KRAMER

USER MANUAL

MODEL:

DIP-30 Automatic Video Switcher

P/N: 2900-300495 Rev 2

www.kramerAV.com

DIP-30 Automatic Video Switcher Quick Start Guide

This guide helps you install and use your product for the first time. For more detailed information, go to http://www.kramerav.com/manual/DIP-30 to download the latest manual or scan the QR code on the left.

Step 1: Check what's in the box

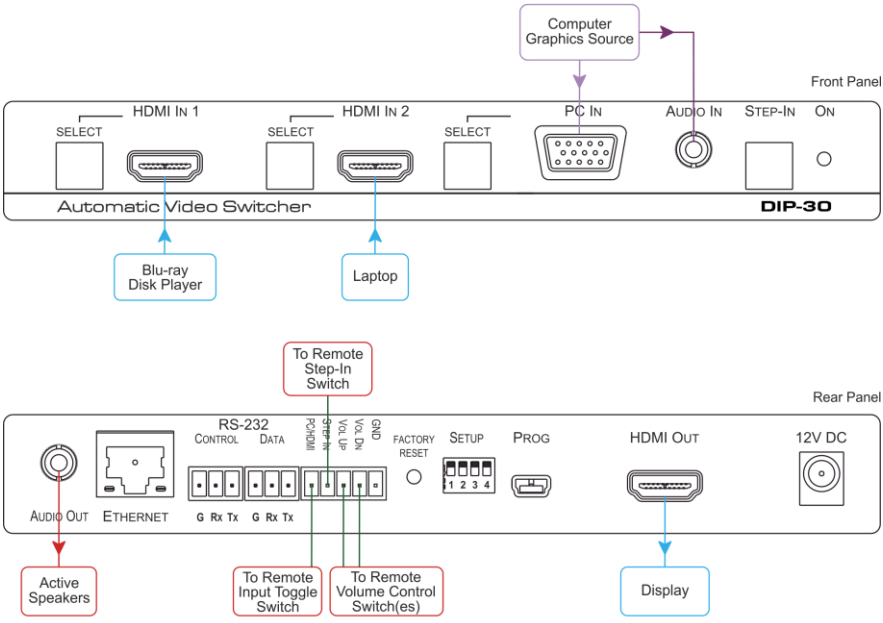
- The **DIP-30** Automatic Video Switcher
- 1 Power supply
- 4 Rubber feet
- 1 Quick start guide
- ADC-DPM/HF DisplayPort (M) to HDMI (F) adapter cable

Step 2: Install the DIP-30

Mount the device in a rack (using the optional **RK-T2B** rack adapter available for purchase) or attach the rubber feet and place it on a shelf.

Step 3: Connect the inputs and outputs

Always switch off the power to each device before connecting it to your **DIP-30**.



Step 4: Set the DIP-switches

Video Input Selection

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

Audio Input Selection

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

Note: After changing a DIP-switch you must power-cycle the device to impliment the changes.

Step 5: Connect the power

Connect the power adapter to the **DIP-30**, and plug the adapter into the mains power. Power on all attached devices.

Step 6: Operate the DIP-30

You can operate the **DIP-30** via the front panel buttons, remote P3000 commands, or by using a Web browser to access the built in Web pages.

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 Web Pages Logon Authentication

Parameter	Values
Name	Admin
Password	Admin

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1 Introduction

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

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

Congratulations on purchasing your Kramer **DIP-30** *Automatic Video Switcher* which are part of the Kramer Audio Distribution System and are ideal for:

- Display systems requiring simple, automatic input selection
- Multimedia and presentation source selection
- Video distribution in hotel rooms and schools

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 http://www.kramerav.com/downloads/DIP-30 to check for up-to-date user manuals, application programs, and to check if firmware upgrades are available (where appropriate).

2.1 Achieving the Best Performance

To achieve the best performance:

- Use only good quality connection cables (we recommend Kramer high-performance, high-resolution cables) to avoid interference, deterioration in signal quality due to poor matching, and elevated noise levels (often associated with low quality cables)
- Do not secure the cables in tight bundles or roll the slack into tight coils
- Avoid interference from neighboring electrical appliances that may adversely influence signal quality
- Position your **DIP-30** *Automatic Video Switcher* 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 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

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 *http://www.kramerelectronics.com/support/recycling/*.

3 Overview

The **DIP-30** accepts two HDMI signals and a PC graphics video input, an Ethernet signal, serial data, and an unbalanced stereo audio input (which is embedded into the output signal), and transmits the signal via HDMI cable to a display or an HDMI switcher, (for example, the **VS-62H** which also supports the step-in function).

The **DIP-30** *Automatic Video Switcher* features:

- Support for 4K UHD (data rate of up to 10.2Gbps)
- Automatic live input detection based on video clock presence
- Automatic input selection based on priority selection or last connected input
- Manual input selection
- Automatic analog audio detection and embedding
- Control via Kramer Protocol 3000 and embedded Web pages over a LAN
- HDTV support
- HDMI with Deep Color, x.v.Color™ and 3D
- HDCP compliancy—works with sources that support HDCP repeater mode
- I-EDIDPro™ Kramer Intelligent EDID Processing™ – Intelligent EDID handling & processing algorithm ensures Plug and Play operation for HDMI systems
- A lockable EDID
- Step-in control when connected to a device that provides step-in support
- Remote control via contact-closure switches
- Equalization and re-clocking of the data
- Support for digital audio formats

4 Defining the Automatic Video Switcher

Figure 1 defines the front panel of the **DIP-30**.

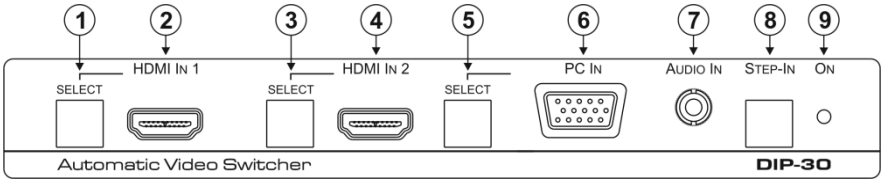

Figure 1: DIP-30 Front Panel

#	Feature		Function
1	*HDMI IN 1*	*SELECT* Button	Press to select the HDMI 1 input. When HDMI 1 is selected, the button: • Lights red when external audio is selected • Lights green when HDMI 1 is selected
2		HDMI 1 Connector	Connect to the first HDMI source
3	*HDMI IN 2*	*SELECT* Button	Press to select the HDMI 2 input. When HDMI 2 is selected, the button: • Lights red when external audio is selected • Lights green when HDMI 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-30**.

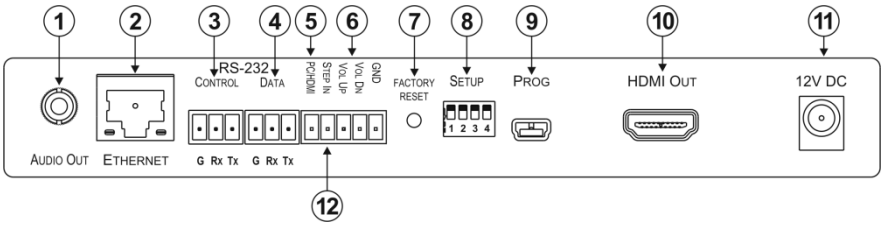

Figure 2: DIP-30 Rear Panel

#	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	For future use
5	*PC/HDMI* Remote Toggle Switch Terminal Block		Connect to a remote 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 Section 8.1)
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

5 Connecting the DIP-30 Automatic Video Switcher

Always switch off the power to each device before connecting it to your **DIP-30**. After connecting your **DIP-30**, connect the power to each of them and then switch on the power to each device.

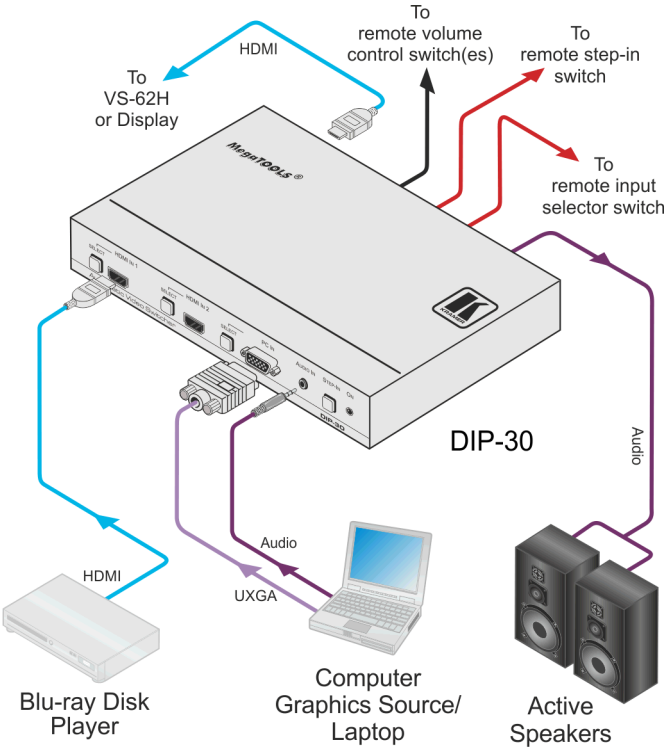

Figure 3: Connecting the DIP-30

To connect the DIP-30 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-30** to an HDMI compatible switcher or display.

5. Connect the AUDIO OUT 3-pin terminal block on the rear panel of the **DIP-30** to the unbalanced, stereo audio acceptor, (for example, active speakers).

6. Connect the STEP IN 2-way terminal block to a momentary, contact-closure switch, (see Section 5.1).

7. Connect the PC/HDMI 2-way terminal block to a momentary, contact-closure switch for input selection, (see Section 5.1).

8. Connect the Vol Up/Vol Down 3-pin terminal block to remote, contact-closure, volume control switches.

9. Connect the power adapter to the **DIP-30** and to the mains power, (not shown in Figure 3).

5.1 Connecting the Remote Control Switches

You can connect remote, momentary-contact contact-closure switches to the terminal block on the rear panel of the **DIP-30** to control the device.

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

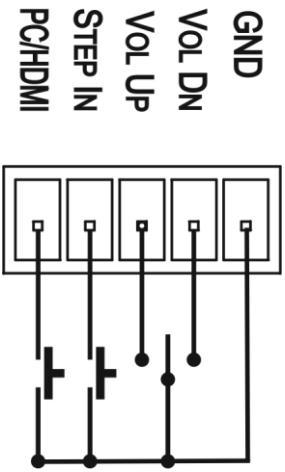

Figure 4: Remote Switches Terminal Block

#	Feature	Function
1	PC/HDMI—input selection/VGA phase shift adjustment	Short press—Input toggle Long press—Adjusts the VGA phase shift, (see Section 6.4)
2	STEP IN	Activates the step-in function if relevant
3	VOL UP—analog audio output volume increase control, (see Section 7.3)	Short press—Increases the volume one step Long press—Increases the volume from 0% to 100% in 10 seconds
4	VOL DN—analog audio output volume decrease control, (see Section 7.3)	Short press—Decreases the volume one step Long press—Decreases the volume from 100% to 0% in 10 seconds
G	GND	Connect to the common side of the switches

6 Principles of Operation

The **DIP-30** selects video and audio inputs based on the rules described below.

6.1 Input Selection

The video mode selection is set by the DIP-switches (see Section 8.1) to either of the following modes:

- Manual
- Auto—Last connected or priority mode

In manual mode 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
- The 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-30** 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.

Note: 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.

6.2 Signal Loss and Unplugged Cable Timeouts

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

Both timeouts are configurable, (see Section 8.1).

Note: Analog audio is not output when there is no display connected. If a display is connected analog audio is output even in the absence of a video signal.

6.3 Audio Signal Control

The Option DIP-switches 3 and 4 (see Section 8.1) control the manner in which audio is handled.

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

Selected Video Input	HDMI Embedded Audio Detected	Analog Audio Detected	DIP-switch 3	DIP-switch 4	Audio on 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.

Note: The default timeout for audio switching when the input signal is lost is five seconds. This can be changed using either P3000 commands or the Web pages.

6.4 VGA Phase Shift

To 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 Section 9.1)
- Protocol 3000 commands over RS-232 (see Section 12.2)

7 Operating the DIP-30

The **DIP-30** can be operated using any of the following methods:

- Front panel buttons
- Protocol 3000 command, (see Section 12.2)
- Remote contact-closure switch, (see Section 5.1)
- Web pages, (see Section 9)

7.1 Locking the 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 Section 12.2)
- Use the Web pages, (see Section 9)

7.2 Resetting the DIP-30

The **DIP-30** can be reset to factory default by either:

- Using the button on the rear panel
- Using the Web pages, (see Section 9)

To perform a soft reset of the DIP-30:

- Briefly press the Reset button.
  The device resets

To reset the DIP-30 to factory default parameters:

- Press and hold the Reset button for five seconds.
  The device is reset to factory default parameters

7.3 Analog Audio Output Volume Control

The analog audio output volume can be controlled using the Web pages, (see Section 9.1) or via the remote, contact-closure switches connected to pins 3 and 4 of the Remote terminal block, (see Section 5.1).

The number of up/down volume steps per press is detailed in the table below.

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

8 Configuring the DIP-30

8.1 Setting the Configuration DIP-switch

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

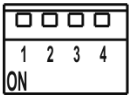

Figure 5: The Configuration DIP-switch

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

Video Switching Selection

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

Audio Switching Selection

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

8.2 Video Switching Timeouts

When the **DIP-30** is configured for auto switching, the timeouts before a new input is automatically selected can be changed as shown in the table below.

	Signal Loss, Power Present	Signal and Power Loss
Default Timeout	10 seconds	0 seconds

Note: The minimum value of “Signal Loss, Power Present” is five seconds.

9 Operating the DIP-30 Remotely Using the Web Pages

The **DIP-30** can be operated remotely using the embedded Web pages. The Web pages are accessed using a Web browser and an Ethernet connection.

Before attempting to connect:

- Ensure that your browser is supported (see Section 10.1)
- Ensure that JavaScript is enabled

9.1 Browsing the DIP-30 Web Pages

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

To browse the DIP-30 Web pages:

1. Open your Internet browser.
2. Type the IP number of the device (see Section 10.1) in the Address bar of your browser.

Note: If authentication is enabled, the following window appears (Figure 6) and you must enter the valid username and password to access the Web pages. For default authentication details, see Section 10.2.

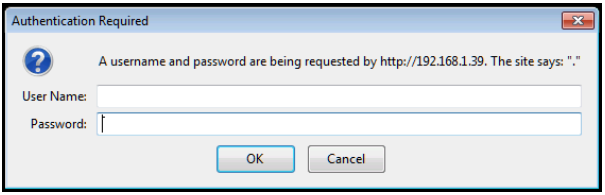

Figure 6: Entering Logon Credentials

Following a successful logon, the screen shown in Figure 7 is displayed.

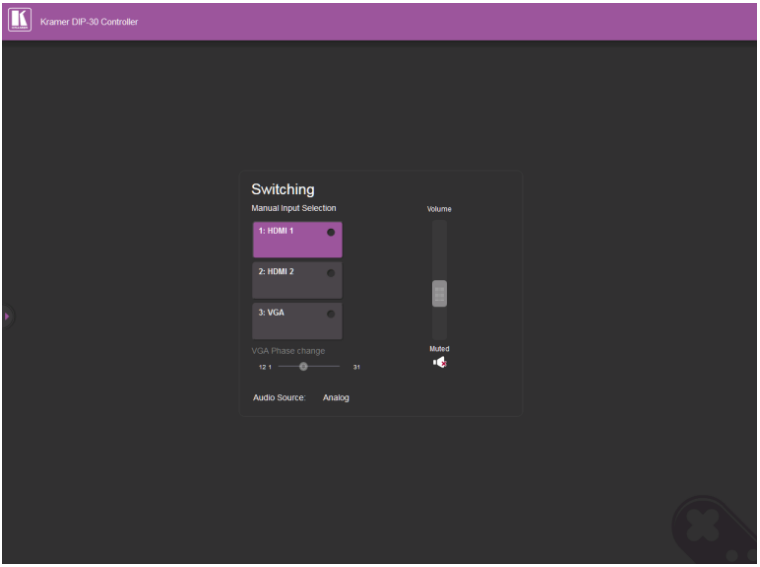

Figure 7: The Default Page

Click the Reveal button to open the left hand side page panel.

The Switching page appears as shown in Figure 8.

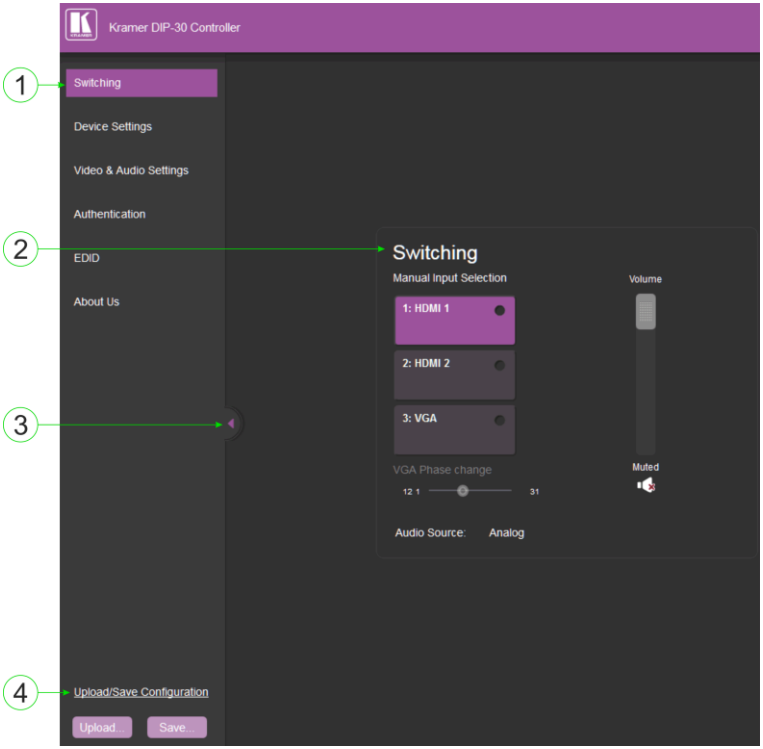

Figure 8: The Main Switching Page

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

#	Item	Description
1	Page Selection Panel	Click one of the buttons to select a page
2	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
3	Hide/Reveal Button	Click to hide or reveal the page selection panel
4	Upload/Save Configuration Area	Click one of the buttons to save or retrieve a configuration, (see Section 9.1.1)

There are six Web pages described in the following sections:

- Switching (see Section 9.2)
- Device Settings (see Section 9.3)
- Video and Audio Settings (see Section 9.4)
- Authentication (see Section 9.5)
- EDID (see Section 9.6)
- About Us (see Section 9.7)

9.1.1 The Upload/Save Configuration Facility

The Upload/Save Configuration facility (see item 4 in Figure 8) lets you retrieve and save a configuration.

To upload a configuration:

1. Click the Upload button.
   The File Upload browser window appears.

2. Browse to the required file and press Open.
   The configuration is retrieved and the success message is displayed.

To save the current configuration:

1. Click the Save button.
   The Save Configuration success message is displayed.

2. Do either of the following:

   - Click Download to either open the file or save it to the required location
     —OR—
   - Click OK to complete the procedure

9.2 The Switching Page

The Switching page lets you select a video input manually, adjust the VGA phase shift, and adjust the audio volume. It also displays the current audio source.

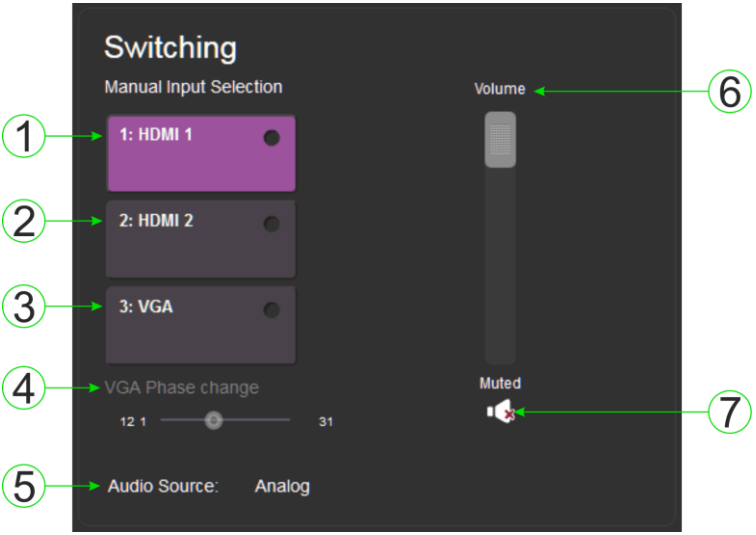

Figure 9: The Switching Page

#	Item	Description
1	*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
2	*HDMI 2* Button	Click to select the HDMI 2 input
3	*VGA* Button	Click to select the VGA input
4	*VGA Phase Change* Slider	Click and slide to the left or right to adjust the VGA phase change
5	*Audio Source:* Indicator	Indicates the source of the audio that is transmitted on the output
6	*Volume* Slider	Click and slide up and down to increase or decrease the audio output volume
7	Mute Button	Click to mute or unmute the output audio

9.3 The Device Settings Page

The Device Settings page lets you:

- View some of the device characteristics, (for example, model and Web version)
- Edit IP settings, (for example, name and IP address)
- Upgrade the firmware
- Reset the device to factory default settings

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

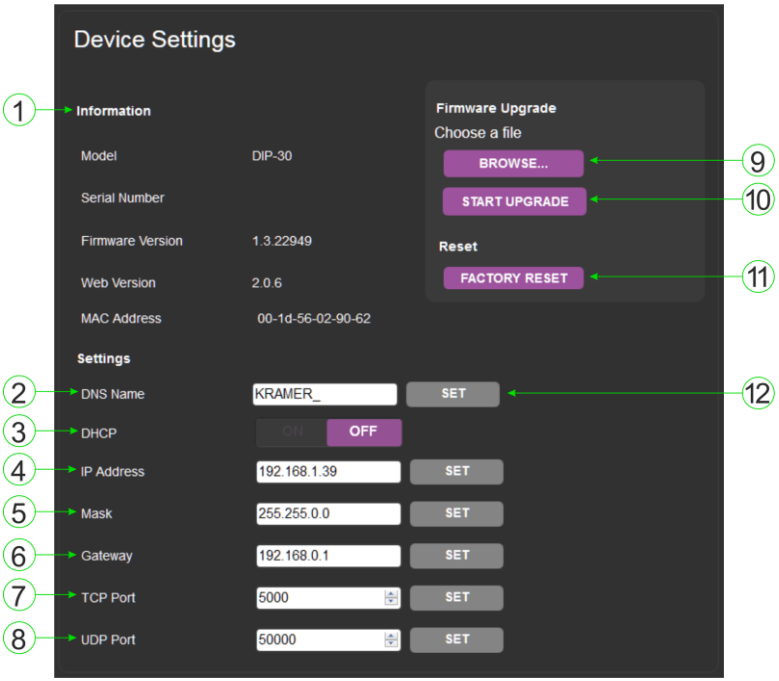

Figure 10: The Device Settings Page

#	Item		Description
1	Information Section		Displays information regarding the device, such as, the model, serial number, and MAC address
2	DNS name		The DNS name of the device. To set a new name, enter the new alphanumeric name and click Set. (For restrictions regarding the name, see Section 10.2)
3	DHCP Buttons		Click ON to turn DHCP on; click OFF to turn DHCP off and use static IP addressing
4	IP address		The IP address of the device. To set a new IP address, enter the new valid IP address and click Set
5	Mask		The network mask of the device. To set a new mask, enter the new valid mask and click Set
6	Gateway		The network gateway for the device. To set a new network gateway, enter the new valid gateway and click Set
7	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
8	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
9	Firmware upgrade Section	BROWSE button	Click to open a window to browse to the new firmware file
10		START UPGRADE button	Click to start the upgrade process following the selection of the new firmware file
11	Factory Reset Button		Click to reset the device to factory default parameters. After the success message is displayed, power cycle the device
12	Set Button		Click to store a changed parameter. **Note**: If you do not click the Set button, the new parameter is not saved

To upgrade the firmware:

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

2. Browse to the required file.

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

4. Click Start Upgrade.
   The firmware file is loaded and a progress bar is displayed.

Do not interrupt the process or the **DIP-30** may be damaged.

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

To reset the DIP-30 to factory default parameters:

1. Click the Factory reset button.
   The confirmation message is displayed.

2. Click OK to continue or Cancel to exit the procedure.

3. Click OK.
   The progress message is displayed.
   On completion, the success message is displayed.

4. Click OK.

9.4 The Video and Audio Settings Page

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

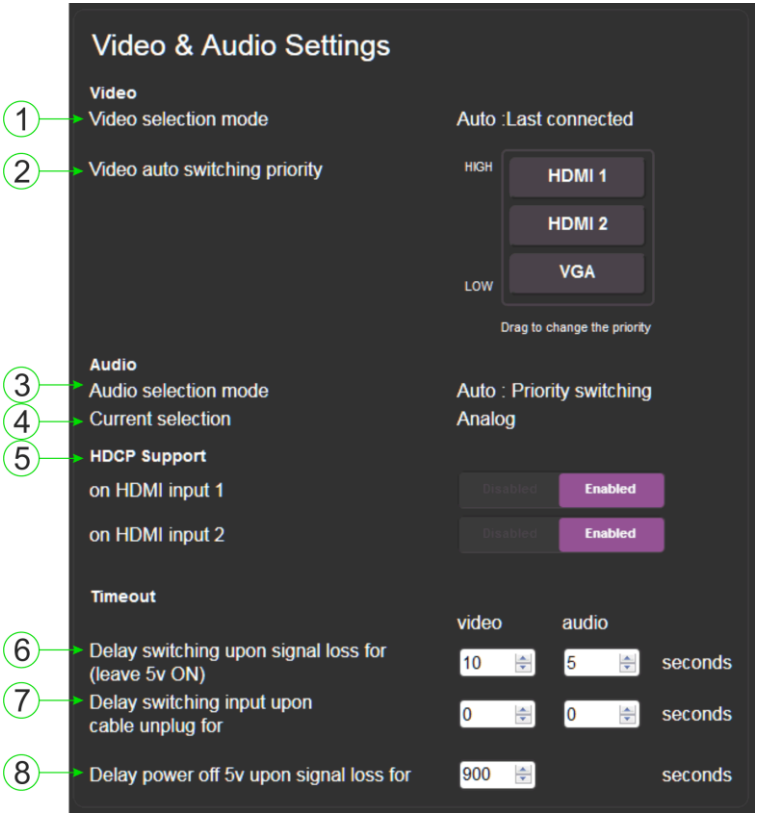

Figure 11: The Video and Audio Settings Page

#	Item	Description
1	*Video selection mode* Indicator	Indicates the current video selection mode; Manual, Auto, or Auto Last connected
2	*Video auto switching priority* Buttons	Click and drag the buttons to the required priority level to use when in auto mode, top is highest priority and bottom is lowest priority
3	*Audio selection mode* Indicator	Indicates the current audio selection mode; Manual, Auto, or Auto Priority switching

#	Item	Description
4	*Current selection* Audio Indicator	Indicates the current audio selection; Embedded or Analog
5	*HDCP Support* (on HDMI input) Buttons	Select HDCP support for HDMI 1 and HDMI 2 Disabled—HDCP encrypted content is not passed Enabled—HDCP support is dictated by the display
6	*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
7	*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
8	*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 minutes

9.5 The Authentication Page

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

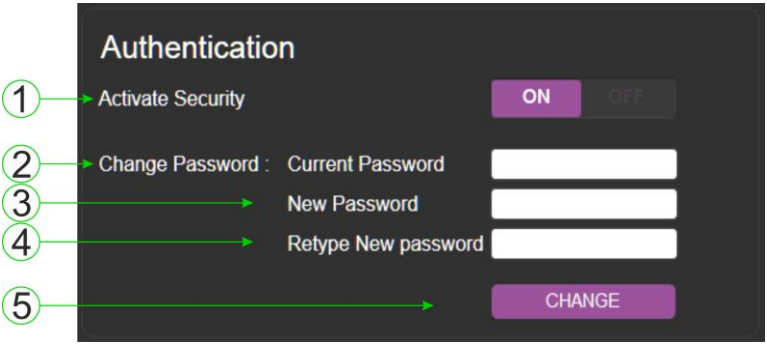

Figure 12: The Authentication Page

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

9.6 The EDID Page

The EDID 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.

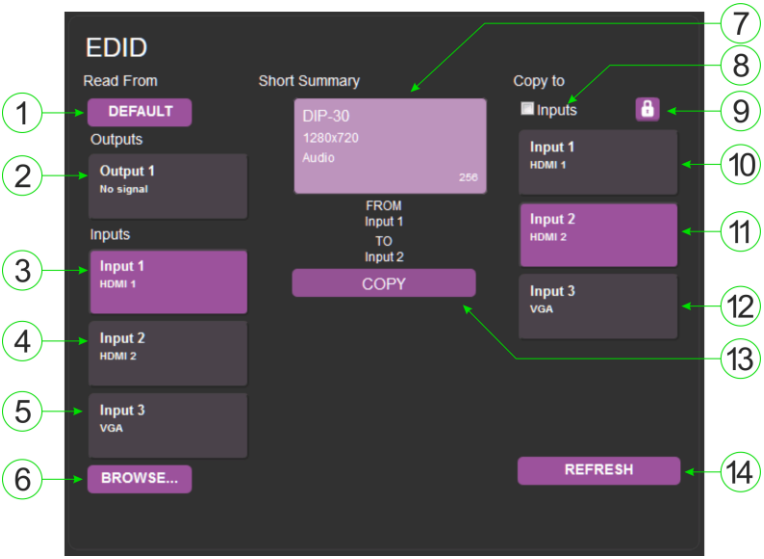

Figure 13: The EDID Page

Note: The display is not updated automatically when the status of an EDID changes on the device caused by outputs being exchanged. Click Refresh to update the display, (see item 14 in the following table).

#	Item		Description
1	*Read from* Section	*DEFAULT* EDID button	Click to read the default EDID
2		*Output 1* button	Click to read the EDID from output 1
3		*Input 1* button	Click to read the EDID from input 1 (HDMI 1)
4		*Input 2* button	Click to read the EDID from input 1 (HDMI 2)
5		*Input 3* button	Click to read the EDID from input 2 (VGA)
6		*BROWSE* button	Click to open the file browser to select an EDID file on your computer
7	*Short Summary* Information Section		Displays the current election of EDID source, destination, video resolution, audio availability, and status
8	*Copy to* Section	*Inputs* selection box	Check the box to select all inputs
9		Lock button 	Click to lock the EDID on the currently selected input. Click again to unlock the EDID
10		*Input 1* button	Click to select input 1 as the destination (HDMI 1), (you can select more than one input at the same time)
11		*Input 2* button	Click to select input 2 as the destination (HDMI 2)
12		*Input 3* button	Click to select input 3 as the destination (VGA)
13	*COPY* Button		Click to copy the EDID from the selected source to the selected destination
14	*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 the Copy button.
   The “EDID was copied” success message is displayed and the EDID data is copied to the selected input(s).

4. Click OK.

9.7 The About Us Page

The **DIP-30** About Us page displays the Web page version and Kramer Electronics Ltd company details.

Figure 14: The About Us Page

10 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 mini jack
OUTPUTS:	Video:	1 HDMI on an HDMI connector
	Audio:	1 Unbalanced stereo audio 1V RMS (nominal) on a 3.5mm mini jack
PORTS:	1 Ethernet on an RJ-45 connector 1 RS-232 3-pin terminal block control port 1 RS-232 3-pin terminal block data port, (for internal use only) 1 USB on mini USB connector	
CONTROLS:	Remote switches for input switching, step-in, volume control, and device reset switch	
STANDARDS:	HDMI with Deep Color, x.v.Color™ and 3D HDCP—works with sources that support HDCP repeater mode	
MAXIMUM ANALOG AUDIO LEVELS:	3.1V p-p	
THD:	0.013%	
SNR:	75dB	
SUPPORTED WEB BROWSERS:	Windows 7 and higher: • Internet Explorer (32/64 bit) version 11 • Firefox version 30 • Chrome version 35 MAC: • Chrome version 35 • Firefox version 27 • Safari version 7 Android OS: • Chrome version 35 iOS: • Chrome version 35 • Safari version 7	
POWER CONSUMPTION:	12V DC, 560mA	
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:	Aluminium	
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 WEIGHT:	0.93kg (2.05lbs) approx.	

ENVIRONMENTAL REGULATORY COMPLIANCE:	Complies with appropriate requirements of RoHs and WEEE
INCLUDED ACCESSORIES:	Power adapter ADC-DPM/HF DisplayPort (M) to HDMI (F) adapter cable, (for connecting a DisplayPort source to the HDMI input)
OPTIONS:	Rack adapter RK-T2B
WARRANTY:	7 years parts and labor

10.1 Default IP Parameters

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

10.2 Default Logon Credentials

Parameter	Values
Name	Admin
Password	Admin

10.3 Supported Resolutions

10.3.1 HDMI

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

Resolution	Refresh Rate (Hz)
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

10.3.2 VGA

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

11 Default EDID

Each input on the **DIP-30** is loaded with a factory default EDID.

11.1 HDMI

```
Monitor
  Model name.....DIP-30
  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,00,41,
56,53,2D,33,32,20,20,20,20,20,20,20,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,01,B7,
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

11.2 PC-UXGA

Monitor
Model name..... DIP-30
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

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,19,01,03,6E,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,00,41,
56,53,2D,33,32,20,20,20,20,20,20,20,20,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,C6,
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

12 Protocol 3000

The **Automatic** Video Switcher can be operated using serial commands from a PC, remote controller or touch screen using the Kramer Protocol 3000.

This section describes:

- Kramer Protocol 3000 syntax (see Section 12.1)
- Kramer Protocol 3000 commands (see Section 12.2)

12.1 Kramer Protocol 3000 Syntax

12.1.1 Host Message Format

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

12.1.1.1 Simple Command

Command string with only one command without addressing:

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

12.1.1.2 Command String

Formal syntax with commands 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

12.1.2 Device Message Format

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

12.1.2.1 Device Long Response

Echoing command:

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

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

12.1.3 Command Terms

Command

A sequence of ASCII letters ('A'-'Z', 'a'-'z' and '-').
Command and 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**.
Note: A string can contain more than one command. Commands are separated by a pipe ('|') character.

Message starting character

'#' – For host command/query
'~' – For device response

Device address (Optional, for K-NET)

K-NET Device ID followed by '@'

Query sign

'?' follows some commands to define a query request.

Message closing character

CR – For host messages; carriage return (ASCII 13)

CRLF – For device messages; carriage return (ASCII 13) + line-feed (ASCII 10)

Command chain separator character

When a message string contains more than one command, a pipe ('|') character separates each command.

Spaces between parameters or command terms are ignored.

12.1.4 Entering Commands

You can directly enter all commands using a terminal with ASCII communications software, such as HyperTerminal, Hercules, etc. Connect the terminal to the serial or Ethernet port on the Kramer device. To enter **CR** press the Enter key.
(**LF** is also sent but is ignored by command parser).

For commands sent from some non-Kramer controllers like Crestron, some characters require special coding (such as, /X##). Refer to the controller manual.

12.1.5 Command Forms

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

12.1.6 Chaining Commands

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 once, at the beginning of the string and at the end.

Commands in the string do not execute until the closing character is entered.

A separate response is sent for every command in the chain.

12.1.7 Maximum String Length

64 characters

12.2 Kramer Protocol 3000 Commands

12.2.1 System Commands

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

Command - #		Command Type - System-mandatory	
Command Name		**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			

Command - **BUILD-DATE**		Command Type - System-mandatory	
Command Name		**Permission**	**Transparency**
Set:	**-**	-	-
Get:	**BUILD-DATE?**	End User	Public
Description		**Syntax**	
Set:	Get device build date	#**BUILD-DATE**CR	
Get:	-	-	
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			

Command - **HELP**		Command Type - System-mandatory	
Command Name		**Permission**	**Transparency**
Set:	**-**	-	-
Get:	**HELP**	End User	Public
Description		**Syntax**	
Set:	-	-	
Get:	Get command list or help for specific command	2 options: 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] **To get help for command use: HELP (COMMAND_NAME)**[CR LF] 2. Multi-line: ~[nn]@**HELP**[SP]*command*:[CR LF]*description*[CR LF]**USAGE:** *usage* [CR LF]			
Parameters			
Response Triggers			
Notes			

Command - **MODEL?**		Command Type - System-mandatory	
Command Name		**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			

Command - **PROT-VER?**		Command Type - System-mandatory	
Command Name		**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			

Command - **RESET**		Command Type - System-mandatory	
Command Name		**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.			

Command - **SN?**		Command Type - System-mandatory	
Command Name		**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			
For new products with 14 digit serial numbers, use only the last 11 digits			

Command - **VERSION?**		Command Type - System-mandatory	
Command Name		**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			

Command - **AV-SW-MODE**		Command Type - System	
Command Name		**Permission**	**Transparency**
Set:	**AV-SW-MODE**	End user	Public
Get:	**AV-SW-MODE?**	End user	Public
Description		**Syntax**	
Set:	Set input auto switch mode (per output)	# **AV-SW-MODE**SP*layer,output_id,mode*CR	
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 (see Section 12.2.10) output_id - 1….num of system outputs mode - 0 - manual 1 - priority switch 2 - last connected switch			
Response Triggers			
Notes			

Command - **AV-SW-TIMEOUT**		Command Type - System	
Command Name		**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 (see Section 12.2.11) *timeout* - timeout in seconds			
Response Triggers			
Notes			

Command - **DISPLAY?**		Command Type - System	
Command Name		**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 - output number *status* - HPD status according to signal validation			
Response Triggers			
After execution, response is sent to the com port from which the Get was received Response is sent after every change in output HPD status ON to OFF Response is sent after every change in output HPD status OFF to ON and ALL parameters (new EDID, etc.) are stable and valid			
Notes			

Command - **FPGA-VER?**		Command Type - System	
Command Name		**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, expected_ver, actual_ver* CR LF			
Parameters			
id - FPGA id *expected_ver* - expected FPGA version for current firmware *actual_ver* - actual FPGA version			
Response Triggers			
Notes			

Command - **HDCP-MOD**		Command Type - System	
Command Name		**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 *stage_id* CR	
Response			
Set / Get: ~ nn@**HDCP-MOD** SP *stage_id,mode* CR LF			
Parameters			
inp_id - input number (1.. max number of inputs) *mode* - HDCP mode			
Response Triggers			
Response is sent to the com port from which the Set (before execution) / Get command was received Response is sent to all com ports after execution if HDCP-MOD was set by any other external control device (button press, device menu and similar) or HDCP mode changed			
Notes			
Set HDCP working mode on the device input: HDCP supported - HDCP_ON [default] HDCP not supported - HDCP OFF HDCP support changes following detected sink - MIRROR OUTPUT			

Command - **HDCP-STAT**		Command Type - System	
Command Name		**Permission**	**Transparency**
Set:	-	-	-
Get:	**HDCP-STAT?**	End User	Public
Description		**Syntax**	
Set:	None	-	
Get:	Get HDCP signal status	#**HDCP-STAT?** SP *stage,stage_id* CR	
Response			
Set / Get: ~ nn @**HDCP-STAT** SP *stage,stage_id,mode* CR LF			
Parameters			
stage – input/output *stage_id* - number of chosen stage (1.. max number of inputs/outputs) *actual_status* - signal encryption status - valid values ON/OFF			
Response Triggers			
Response is sent to the com port from which the Set (before execution) / Get command was received Response is sent to all com ports after execution if HDCP-STAT was set by any other external control device (button press, device menu and similar) or HDCP mode changed			
Notes			
On output – sink status On input – signal status			

Command - **LDFW**		Command Type - System - Packets	
Command Name		**Permission**	**Transparency**
Set:	**LDFW**	Internal SW	Public
Get:	**-**	-	-
Description		**Syntax**	
Set:	Load new firmware file	Step 1: #**LDFW**[SP]*size*[CR] Step 2: If ready was received, send [FIRMWARE_DATA]	
Get:	-	-	
Response			
Response 1: ~[nn]@**LDFW**[SP]*size*[SP]**READY**[CR LF] or ~[nn]@**LDFW**[SP]**ERRnn**[CR LF] Response 2: ~[nn]@**LDFW**[SP]*size*[SP]**OK**[CR LF]			
Parameters			
size - size of firmware data that is sent [FIRMWARE_DATA] - HEX or KFW file in protocol packets (see Section 4)			
Response Triggers			
Notes			
In most devices firmware data is saved to flash memory, but the memory does not update until receiving the “UPGRADE” command and is restarted. Use this command in dedicated SW application			

Command - **NAME**		Command Type - System (Ethernet)	
Command Name		**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 chars (can include hyphen, 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)			

Command - **NAME-RST**		Command Type - System (Ethernet)	
Command Name		**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_” + 4 last digits of device serial number			

Command - **PRIORITY**		Command Type - System	
Command Name		**Permission**	**Transparency**
Set:	**PRIORITY**	Administrator	Public
Get:	**PRIORITY?**	Administrator	Public
Description		**Syntax**	
Set:	Set input priority	# **PRIORITY**SP*layer,PRIORITY1, PRIORITY2… PRIORITYn* CR	
Get:	Get input priority	# **PRIORITY?***layer*CR	
Response			
~ nn@ **PRIORITY**SP*layer,PRIORITY1, PRIORITY2… PRIORITYn* CR LF			
Parameters			
layer (see Section 12.2.10) *PRIORITY1* - priority of first input *PRIORITYn*- priority of input n			
Response Triggers			
Notes			
WP-577VH – layer parameter is not used			

Command - **SIGNAL**		Command Type - System	
Command Name		**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			
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			

12.2.2 File System Commands

Command	Description
DEL	Delete file
DIR	List files in device
FORMAT	Format file system
FS-FREE?	Get file system free space
GET	Get file
LOAD	Load file to device

Command - **DEL**		Command Type - File System	
Command Name		**Permission**	**Transparency**
Set:	**DEL**	Administrator	Public
Get:	**-**	-	-
Description		**Syntax**	
Set:	Delete file	#**DEL**[SP]*file_name*[CR]	
Get:			
Response			
~nn@**DEL**[SP]*file_name*[CR LF]			
Parameters			
file_name - name of file to delete (file names are case-sensitive)			
Response Triggers			
Notes			

Command - **DIR**		Command Type - File System	
Command Name		**Permission**	**Transparency**
Set:	**DIR**	Administrator	Public
Get:	**-**	-	-
Description		**Syntax**	
Set:	List files in device	#**DIR**CR	
Get:	-	-	
Response			
Multi Line: ~nn@**DIR**CR LF *file_name* TAB *file_size*SP bytes.,SP ID:SP*file_id*CR LF TAB*free_size*SP bytes.CR LF			
Parameters			
file_name - name of file *file_size* - file size in bytes. A file can take more space on device memory *file_id* - internal ID for file in file system *free_size* - free space in bytes in device file system			
Response Triggers			
Notes			

Command - **FORMAT**		Command Type - File System	
Command Name		**Permission**	**Transparency**
Set:	**FORMAT**	Administrator	Public
Get:	**-**	-	-
Description		**Syntax**	
Set:	Format file system	#**FORMAT**CR	
Get:	-	-	
Response			
~nn@**FORMAT**SP**OK**CR LF			
Parameters			
Response Triggers			
Notes			
Response could take some time (seconds) until formatting completes			

Command - **FS-FREE?**		Command Type - File System	
Command Name		**Permission**	**Transparency**
Set:	**-**	-	-
Get:	**FS-FREE?**	Administrator	Public
Description		**Syntax**	
Set:	-	-	
Get:	Get file system free space	#**FS-FREE?**CR	
Response			
~nn@**FS_FREE**SP*free_size*CR LF			
Parameters			
free_size - free size in device file system in bytes			
Response Triggers			
Notes			

Command - **GET**		Command Type - File System	
Command Name		**Permission**	**Transparency**
Set:	**-**	-	-
Get:	**GET**	Administrator	Public
Description		**Syntax**	
Set:	-	-	
Get:	Get file	#**GET**SP*file_name*CR	
Response			
Multi-line: ~nn@**GET**SP*file_name, file_size*SP**READY**CR LF *contents* ~nn@**GET**SP*file_name*SP**OK**CR LF			
Parameters			
file_name - name of file to get contents *contents* - byte stream of file contents *file_size* - size of file (device sends it in response to give user a chance to get ready)			
Response Triggers			
Notes			

Command - **LOAD**		Command Type - System - Packets	
Command Name		**Permission**	**Transparency**
Set:	**LOAD**	Administrator	Public
Get:	**-**	-	-
Description		**Syntax**	
Set:	Load file to device	#**LOAD**[SP]*file_name,size*[CR]	
Get:	-	-	
Response			
Data sending negotiation: * Device - ~**01@LOAD**[SP]*file_name,size*[SP]**READY**[CR LF] * End User (+Device)- Send file in Protocol Packets * Device - ~**01@LOAD**[SP]*file_name, size*[SP]**OK**[CR LF]			
Parameters			
file_name - name of file to save on device *size* - size of file data that is sent.			
Response Triggers			
Notes			
See the Protocol Packet reference			

12.2.3 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

Command - **LOGIN**		Command Type - Authentication	
Command Name		**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 (End User or Admin) *password* - predefined password (by PASS command). Default password is an empty string			
Response Triggers			
Notes			
For devices that support security, LOGIN allows to the user to run commands with an End User or Administrator permission level In each device, some connections can be logged in to different levels and some do not work with security at all Connection may logout after timeout The permission system works only if security is enabled with the “SECUR” command			

Command - **LOGOUT**		Command Type - Authentication	
Command Name		**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 End User or Administrator permission levels to Not Secure			

Command - **PASS**		Command Type - Authentication	
Command Name		**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 (End User or Administrator). *password* - password for the *login_level*. Up to 15 printable ASCII chars			
Response Triggers			
Notes			
The default password is an empty string			

Command - **SECUR**		Command Type - Authentication	
Command Name		**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 - enables security, 0/OFF - disables security			
Response Triggers			
Notes			
The permission system works only if security is enabled with the “SECUR” command			

12.2.4 Switching/Routing Commands

Command	Description
ROUTE	Set/get layer routing

Command - **ROUTE**		Command Type - Routing	
Command Name		**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 (see Section 12.2.10)
dest - * - ALL
x - disconnect, otherwise destination id
src - source id

Response Triggers

Notes

This command replaces all other routing commands
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)

12.2.5 Video Commands

Command	Description
VMUTE	Set/get video on output mute

Command - **VMUTE**		Command Type - Video	
Command Name		**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….num of system outputs flag - 0 - disable video on output 1 - enable video on output 2 - blank video			
Response Triggers			
Notes			

12.2.6 Audio Commands

Command	Description
AUD-EMB	Set/get audio in video embedding status
AUD-LVL	Set/get audio level in specific amplifier stage
AUD-SIGNAL?	Get audio input signal status

Command - **AUD-EMB**		Command Type - Audio	
Command Name		**Permission**	**Transparency**
Set:	**AUD-EMB**	End User	Public
Get:	**AUD-EMB?**	End User	Public
Description		**Syntax**	
Set:	Set audio in video embedding status	#**AUD-EMB**SP*in,out,status*CR	
Get:	Get audio in video embedding status	#**AUD-EMB?**SP*in,out*CR	
Response			
Set/Get: ~ nn@**AUD-EMB**SP*in,out,status*CR LF			
Parameters			
in - audio input to be embedded number (1… max number of inputs) *out* - video output to embed into number (1 .. max number of outputs) *status* - embedded (ON), or not (OFF) status			
Response Triggers			
Response is sent to the com port from which the Set (before execution)/Get command was received After execution, 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			

Command - **AUD-LVL**		Command Type - Audio	
Command Name		**Permission**	**Transparency**
Set:	**AUD-LVL**	End User	Public
Get:	**AUD-LVL?**	End User	Public
Description		**Syntax**	
Set:	Set audio level in specific amplifier stage	#**AUD-LVL**SP*stage, channel, volume*CR	
Get:	Get audio level in specific amplifier stage	#**AUD-LVL?**SP*stage, channel*CR	

Response

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

Parameters

stage - input/output or numeric value of present audio processing stage
For example: '1' for input level, '2' for output
channel - input or output number
volume - audio parameter in Kramer units, minus sign precedes negative values.
++ increase current value,
-- decrease current value

Response Triggers

Notes

Command - **AUD-SIGNAL**		Command Type - Audio	
Command Name		**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 - input number (1 .. max input number)
status - 0 - OFF (no signal)
1 - ON (signal present

Response Triggers

After execution, response is sent to the com port from which the Get was received
Response is sent to all com ports if audio status state was changed on any input

Notes

Command - **MUTE**		Command Type - Audio	
Command Name		**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 - output number *mute_mode* - 0 or OFF / 1 or ON			
Response Triggers			
Notes			

12.2.7 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

Command - **ETH-PORT**		Command Type - Communication	
Command Name		**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 - TCP/UDP *ETHPort* - TCP/UDP port number			
Response Triggers			
Notes			

Command - **NET-DHCP**		Command Type - Communication	
Command Name		**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 set by the factory or using the IP set command 1 - Try to use DHCP. If unavailable, use IP as above			
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 command “NAME”. You can also get an assigned IP by direct connection to USB or RS-232 protocol port if available For proper settings consult your network administrator			

Command - **NET-GATE**		Command Type - Communication	
Command Name		**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 - format: xxx.xxx.xxx.xxx			
Response Triggers			
Notes			
A network gateway connects the device via another network and maybe over the Internet. Be careful of security problems. For proper settings consult your network administrator			

Command - **NET-IP**		Command Type - Communication	
Command Name		**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 - format: xxx.xxx.xxx.xxx			
Response Triggers			
Notes			
For proper settings consult your network administrator			

Command - **NET-MAC?**		Command Type - Communication	
Command Name		**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			

Command - **NET-MASK**		Command Type - Communication	
Command Name		**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 For proper settings consult your network administrator			
Notes			

12.2.8 EDID Handling Commands

Command	Description
CPEDID	Copy EDID data from the output to the input EEPROM
GEDID	Set/get EDID data
LDEDID	Load EDID data
LOCK-EDID	Lock last read EDID

Command - **CPEDID**		Command Type - EDID Handling	
Command Name		**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_stg, src_id, dst_type, dest_bitmap*CR LF			
Parameters			
src_type - EDID source type (usually output) *src_id* - number of chosen source stage (1.. max number of inputs/outputs) *dst_type - EDID destination* type (usually input) *dest_bitmap* - bitmap representing destination IDs. Format: XXXX…X, where X is hex digit. The binary form of every hex digit represents corresponding destinations. Setting '1' says that EDID data has to be 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			

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
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 002CR LF is received

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:	None	None	

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)

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

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

Command – **LOCK-EDID**		Command Type – EDID Handling	
Command Name		**Permission**	**Command Name**
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….num of system inputs *lock_mode* - 0/OFF - unlocks EDID, 1/ON - locks EDID			
Response Triggers			
Notes			

12.2.9 Factory Commands

Command	Description
UPGRADE	Perform firmware upgrade

Command - **UPGRADE**		Command Type - System	
Command Name		**Permission**	**Transparency**
Set:	**UPGRADE**	Administrator	Internal
Get:	**-**	-	-
Description		**Syntax**	
Set:	Perform firmware upgrade	#**UPGRADE**[CR]	
Get:	-	-	
Response			
~[nn]@**UPGRADE**[SP]OK[CR LF]			
Parameters			
Response Triggers			
Notes			
Not necessary for some devices Firmware usually uploads to a device via a command like LDFW Reset the device to complete the process			

12.2.10 Layer

Number	Value
1	Video
2	Audio
3	Data
4	IR
5	USB

12.2.11 Video/Audio Signal Changes

Number	Value
0	Video signal lost
1	New video signal detected
2	Audio signal lost
3	Audio signal detected
4	Disable 5V on video output if no input signal detected
5	Video cable unplugged
6	Audio cable unplugged

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SAFETY WARNING

Disconnect the unit from the power supply before opening and servicing

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