-pin terminal block to remote, contact-closure, volume control switches.
10. Connect the power adapter to the **DIP-31** and to the mains power, (not shown in Figure 3).

Connecting Remote Control Switches

You can connect remote, momentary-contact contact-closure switches to the terminal block on the rear panel of the **DIP-31** to control the device.

Figure 4 illustrates the connections from the terminal block to the contact-closure switches.

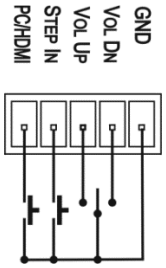


Figure 4: Remote Switches Terminal Block

#	Feature	Function
1	PC/HDMI-input selection/VGA phase shift adjustment.	Short press-Input toggle. Long press-Adjusts the VGA phase shift, (see VGA Phase Shift on page 11).
2	STEP IN	Activates the step-in function if relevant.
3	VOL UP-analog audio output volume increase control, (see Analog Audio Output Volume Control on page 12).	Short press-Increases the volume one step. Long press-Increases the volume from -83dB to +24dB in 10 seconds.
4	VOL DN-analog audio output volume decrease control, (see Analog Audio Output Volume Control on page 12).	Short press-Decreases the volume one step. Long press-Decreases the volume from -83dB to +24dB in 10 seconds.
G	GND	Connect to the common side of the switches.

Wiring RJ-45 Connectors

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

EIA /TIA 568B	
PIN	Wire Color
1	Orange / White
2	Orange
3	Green / White
4	Blue
5	Blue / White
6	Green
7	Brown / White
8	Brown

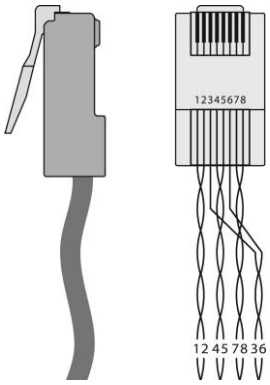


Figure 5: TP PINOUT

Principles of Operation

The **DIP-31** selects video and audio inputs based on the rules described below.

Input Selection

The video mode selection is set by the DIP-switches (see Setting Configuration DIP-switch on page 13) to either of the following modes:

- Manual
- Auto-Last connected or priority mode

In manual mode switching occurs whether or not there is a live signal present on the input. You select manually select an input using any of the following methods:

- Front panel buttons
- Remote input selection switches
- RS-232 control
- Web pages

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

In last connected mode, if the signal on the current input is lost, the **DIP-31** automatically selects the last connected input, (the delay depending on the configurable signal-lost timeout).

In priority mode, when the input sync signal is lost for any reason, the input with a live signal and next in priority is selected automatically, (the delay depending on the configurable signal-lost timeout). This priority is configurable; the default setting is HDMI 1 → HDMI 2 → PC.

In both last connected and priority modes, manually selecting an input (using the remote input selection switches or any of the above methods) overrides automatic selection.

Signal Loss and Unplugged Cable Timeouts

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

Both timeouts are configurable, (see Setting Configuration DIP-switch on page 13).

When “Audio Only” mode is enabled, analog audio is not output when there is no display connected. If a display is connected analog audio is output even in the absence of a video signal.

Audio Signal Control

The Option DIP-switches 3 and 4 (see Setting Configuration DIP-switch on page 13) control the manner in which audio is handled.

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

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

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

VGA Phase Shift

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

- A long press on the PC IN select button on the front panel.
  Each long press steps the phase shift up one step, starting from 0 and going to 31.
  When set to 31, another long press steps the shift to 0.
- A remote, contact-closure switch connected to pins 1 and G of the Remote terminal block.
  Each long press steps the phase shift up one step, starting from 0 and going to 31.
  When set to 31, another long press steps the shift to 0.
- Using the Web pages, (see Operating DIP-31 Remotely Using Web Pages on page 15).
- Protocol 3000 commands over RS-232 (see Protocol 3000 on page 34).

VGA phase default value is 6.

Operating DIP-31

The **DIP-31** can be operated using any of the following methods:

- Front panel buttons.
- Remote contact-closure switch, (see Connecting Remote Control Switches on page 9).
- Web pages, (see Operating DIP-31 Remotely Using Web Pages on page 15).
- Protocol 3000 command, (see Protocol 3000 on page 34).

Locking EDID

To lock the EDID and prevent the stored EDID (either default or read from a device) from being overwritten:

- Send a Protocol 3000 command, (see Protocol 3000 on page 34).
- Use the Web pages, (see EDID Management Page on page 24).

Resetting DIP-31

The **DIP-31** can be reset to factory default by either:

- Using the button on the rear panel.
- Using the Web pages, (see Device Settings Page on page 18).

To perform a soft reset of the DIP-31:

- Briefly press the Reset button.

  The device resets.

To reset the DIP-31 to factory default parameters:

- Press and hold the Reset button for five seconds.

  The device is reset to factory default parameters.

Analog Audio Output Volume Control

The analog audio output volume can be controlled using different methods:

- Using the Web pages, (see Browsing DIP-31 Web Pages on page 15).
- Using the remote, contact-closure switches connected to pins 3 and 4 of the Remote terminal block, (see Connecting Remote Control Switches on page 9).
- Using P3000 commands to control the volume (see Audio Commands on page 55).

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

Configuring DIP-31

Setting Configuration DIP-switch

The 4-way DIP-switch provides the ability to configure a number of device functions. A switch that is down is on; a switch that is up is off. By default, all the switches are up (off).

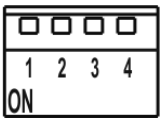


Figure 6: Configuration DIP-switch

After changing a DIP-switch you must power cycle the device to implement the change.

Video Switching Selection

DIP-switch 1	DIP-switch 2	Video Input Selection
Off (up)	Off (up)	Automatic-Last connected. Where more than one source is connected the last one connected has priority
Off (up)	On (down)	Automatic-Priority selection. HDMI 1 → HDMI 2 → PC IN (default, high to low priority)
On (down)	Off (up)	Manual
On (down)	On (down)	Manual

Audio Switching Selection

DIP-switch 3	DIP-switch 4	Audio Input Selection
Off (up)	Off (up)	Automatic-Priority selection. Embedded HDMI → analog Audio In (high to low priority)
Off (up)	On (down)	Automatic-Priority selection. Analog Audio In → embedded HDMI (high to low priority)
On (down)	Off (up)	Embedded HDMI
On (down)	On (down)	Analog Audio In

Switching Timeouts

When the **DIP-31** is configured for auto switching, the timeouts (before a new input is automatically selected) can be changed as shown in the tables below. (For the delay settings on the Web page, see Control Settings Page on page 21.) The following switching timeouts are only for HDMI and not VGA.

Timeout	Minimum Value	Default Value
Delay switching upon signal loss (signal off, 5V power on)	5 seconds.	10 seconds for video input 5 Seconds for audio input.
Delay switching upon cable unplug (signal off, power off)	0 seconds.	0 seconds.
Delay 5V power off upon signal loss (delay must be greater than “Delay switching upon signal loss”)	Should at least equal the larger of the above two values (signal loss timeout and cable unplug timeout).	900 seconds.

For example,

If: Delay switching upon signal loss = 15 seconds
and/or: Delay switching upon cable unplug = 30 seconds
then: Delay 5V power off upon signal loss must be >= 30 seconds

Using Step-in Feature

To be able to use the Step-in feature, you need to assign the RS-232 signal that is transmitted over the HDMI link to control, (see Switching Page on page 17). The Step-in button on the front panel now operates in conjunction with a compatible receiver, for example, the **VS-62H**).

Operating DIP-31 Remotely Using Web Pages

The **DIP-31** can be operated remotely using the embedded Web pages. The Web pages are accessed using a Web browser and an Ethernet connection.

Before attempting to connect:

- Ensure that your browser is supported (see Technical Specifications on page 28).
- Ensure that JavaScript is enabled.

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

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

Browsing DIP-31 Web Pages

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

To browse the DIP-31 Web pages:

1. Open your Internet browser.
2. Type the IP number of the device (see Default IP Parameters on page 28) in the Address bar of your browser.

If authentication is enabled, the following window appears (Figure 7) and you must enter the valid username (**Admin**) and password (**Admin**) to access the Web pages.

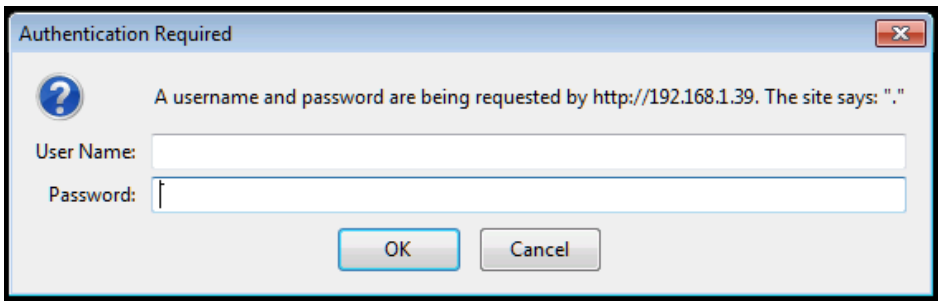


Figure 7: Entering Logon Credentials

Following a successful logon, the Switching page appears (Figure 8).

To open the left-hand side page panel, click the Reveal button ►.

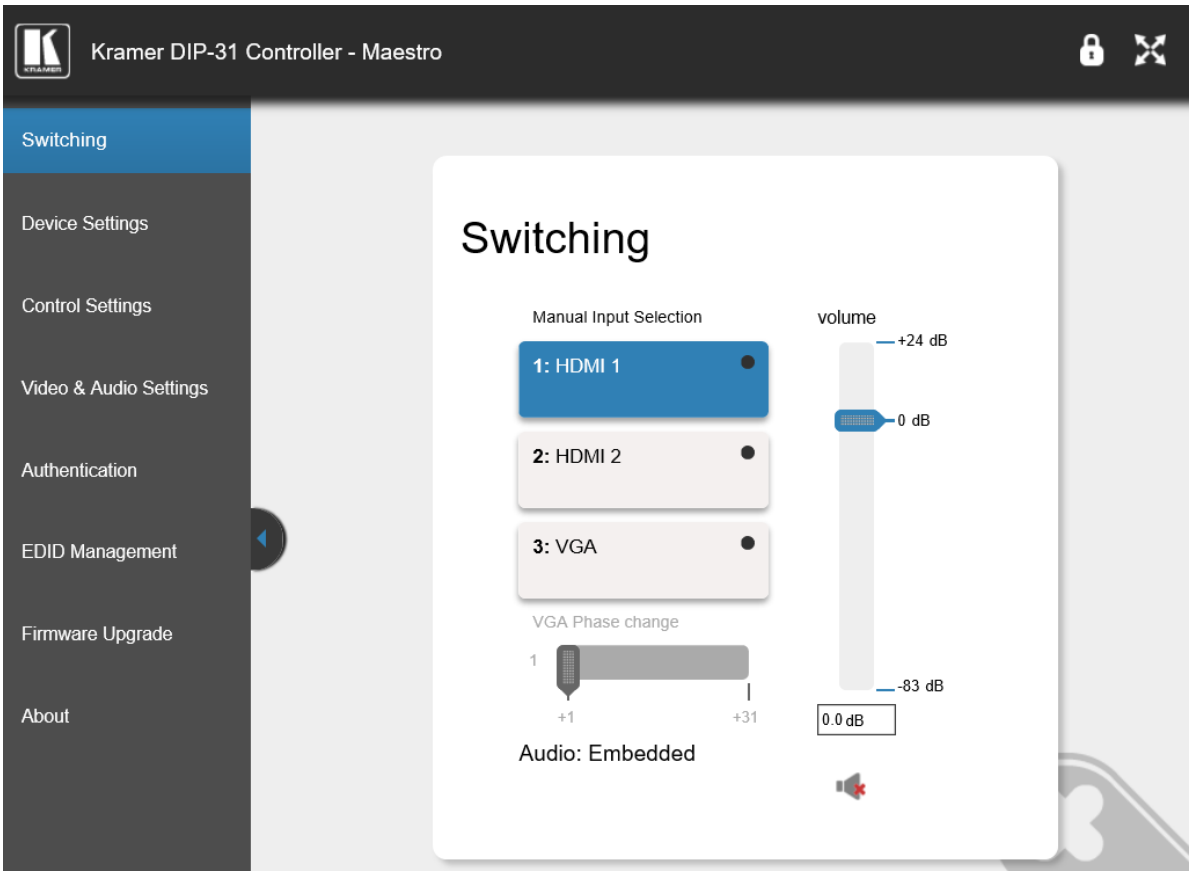


Figure 8: Main Switching Page

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

Item	Description
Page Selection Panel	Click one of the buttons to select a page.
Switching Selection	Switching and control section. Click one of the buttons to select a video input. Adjust the VGA phase shift. Adjust the audio volume. Select data routing mode.
Hide/Reveal Button	Click to hide or reveal the page selection panel.

There are eight Web pages described in the following sections:

Switching Page

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

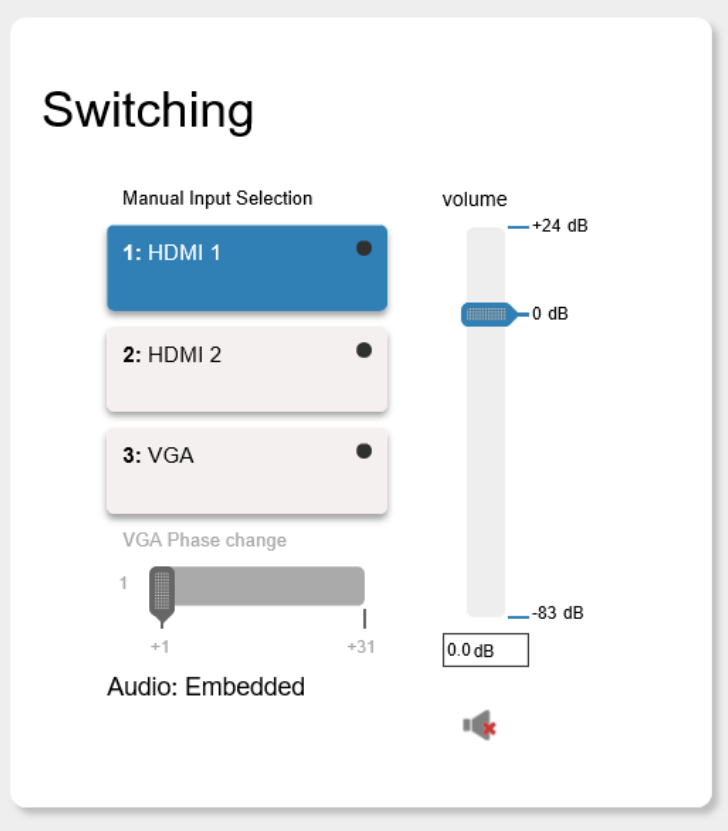


Figure 9: Switching Page

Item	Description
HDMI 1 Button	Click to select the HDMI 1 input. The button color indicates whether or not there is a live signal on the input.
HDMI 2 Button	Click to select the HDMI 2 input.
VGA Button	Click to select the VGA input.
VGA Phase Change Slider	Click and slide to the left or right to adjust the VGA phase change.
Audio Source: Indicator	Indicates the source of the audio that is transmitted on the output (see Setting Configuration DIP-switch on page 13).
Volume Slider	Click and slide up and down to increase or decrease the audio output volume.
Mute/Unmute Button	Click to mute or unmute the output audio.

Device Settings Page

The Device Settings page lets you:

- Set the unit name and view the model type, firmware version, serial number and MAC address.
- Edit IP settings, (for example, enable DHCP, set IP, mask and gateway addresses and set UDP or TCP ports).
- Save and load configurations.
- Reset the device to factory default settings.

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

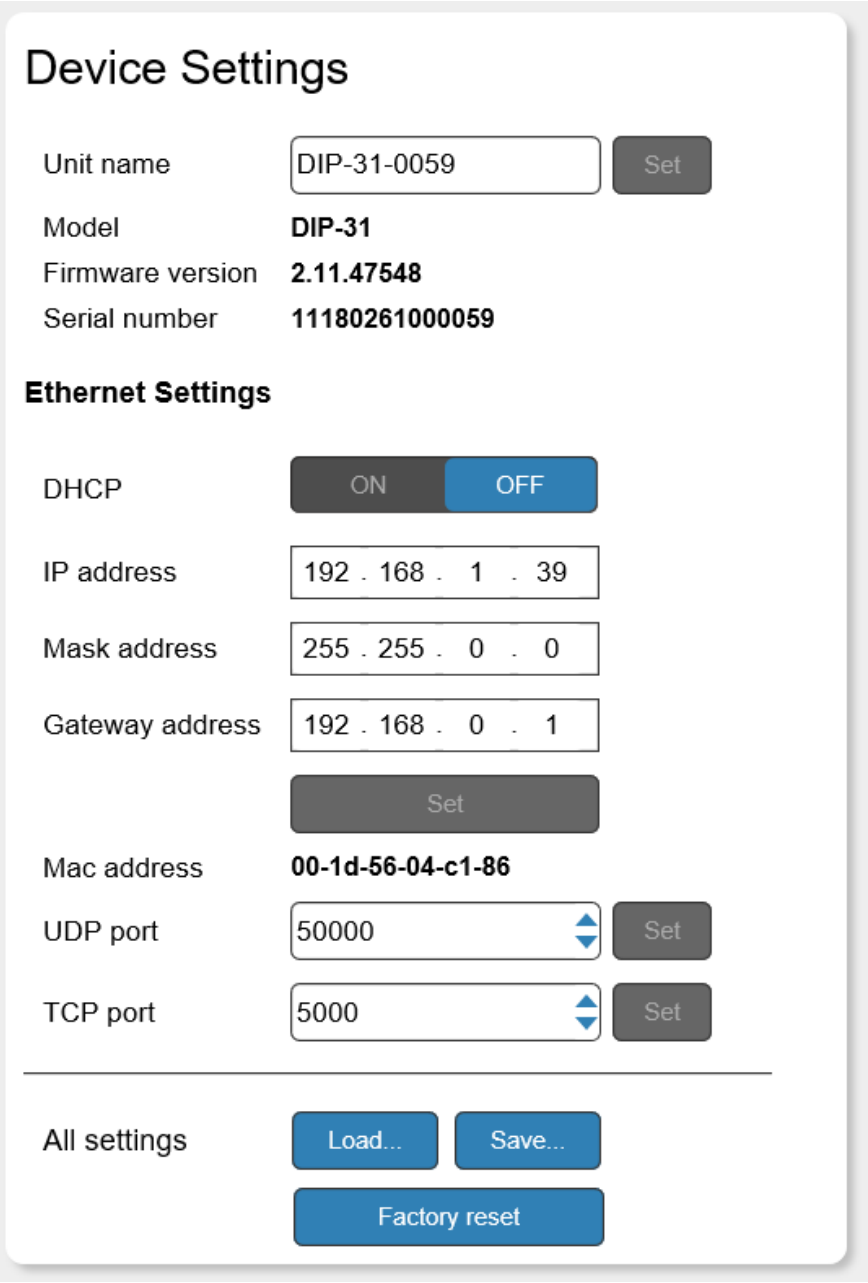


Figure 10: Device Settings Page

Item	Description
Unit Name	Enter a descriptive, easy to identify name for the **DIP-31**
Model	Displays the model of the device
Firmware version	Displays the firmware version of the device
Serial number	Displays the serial number of the device
Ethernet Settings	
DHCP ON/OFF buttons	Click ON to turn DHCP on; click OFF to turn DHCP off and use static IP addressing
IP address	The IP address of the device. To set a new IP address, enter the new valid IP address and click Set
Mask address	The network mask of the device. To set a new mask, enter the new valid mask and click Set
Gateway address	The network gateway for the device. To set a new network gateway, enter the new valid gateway and click Set
MAC address	Read-only field showing the MAC address
UDP port	The UDP port number of the device. To set a new UDP port number, enter the new valid port number or use the spin controls and click Set
TCP port	The TCP port number of the device. To set a new TCP port number, enter the new valid port number or use the spin controls and click Set
All settings	
Load & Save buttons	Click Load to retrieve a previously saved configuration, click Save to save the present configuration (see Loading and Saving Configurations on page 19) IP is not saved in configuration file
Factory reset button	Click to reset the device to factory default parameters. After the success message is displayed, turn the device off and on (see Resetting the Unit on page 20)

Loading and Saving Configurations

The **DIP-31** enables loading and saving device setting configurations to/from a connected laptop file. This is especially useful when setting up multiple **DIP-31** devices.

To load a configuration:

1. Click **Load**.
   The File Upload browser window appears.
2. Browse to the required file and click **Open**.
   The configuration is retrieved and the success message is displayed.

To save the current configuration:

1. Click **Save**.
   The Save Configuration success message is displayed.
2. Click **Download** to either open the file or save it to the required location.
   Or,
   Click **OK** to complete the procedure.

IP address is not saved in configuration file.

Resetting the Unit

To reset the DIP-31 to factory default parameters:

1. Click the **Factory Reset** button.
   A confirmation message is displayed.

Clicking **Cancel** exits the reset procedure without making any changes.

2. Click **OK**.
   A progress message is displayed. Upon completion, a success message is displayed.
3. Click **OK**.

Control Settings Page

Use the **Control Settings** page to access Kramer Maestro room automation. Maestro is a powerful tool that lets you to configure single-trigger room element automation scenarios without the need for complicated programming. To use room automation, you need to define triggers that, upon an event, will execute scripts which include a sequence of actions (commands, which can appear in different scenarios) that will be carried out via any defined ports.

Download the Kramer Maestro User Manual from the Kramer web site at www.kramerav.com/downloads/DIP-31 to learn how to use Kramer Maestro.

Note that all the ports, actions and triggers that are relevant to **DIP-31** are included in the Kramer Maestro, as well as ports, actions and triggers that are relevant to other Kramer devices.

The Panel tab in the Automation page is currently unavailable.

To access Kramer Maestro:

1. In the Navigation pane, select the **Control Settings** page.

   The Maestro page appears.

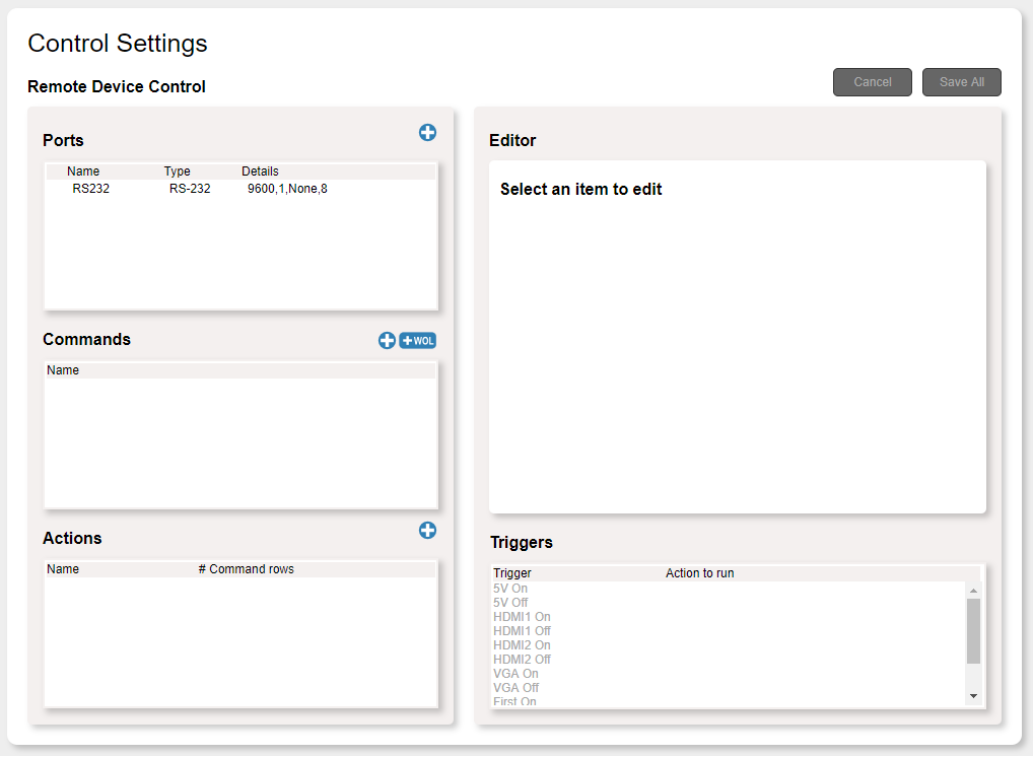


Figure 11: Automation – Maestro Page

2. Configure the ports, actions, scripts and triggers as described in the Kramer Maestro User Manual.

   Once the triggers are defined the trigger activates the scripts configured in the automation page. For example, when using the Scheduling trigger, you can activate a series of actions following a preset schedule.

Video and Audio Settings Page

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

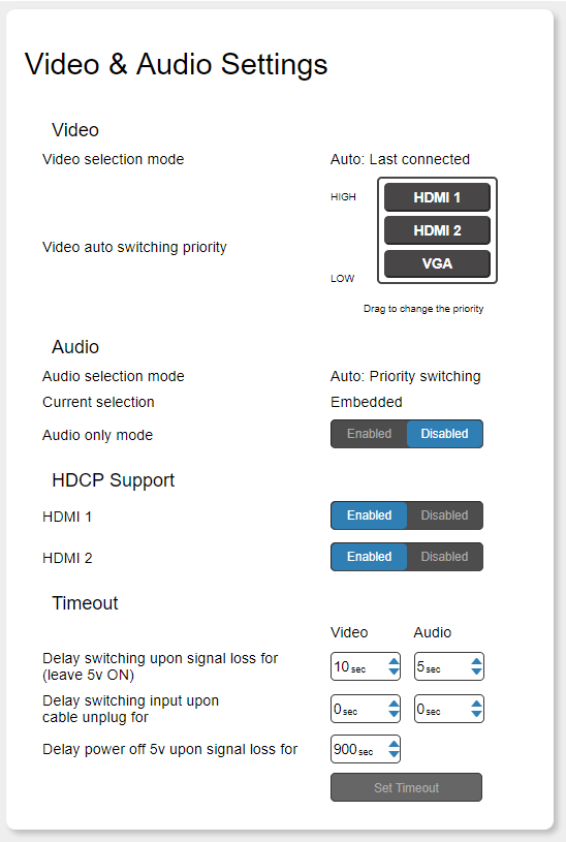


Figure 12: Video and Audio Settings Page

Item	Description
Video selection mode Indicator	Indicates the current video selection mode; manual, auto, or auto last connected.
Video auto switching priority Buttons	Click and drag the buttons to the required priority level to use when in auto mode.
Audio selection mode Indicator	Indicates the current audio selection; manual, auto, or auto last connected.
Current selection Audio Indicator	Indicates the current audio selection; Embedded or analog.
Audio only mode Buttons	Select to enable/disable audio only mode. Disabled-Audio only mode is disabled. Enabled-Audio only mode is enabled. When enabled, if there is no video signal in the input, the device outputs a black pattern and the analog audio input will continue to input any audio signal.
HDCP Support (on HDMI inputs) Buttons	Select HDCP support for HDMI 1 and HDMI 2 inputs. Disabled-HDCP encrypted content is not passed. Enabled-HDCP support is dictated by the display.
Delay switching upon signal loss for (leave 5V on) Box	Sets the delay for video and audio before switching (in auto mode) because of a signal loss on the currently selected input. Value in seconds (see Signal Loss and Unplugged Cable Timeouts on page 10).
Delay switching input upon cable unplug for Box	Sets the delay for video and audio before switching (in auto mode) because the currently selected input cable is unplugged. Value in seconds (see Signal Loss and Unplugged Cable Timeouts on page 10).
Delay power off 5V upon signal loss for Box	Sets the delay for turning off the 5V output because of a signal loss on the currently selected input. Value in seconds (see Signal Loss and Unplugged Cable Timeouts on page 10).

Authentication Page

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

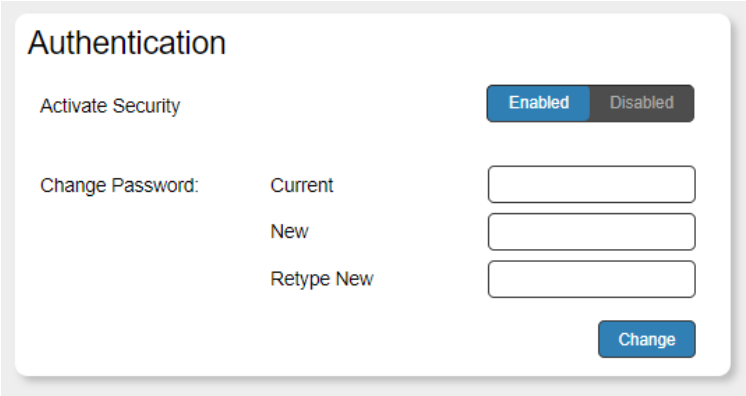


Figure 13: Authentication Page

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

EDID Management Page

The EDID Management page lets you copy EDID data to one or more of the inputs from the following sources:

- Output
- Input
- Default EDID
- EDID data file

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

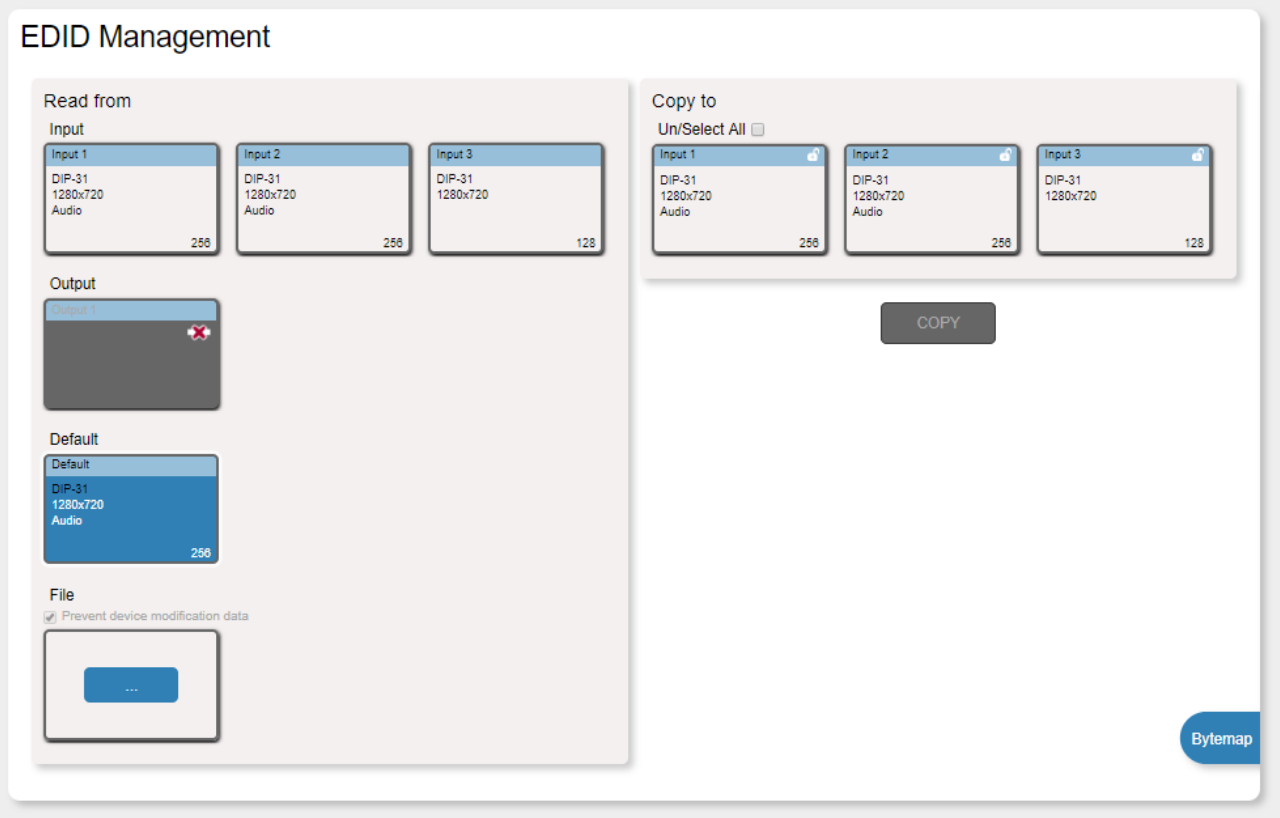


Figure 14: EDID Page

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

Item		Description
Read from Section	DEFAULT EDID button	Click to read the default EDID.
	Output 1 button	Click to read the EDID from output 1.
	Input 1 button	Click to read the EDID from input 1 (HDMI 1).
	Input 2 button	Click to read the EDID from input 2 (HDMI 2).
	Input 3 button	Click to read the EDID from input 3 (VGA).
	BROWSE button	Click to open the file browser to select an EDID file on your computer.
Short Summary Information Section		Displays the current election of EDID source, destination, video resolution, audio availability, and status.
Copy to Section	Inputs selection box	Check to select both inputs.
	Lock button	Locks the EDID on the currently selected input.
	Input 1 button	Click to select input 1 as the destination (HDMI 1).
	Input 2 button	Click to select input 2 as the destination (HDMI 2).
	Input 3 button	Click to select input 3 as the destination (VGA).
COPY Button		Click to copy the EDID from the selected source to the selected destination.
REFRESH Button		Click to refresh the display.

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

1. Click the source button from which to read the EDID (default, output, input, or EDID file). The button changes color and the EDID summary information reflects the selection and EDID data.
2. Click a destination input or select all inputs by checking the Inputs check-box.
   All selected input buttons change color and the EDID summary information reflects the selection and EDID data.
3. Click **Copy**.
   The “EDID was copied” success message is displayed and the EDID data is copied to the selected input(s).
4. Click **OK**.

Firmware Upgrade Page

The Firmware Upgrade page lets you upgrade the **DIP-31** software with the latest version.

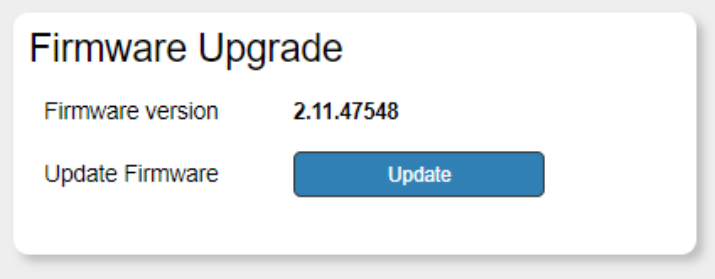


Figure 15: Firmware Upgrade page

To upgrade the firmware:

1. Click **Browse**.
   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 **DIP-31** may be damaged.

5. When the process is complete reboot the device.
   The firmware is upgraded.

About Page

The **DIP-31** About page displays the Web page version and Kramer Electronics Ltd company details.

Figure 16: About Us Page

Technical Specifications

INPUTS:	Video:	2 HDMI on HDMI connectors 1 VGA on a 15-pin HD (F) connector
	Audio:	1 Unbalanced stereo audio 1V RMS (nominal) on a 3.5mm jack
OUTPUTS:	Video:	1 HDMI on an HDMI connector
	Audio:	1 Unbalanced stereo audio 1V RMS (nominal) on a 3.5mm jack
PORTS:	1 RS-232 on a 3-pin terminal block for external device control (e.g., Display) 1 100BaseT Ethernet on an RJ-45 connector 1 RS−232 on a 3–pin terminal block for device serial control 1 USB on mini USB connector	
CONTROLS:	4 contact-closure switches on a 5–pin terminal block for remote device operation	
VIDEO:	Max. Data Rate: 10.2Gbps (3.4Gbps per graphic channel) Max. Resolution: 4K@60Hz (4:2:0) 24bpp resolution HDMI Support: Deep color, x.v.Color™, lip sync, HDMI uncompressed audio channels, Dolby TrueHD, DTS HD, 2K, 4K, and 3D as specified in HDMI 2.0 Compliance: HDCP 1.4	
ANALOG AUDIO:	Max. Level: 3.1 Vpp THD: 0.013% SNR: -70dB	
POWER SOURCE:	SOURCE: 12V DC,2A CONSUMPTION: 12V DC, 600mA	
OPERATING TEMPERATURE:	0° to +40°C (32° to 104°F)	
STORAGE TEMPERATURE:	–40° to +70°C (–40° to 158°F)	
HUMIDITY:	10% to 90%, RHL non-condensing	
COOLING:	Convection	
ENCLOSURE TYPE:	Aluminum	
DIMENSIONS:	18.75cm x 11.5cm x 2.54cm (7.38” x 4.53” x 1.0”) W, D, H	
WEIGHT:	0.43kg (0.95lbs) approx.	
SHIPPING DIMENSIONS:	34.5cm x 16.5cm x 5.2cm (13.6” x 6.5” x 2.0”) W, D, H	
SHIPPING WEIGHT:	1.03kg (2.3lbs) approx.	
ENVIRONMENTAL & REGULATORY COMPLIANCE:	RoHs, WEEE, and CE	
INCLUDED ACCESSORIES:	Power adapter	
WARRANTY:	7 years parts and labor	

Default IP Parameters

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

Default RS-232 Communication Parameters

Parameter	Values
Baud Rate	115200
Data Bits	1
Stop Bits	1
Parity	None
Command Format	ASCII

Default Logon Credentials

Parameter	Values
Name	Admin
Password	Admin

Supported HDMI Resolutions

Resolution	Refresh Rate (Hz)
640x480p	85Hz; 75Hz; 72Hz; 60Hz; 59.95Hz
720x480p	60Hz
720x480i	30Hz
720x576p	50Hz
800x600p	85Hz; 75Hz; 72Hz; 60Hz
848x480p	60Hz
852x480p	60Hz
1024x768p	85Hz; 75Hz; 70Hz; 60Hz
1152x864p	75Hz
1280x768p	60Hz
1280x800p	60Hz
1280x960	60Hz
1280x1024p	75Hz; 60Hz
1360x768p	60Hz
1366x768	60Hz; 50Hz
1400x1050p	60Hz
1440x900p	60Hz
1600x900p	60Hz
1600x1200p	60Hz
1680x1050p	60Hz
1920x1080p	50Hz; 60Hz; 30Hz; 24Hz;
1920x1080i	50Hz; 60Hz;
3840x2160	30Hz
4096x2160	30Hz

Supported VGA Resolutions

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

Default EDID

Each input on the **DIP-31** is loaded with a factory default EDID.

HDMI

```
Monitor
  Model name.....DIP-31
  Manufacturer..... KMR
  Plug and Play ID..... KMR1200
  Serial number..... n/a
  Manufacture date..... 2015, ISO week 255
  Filter driver..... None
  ------------------------
  EDID revision..... 1.3
  Input signal type..... Digital
  Color bit depth..... Undefined
  Display type..... RGB color
  Screen size..... 520 x 320 mm (24.0 in)
  Power management..... Standby, Suspend, Active off/sleep
  Extension blocs..... 1 (CEA-EXT)
  ------------------------
  DDC/CI..... 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
EIA/CEA-861 Information
  Revision number..... 3
  IT underscan..... Supported
  Basic audio..... Supported
  YCbCr 4:4:4..... Supported
  YCbCr 4:2:2..... Supported
  Native formats..... 1
  Detailed timing #1..... 1920x1080p at 60Hz (16:10)
    Modeline..... "1920x1080" 148.500 1920 2008 2052 2200 1080 1084 1089 1125 +hsync +vsync
  Detailed timing #2..... 1920x1080i at 60Hz (16:10)
    Modeline..... "1920x1080" 74.250 1920 2008 2052 2200 1080 1084 1094 1124 interlace +hsync +vsync
  Detailed timing #3..... 1280x720p at 60Hz (16:10)
    Modeline..... "1280x720" 74.250 1280 1390 1430 1650 720 725 730 750 +hsync +vsync
  Detailed timing #4..... 720x480p at 60Hz (16:10)
    Modeline..... "720x480" 27.000 720 736 798 858 480 489 495 525 -hsync -vsync
CE audio data (formats supported)
  LPCM    2-channel, 16/20/24 bit depths at 32/44/48 kHz
CE video identifiers (VICs) - timing/formats supported
    1920 x 1080p at  60Hz - HDTV (16:9, 1:1)
    1920 x 1080i at  60Hz - HDTV (16:9, 1:1)
    1280 x  720p at  60Hz - HDTV (16:9, 1:1) [Native]
     720 x  480p at  60Hz - EDTV (16:9, 32:27)
```

720 x 480p at 60Hz - EDTV (4:3, 8:9)
720 x 480i at 60Hz - Doublescan (16:9, 32:27)
720 x 576i at 50Hz - Doublescan (16:9, 64:45)
640 x 480p at 60Hz - Default (4:3, 1:1)
NB: NTSC refresh rate = (Hz*1000)/1001
CE vendor specific data (VSDB)
IEEE registration number. 0x000C03
CEC physical address..... 1.0.0.0
Maximum TMDS clock..... 165MHz
CE speaker allocation data
Channel configuration.... 2.0
Front left/right..... Yes
Front LFE..... No
Front center..... No
Rear left/right..... No
Rear center..... No
Front left/right center.. No
Rear left/right center... No
Rear LFE..... No
Report information
Date generated..... 09/08/2015
Software revision..... 2.60.0.972
Data source..... File
Operating system..... 6.1.7601.2.Service Pack 1
Raw data
00,FF,FF,FF,FF,FF,FF,00,2D,B2,00,12,00,00,00,00,FF,19,01,03,80,34,20,78,EA,B3,25,AC,51,30,B4,26,
10,50,54,FF,FF,80,81,8F,81,99,A9,40,61,59,45,59,31,59,71,4A,81,40,01,1D,00,72,51,D0,1E,20,6E,28,
55,00,07,44,21,00,00,1E,00,00,00,FD,00,38,4C,1E,53,11,00,0A,20,20,20,20,20,20,00,00,00,FC,00,44,
49,50,2D,32,30,0A,20,20,20,20,20,20,02,3A,80,18,71,38,2D,40,58,2C,45,00,07,44,21,00,00,1E,01,A0,
02,03,1B,F1,23,09,07,07,48,10,05,84,03,02,07,16,01,65,03,0C,00,10,00,83,01,00,00,02,3A,80,18,71,
38,2D,40,58,2C,45,00,07,44,21,00,00,1E,01,1D,80,18,71,1C,16,20,58,2C,25,00,07,44,21,00,00,9E,01,
1D,00,72,51,D0,1E,20,6E,28,55,00,07,44,21,00,00,1E,8C,0A,D0,8A,20,E0,2D,10,10,3E,96,00,07,44,21,
00,00,18,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,47

PC-UXGA

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

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

DDC/CI..... n/a

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

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

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

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

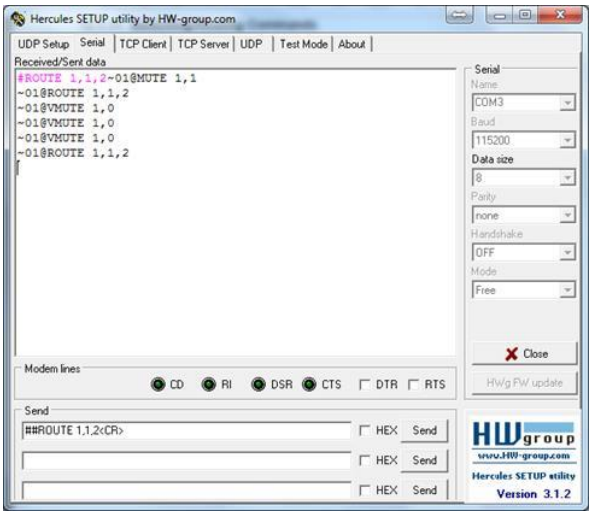
Report information
Date generated..... 04/04/2019
Software revision..... 2.90.0.1020
Data source..... File - NB: improperly installed
Operating system..... 10.0.16299.2

Raw data
00,FF,FF,FF,FF,FF,FF,00,2D,B2,00,12,00,00,00,00,FF,19,01,03,6E,34,20,78,EE,B3,25,AC,51,30,B4,26,
10,50,54,FF,FF,80,81,8F,81,99,A9,40,61,59,45,59,31,59,71,4A,81,40,01,1D,00,72,51,D0,1E,20,6E,28,
55,00,07,44,21,00,00,1E,00,00,00,FD,00,38,4C,1E,53,11,00,0A,20,20,20,20,20,20,00,00,00,FC,00,44,
49,50,2D,32,30,0A,20,20,20,20,20,20,02,3A,80,18,71,38,2D,40,58,2C,45,00,07,44,21,00,00,1E,00,AF

Protocol 3000

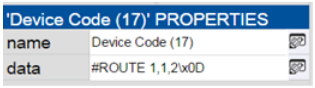
The **DIP-31** Automatic Video Switcher can be operated using the Kramer Protocol 3000 serial commands. The command framing varies according to how you interface with the **DIP-31**. For example, a basic video input switching command that routes a layer 1 video signal to HDMI out 1 from HDMI input 2 (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):

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 **DIP-31**. 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 Understanding Protocol 3000 on page 35.

- General syntax used for Protocol 3000 commands, see Kramer Protocol 3000 Syntax on page 36.
- Protocol 3000 commands available for the **DIP-31**, see Protocol 3000 Commands on page 37.

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.

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**

Protocol 3000 Commands

This section includes the following commands:

System Commands

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

#

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			

BUILD-DATE

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

FACTORY

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

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			

MODEL

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

PROT-VER

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

RESET

Functions		Permission	Transparency
Set:	**RESET**	Administrator	Public
Get:	-	-	-
Description		**Syntax**	
Set:	Reset device	#**RESET**CR	
Get:	-	-	
Response			
~nn@**RESET**SP**OK**CR LF			
Parameters			
Response Triggers			
Notes			
To avoid locking the port due to a USB bug in Windows, disconnect USB connections immediately after running this command. If the port was locked, disconnect and reconnect the cable to reopen the port.			
K-Config Example			
"#RESET",0x0D			

SN

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

VERSION

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

AV-SW-MODE

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

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).
This does not apply to VGA input.

K-Config Example

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

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			

DPSW-STATUS

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

FPGA-VER

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

HDCP-MOD

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

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*,*status*CR LF			
Parameters			
stage – 0 (input), 1 (output) *stage_id* – for input stage: 1 (HDMI In 1), 2 (HDMI In 2), for output stage: 1 (HDMI Out) *status* – signal encryption status: 0 (Off), 1 (On)			
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			

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			

NAME-RST

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

PRIORITY

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

SIGNAL

Functions		Permission	Transparency
Set:	-	-	-
Get	**SIGNAL?**	End User	Public
Description		**Syntax**	
Set:	-	-	
Get:	Get input signal lock status	#**SIGNAL?**SP*inp_id*CR	
Response			
~nn@**SIGNAL**SP*inp_id*,*status*CR LF			
Parameters			
inp_id – input number: 1 (HDMI In 1), 2 (HDMI In 2), 3 (PC In) *status* – lock status according to signal validation: 0 (Off), 1 (On)			
Response Triggers			
After execution, a response is sent to the com port from which the Get was received A response is sent after every change in input signal status from On to Off or from Off to On			
Notes			
K-Config Example			
Get the input signal lock status of HDMI In 2: "#SIGNAL? 2",0x0D			

Authentication Commands

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

LOGIN

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

Response

Set: ~nn**@LOGIN**SP*login_level*,*password*SP**OK**CR LF

or

~nn**@LOGIN**SPERRSP004CR LF (if bad password entered)

Get: ~nn**@LOGIN**SP*login_level*CR LF

Parameters

login_level – level of permissions required: User, Admin

password – predefined password (by PASS command). Default password is an empty string

Response Triggers

Notes

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

When set, login must be performed upon each connection

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

K-Config Example

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

"#LOGIN Admin,33333",0x0D

LOGOUT

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

PASS

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

SECUR

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

Switching/Routing Commands

Command	Description
ROUTE	Set/get layer routing

ROUTE

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

Response

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

Parameters

layer – 1 (video)
dest – 1 (HDMI Out)
src – 1 (HDMI In 1), 2 (HDMI In 2), 3 (PC In)

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 video to HDMI Out from HDMI In 2:
"#ROUTE 1,1,2",0x0D

Video Commands

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

VGA-PHASE

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

Response

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

Parameters

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

Response Triggers

Notes

K-Config Example

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

VMUTE

Functions		Permission	Transparency
Set:	**VMUTE**	End User	Public
Get:	**VMUTE?**	End User	Public
Description		**Syntax**	
Set:	Set enable/disable video on output	#**VMUTE**SP*output_id*,*flag*CR	
Get:	Get video on output status	#**VMUTE?**SP*output_id*SP CR	

Response

Set / Get: ~nn@**VMUTE**SP*output_id*,*flag*CR LF

Parameters

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

Response Triggers

Notes

K-Config Example

Disable the video output on HDMI Out:
"#VMUTE 3,0",0x0D

Audio Commands

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

AUD-EMB

Functions		Permission	Transparency
Set:			
Get:	**AUD-EMB?**	End User	Public
Description		**Syntax**	
Set:			
Get:	Get audio in video embedding status	#**AUD-EMB?**SP*in,out*CR	
Response			
~nn@**AUD-EMB**SP*in,out,status*CR LF			
Parameters			
in – embedded audio input number: 1 (Audio In) *out* – video output number in which audio is embedded: 1 (HDMI Out) *status* – embedded status: 1 (On), 0 (Off)			
Response Triggers			
A response is sent to the com port from which the get command was received After execution, a response is sent to all com ports if AUD-EMB was set by any other external control device (button press, device menu and similar)			
Notes			
K-Config Example			
"#AUD-EMB? 1,1",0x0D			

AUD-LVL

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

Response

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

Parameters

stage – 1 (audio output)
channel – output channel number of selected stage: 1 (Audio Out)
volume – audio volume: -83 to +24 (dB value), ++ (increase current value by 0.5dB), -- (decrease current value by 0.5dB)

Response Triggers

Notes

All values are in percentages
A minus sign precedes negative values

K-Config Example

Set the volume of the Audio Out (1) output to 12 decibels:
"#AUD-LVL 1,1,12",0x0D

AUD-SIGNAL

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

Response

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

Parameters

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

Response Triggers

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

Notes

K-Config Example

"#AUD-SIGNAL? 1",0x0D

MUTE

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

Communication Commands

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

ETH-PORT

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

Response

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

Parameters

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

Response Triggers

Notes

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

K-Config Example

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

NET-DHCP

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

NET-GATE

Functions		Permission	Transparency
Set:	**NET-GATE**	Administrator	Public
Get:	**NET-GATE?**	End User	Public
Description		Syntax	
Set:	Set gateway IP	#**NET-GATE**SP*ip_address*CR	
Get:	Get gateway IP	#**NET-GATE?**CR	
Response			
~nn@**NET-GATE**SP*ip_address*CR LF			
Parameters			
ip_address – gateway IP address, in the following format: xxx.xxx.xxx.xxx			
Response Triggers			
Notes			
A network gateway connects the device via another network, possibly over the Internet. Be careful of security problems. Consult your network administrator for correct settings.			
K-Config Example			
Set the gateway IP address to 192.168.0.1: "#NET-GATE 192.168.000.001",0x0D			

NET-IP

Functions		Permission	Transparency
Set:	**NET-IP**	Administrator	Public
Get:	**NET-IP?**	End User	Public
Description		Syntax	
Set:	Set IP address	#**NET-IP**SP*ip_address*CR	
Get:	Get IP address	#**NET-IP?**CR	
Response			
~nn@**NET-IP**SP*ip_address*CR LF			
Parameters			
ip_address – IP address, in the following format: xxx.xxx.xxx.xxx			
Response Triggers			
Notes			
Consult your network administrator for correct settings			
K-Config Example			
Set the IP address to 192.168.1.39: "#NET-IP 192.168.001.039",0x0D			

NET-MAC

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

NET-MASK

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

EDID Handling Commands

Additional EDID data functions can be performed via the **DIP-31** web pages or a compatible EDID management application, such as Kramer EDID Designer (see www.kramerav.com/product/DIP-31).

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

CPEDID

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

Response

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

Parameters

src_type – EDID source type (usually output): 0 (input), 1 (output), 2 (default EDID)

src_id – for input source: 1 (HDMI In 1), 2 (HDMI In 2), 3 (PC In), for output source: 1 (HDMI Out), for default EDID source: 0 (default EDID)

dst_type – EDID destination type (usually input): 0 (input), 1 (output), 2 (default EDID)

dest_bitmap – bitmap representing destination IDs. Format: XXXX…X, where X is hex digit. The binary form of every hex digit represents corresponding destinations. Setting '1' indicates that EDID data is copied to this destination. Setting '0' indicates that EDID data is not copied to this destination.

Response Triggers

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

Notes

Destination bitmap size depends on device properties (for 64 inputs it is a 64-bit word)
Example: bitmap 0x0013 means inputs 1, 2 and 5 are loaded with the new EDID.
In this device, if the destination type is input (0), the bitmap size is 3 bits, for example bitmap 0x5 means inputs 1 and 3 are loaded with the new EDID.

K-Config Example

Copy the EDID data from the 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

LOCK-EDID

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

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What is Not Covered

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KRAMER

P/N: 2900-300630 Rev: 8

SAFETY WARNING

Disconnect the unit from the power supply before opening and servicing

For the latest information on our products and a list of Kramer distributors, visit our Web site where updates to this user manual may be found.

We welcome your questions, comments, and feedback.

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