KRAMER

USER MANUAL

MODEL:

VM-214DT
HDMI/HDBT Switcher/DA

P/N: 2900-300423 Rev 5

Contents

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!

Congratulations on purchasing your Kramer **VM-214DT HDMI/HDBT Switcher/DA**. This product, which incorporates HDMI™ technology, is ideal for:

- Presentation and multimedia applications
- Rental and staging

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/VM-214DT 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 **VM-214DT** 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

The **VM-214DT HDMI/HDBT Switcher/DA** is a switcher/distribution amplifier for HDMI and HDBT signals. It reclocks and equalizes one of two selectable input signals (HDMI or HDBT) and distributes it to one HDMI and four HDBT outputs.

In particular, the **VM-214DT** features:

- Support for 4K UHD (maximum data rate of 10.2Gbps).
- Non-volatile memory that stores the default EDID so it can then provide the EDID information to the source even if the display device is not connected.
- I-EDIDPro™ Kramer Intelligent EDID Processing™, an intelligent EDID handling & processing algorithm that ensures Plug and Play operation for HDMI systems.
- HDMI support for 3D, Deep Color, x.v.Color™ and 7.1 uncompressed audio channels (Dolby TrueHD, DTS-HD).
- HDCP compliance.
- LEDs indicating the selected input and active output.
- A 1U rack mount enclosure.
- Support for up to 130m (430ft) in normal mode for 1080p @60Hz @36bpp, and up to 100m (328ft) for 4K UHD @30Hz when using **BC−HDKat6a** cables.
- Bidirectional RS-232 Extension – Serial interface data flows in both directions, on each extension line, enabling data transmission and control of devices.
- Bidirectional Infrared Extension – IR interface data flows in both directions, on each extension line, enabling remote control of peripheral devices located at either end of the extended line.

Using Twisted Pair Cable

Kramer engineers have developed special twisted pair cables to best match our digital twisted pair products; the Kramer: **BC-HDKat6a** (CAT 6 23 AWG cable), and the Kramer: **BC-DGKat7a23** (CAT 7a 23 AWG cable). These specially built cables significantly outperform regular CAT 6 / CAT 7a cables.

About HDBaseT™ Technology

HDBaseT™ is an advanced, all-in-one connectivity technology (supported by the HDBaseT Alliance). It is particularly suitable in the ProAV – and also the home – environment as a digital networking alternative, where it enables you to replace numerous cables and connectors by a single LAN cable used to transmit, for example, uncompressed, full high-definition video, audio, IR, as well as various control signals.

The products described in this user manual are HDBaseT certified.

Defining the VM-214DT HDMI/HDBT Switcher/DA

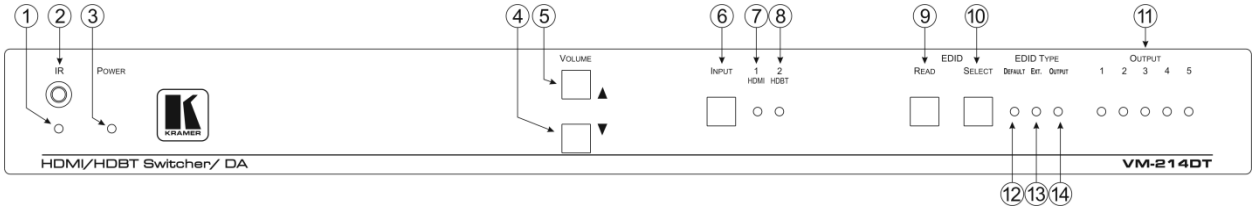


Figure 1: VM-214DT HDMI/HDBT Switcher/DA Front Panel

#	Feature		Function
1	*IR* LED		Lights orange when receiving IR signals.
2	*IR* Remote Control Sensor		Extends a detected IR signal to the connected HDBT devices as defined in the Data Switching embedded web page (see The Data Switching Page on page 20) – when an IR sensor/emitter is **not connected** to the IR 3.5mm mini jack on the rear panel. Disabled when the IR 3.5mm mini jack on the rear panel is connected.
3	*POWER* LED		Lights green when the unit receives power.
4	*VOLUME* Buttons	▼ Down button	Press to decrease the audio volume.
5		▲ Up button	Press to increase the audio volume.
6	*INPUT* Button		Press to toggle between HDMI Input 1 and HDBT Input 2. Lights red when the input is valid, selected and routing to an output(s).
7	*1 HDMI* LED		Lights green when HDMI 1 Input is selected.
8	*2 HDBT* LED		Lights green when HDBT 2 Input is selected.
9	*EDID* Buttons	*READ* Button	Press to read the selected EDID to both inputs, (see Acquiring the EDID on page 9).
10		*SELECT* Button	Press to cycle through the EDID sources, (default, external, and each output) from which to read the EDID. The relevant LED lights green, (see Acquiring the EDID on page 9).
11	*OUTPUT* LEDs *1* to *5*		In normal operation mode: lights green when an acceptor is connected to the output. In EDID mode: Indicates the EDID which is currently stored. The relevant LED lights during EDID setup and remains lit after completing the EDID setup, (see Acquiring the EDID on page 9).
12	*EDID TYPE* LEDs	*DEFAULT*	Lights green when the default EDID is selected, (see Acquiring the EDID on page 9)
13		*EXT*.	Lights green when an external EDID is selected
14		*OUTPUT*	Lights green when one of the output EDIDs is selected

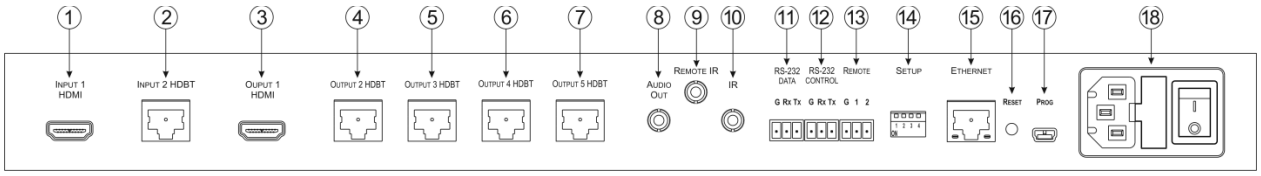


Figure 2: VM-214DT HDMI/HDBT Switcher/DA Rear Panel

#	Feature		Function
1	*INPUT 1 HDMI* Local Input		Connect to the HDMI source.
2	*INPUT 2 HDBT* Remote Input		Connect to the remote HDBT transmitter, (for example, the WP-20 or TP-580Txr).
3	*OUTPUT 1 HDMI* Local Output		Connect to the HDMI acceptor.
4	*OUTPUT HDBT* Connectors	2	Connect to the first HDBT acceptor, (for example, the TP-588D).
5		*3*	Connect to the second HDBT acceptor.
6		*4*	Connect to the third HDBT acceptor, (for example, the TP-580RXR).
7		*5*	Connect to the fourth HDBT acceptor.
8	*AUDIO OUT* 3.5mm Mini Jack		Connect to the analog audio acceptor.
9	*REMOTE IR* 3.5mm Mini Jack		For future use.
10	*IR* 3.5mm Mini Jack		Connect to the remote IR sensor/emitter.
11	*RS-232 DATA* 3-pin Terminal Block		Connect to the device to be controlled via RS-232.
12	*RS-232 CONTROL* 3-pin Terminal Block		Connect to the serial controller to control the **VM-214DT**.
13	*REMOTE* 3-pin Terminal Block		For future use.
14	*SETUP* 4-way DIP-switch		Used to set the device behavior, (see Setting the DIP-switch on page 28).
15	*ETHERNET* RJ-45 Connector		Connect to a remote network controller via a LAN.
16	*RESET* Switch		Press and hold while powering on the device to reset to factory default parameters, (see Performing a Factory Reset on page 28).
17	*PROG* Mini USB Connector		Connect to a PC to perform firmware upgrades.
18	Mains Power Connector, Fuse, and Switch		Connect to the mains supply.

Installing in a Rack

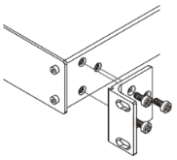
This section provides instructions for rack mounting **VM-214DT**. Before installing in a rack, verify that the environment is within the recommended range:

- 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.

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

- It is located within recommended environmental conditions. Operating ambient temperature of a closed or multi-unit rack assembly may exceed ambient room temperature.
- Once rack mounted, there is enough air flow around **VM-214DT**.
- **VM-214DT** is placed upright in the correct horizontal position.
- You do not overload the circuit(s). When connecting **VM-214DT** to the supply circuit, overloading the circuits may have a detrimental effect on overcurrent protection and supply wiring. Refer to the appropriate nameplate ratings for information. For example, for fuse replacement, see the value printed on the product label.
- **VM-214DT** is earthed (grounded) and connected only to an electricity socket with grounding. Pay particular attention when electricity is supplied indirectly (for example, when the power cord is not plugged directly into the wall socket but to an extension cable or power strip). Use only the supplied power cord.

To rack mount the machine, attach both ear brackets (by removing the screws from each side of the machine and replacing those screws through the `ear brackets) or place the machine on a table.



- Detachable rack ears can be removed for desktop use.
- Always mount **VM-214DT** in the rack before connecting any cables or power.
- 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/VM-214DT.

Connecting the VM-214DT

Always switch off the power to each device before connecting it to your **VM-214DT**. After connecting your **VM-214DT**, connect its power and then switch on the power to each device.

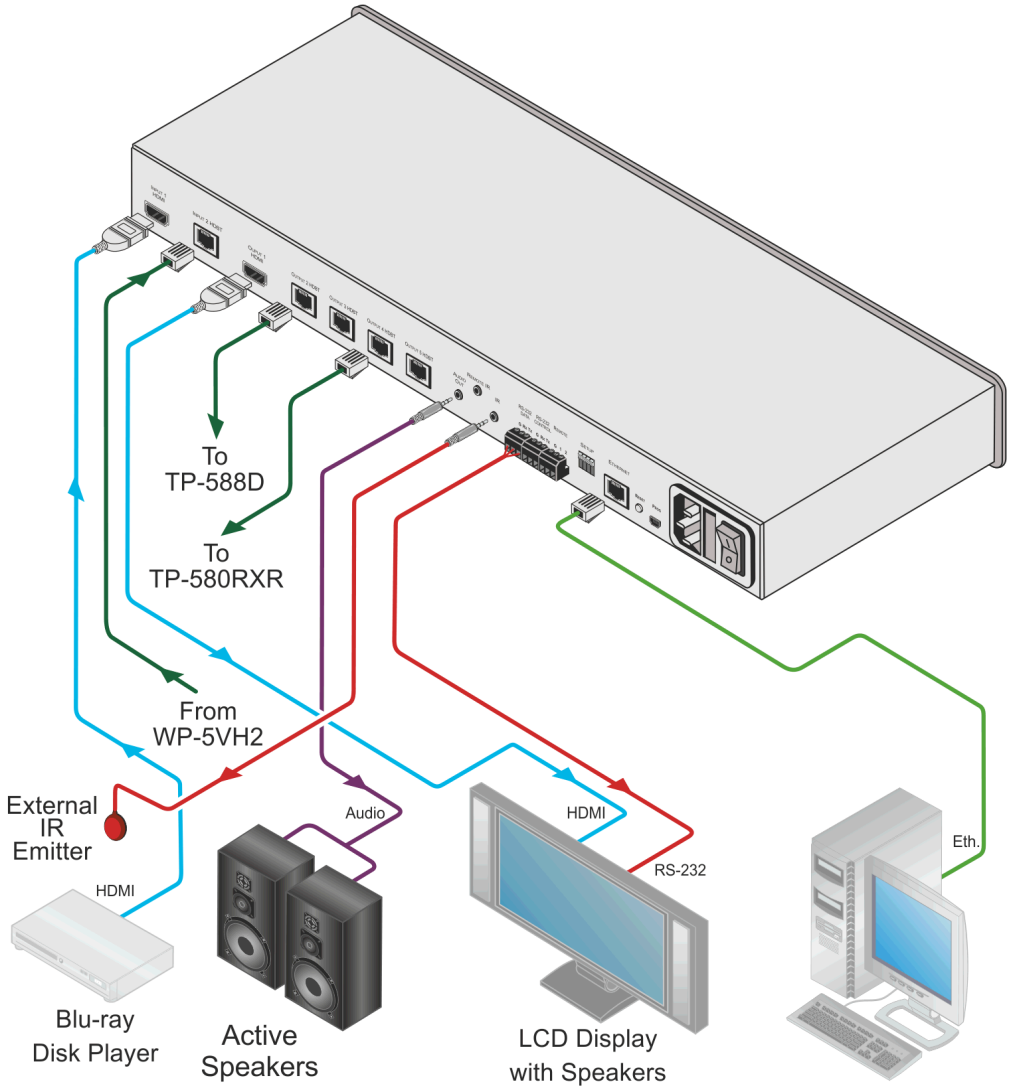


Figure 3: Connecting the VM-214DT HDMI/HDBT Switcher/DA

To connect the VM-214DT, as illustrated in the example in Figure 3:

1. Connect the HDMI source (for example, a Blu-ray disk player) to the IN 1 (HDMI) connector.
2. Connect the HDBT source, (for example, the **WP-20**) to the Input 2 HDBT connector.
3. Connect the Output 1 HDMI connector to an HDMI acceptor, (for example, an LCD TV with speakers).
4. Connect the four Output HDBT connectors to up to four HDBT receivers, (for example, the **TP-588D** or the **TP-580RXR**).
5. Connect the Audio Out 3.5mm mini jack to an audio acceptor (for example, active speakers).
6. If required, connect an IR sensor/emitter to the IR 3.5mm mini jack.
7. If required, connect the serial RS-232 DATA 3-pin terminal block to a device to be controlled, (for example, the LCD TV connected in step 3).
8. Connect a PC via RS-232 to the RS-232 CONTROL 3-pin terminal block, (see Section Connecting to the VM-214DT via RS-232 on page 8).
9. Connect the VM-214DT to the mains electricity using the mains cord provided.

Connecting to the VM-214DT via RS-232

You can connect to the VM-214DT via an RS-232 connection using, for example, a PC.

To connect to the VM-214DT via RS-232:

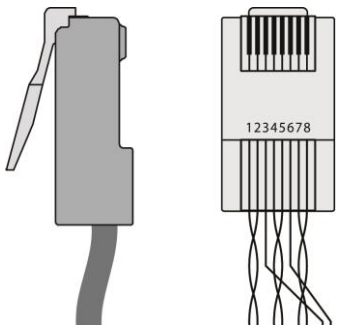
- Connect the 3-pin terminal block serial port on the VM-214DT to the RS-232 9-pin D-sub port on your PC, (pin Tx to pin 2, pin Rx to pin 3, and G to pin 5)

Wiring the RJ-45 Connectors

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

For HDBT cables, it is recommended that the cable ground shielding be connected/soldered to the connector shield.

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



Operating the VM-214DT

Acquiring the EDID

Each input on the **VM-214DT** has a factory default EDID loaded (see Default EDID on page 31). This lets you connect the power before having to connect one of the acceptors. The **VM-214DT** reads the EDID, which is stored in the non-volatile memory.

The following procedure is usually done only once, when the device is being set up.

To acquire the EDID:

1. Press the EDID Select button repeatedly until the required EDID source is selected, (either Default, Ext, or one of the outputs).
   The relevant LED lights green.
2. Press the EDID READ button.
   The EDID Read button lights red for a short while and the EDID is copied to the currently selected input. If the EDID Read button flashes twice after the first flash this indicates that the EDID was not read and the device reverts to the last stored EDID, as indicated by the LEDs.

Note: If the EDID READ button is not pressed for five seconds, the procedure is terminated and the device does not store a new EDID. The last EDID is restored.

The EDID can also be modified using **EDID Designer**.

RS-232 Control and Pass-Through Using the VM-214DT

The **VM-214DT** can be controlled via RS-232. As shown in Figure 4, you can connect a PC (or other serial controller) directly to the **VM-214DT** to control the **VM-214DT.**

The **VM-214DT** also transparently passes bidirectional RS-232 signals over the TP cable from the **TP-580Txr** transmitter to the **TP-580Rxr** receiver. For example, a PC connected to the RS-232 port on the **TP-580Txr** can control an RS-232-controllable device (for example, a projection screen) connected to the **TP-580Rxr**.

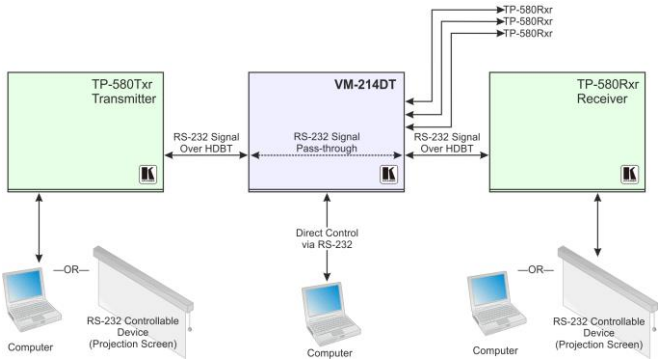


Figure 4: VM-214DT RS-232 Control and Pass-Through

IR Pass-Through Using the VM-214DT

The **VM-214DT** provides an IR sensor and a 3.5mm mini jack for connecting a remote IR emitter or sensor. When the **VM-214DT** is connected to suitable transmitters and receivers (for example, the **TP-580Txr** and **TP-580Rxr)**, the **VM-214DT** can act as a pass-through for IR control signals, allowing remote control of multiple devices using multiple IR remote controllers.

If no IR sensor cable is plugged into the rear-panel IR connector, any signal that is detected by the front-panel built-in IR sensor is extended to all the HDBT links as defined in the Data Switching embedded web page (see The Data Switching Page on page 20).

IR Pass-Through Example 1

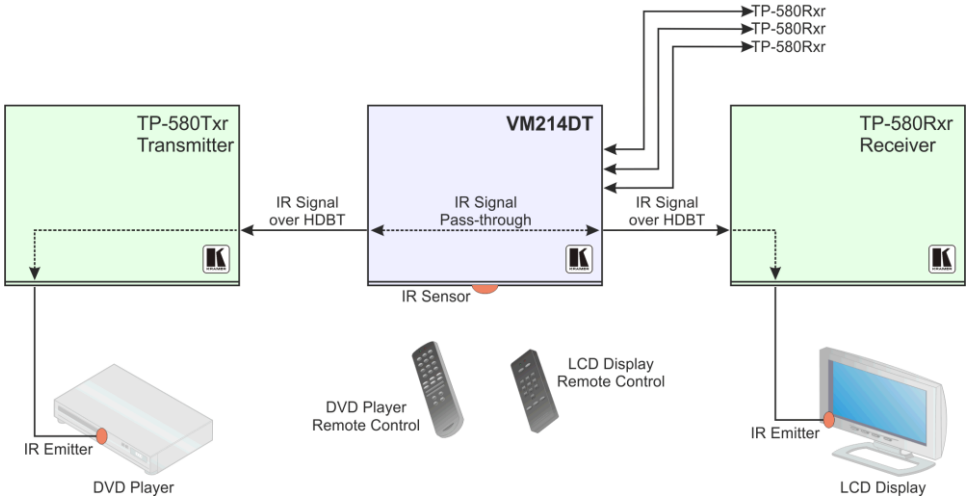


Figure 5: VM-214DT IR Pass-Through Example 1

- A DVD player is connected to the **TP-580Txr** transmitter via an IR emitter
- An LCD display is connected to the **TP-580Rxr** receiver via an IR emitter
- Both the **TP-580Txr** and the **TP-580Rxr** are connected to the **VM-214DT** via TP cabling

Point the appropriate remote control for the device at the **VM-214DT** IR sensor (either the front IR sensor or the IR 3.5mm mini jack) to control a device.

IR Pass-Through Example 2

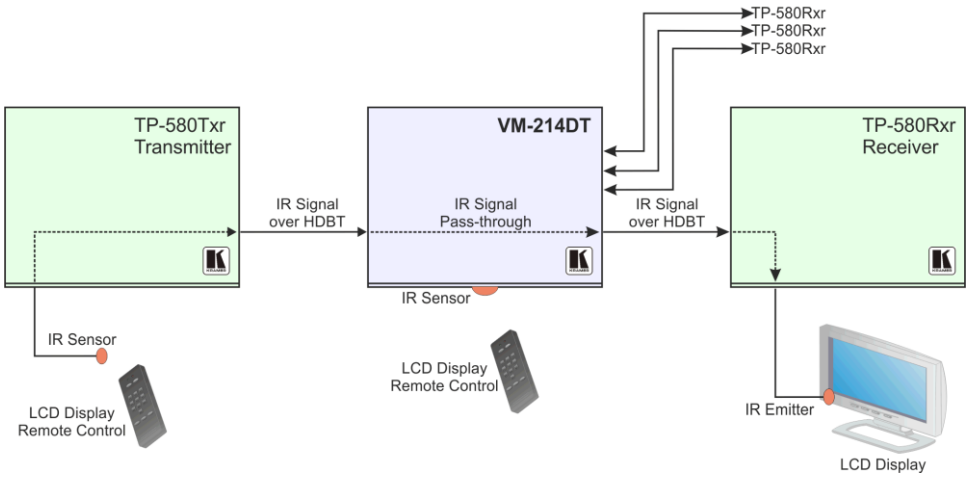


Figure 6: VM-214DT IR Pass-Through Example 2

- An IR sensor is connected to the **TP-580Txr** transmitter
- An LCD display is connected to the **TP-580Rxr** receiver via an IR emitter
- Both the **TP-580Txr** and the **TP-580Rxr** are connected to the **VM-214DT** via TP cabling

Point the LCD display remote control either at the **TP-580Txr** IR sensor or at the **VM-214DT** IR sensor to control the LCD display.

IR Pass-Through Example 3

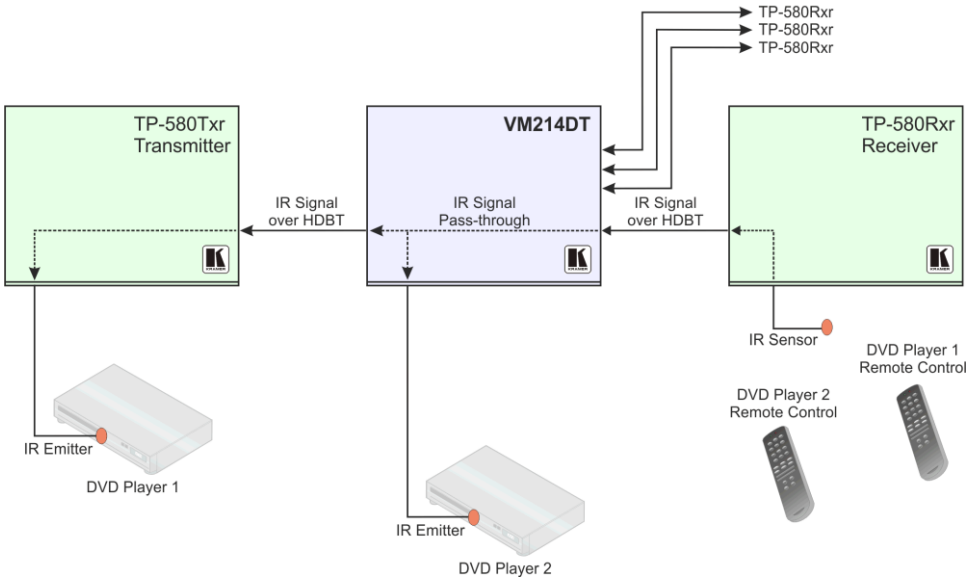


Figure 7: VM-214DT IR Pass-Through Example 3

- The first DVD player (player 1) is connected to the **TP-580Txr** transmitter via an IR emitter
- The second DVD player (player 2) is connected to the **VM-214DT** via an IR emitter
- An IR sensor is connected to the **TP-580Rxr** receiver
- Both the **TP-580Txr** and the **TP-580Rxr** are connected to the **VM-214DT** via TP cabling

To control DVD player 1, point the DVD player 1 IR remote control at the **TP-580Rxr** IR sensor. To control DVD player 2, point the DVD player 2 IR remote control at the **TP-580Rxr** IR sensor.

Operating the VM-214DT Remotely Using the Web Pages

The **VM-214DT** 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 Default IP Parameters on page 29)
- Ensure that JavaScript is enabled

Browsing the VM-214DT 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 VM-214DT Web pages:

1. Open your Internet browser.
2. Type the IP number of the device (see Default IP Parameters on page 29) in the Address bar of your browser.

Note: If authentication is enabled, the following window appears (Figure 8) and you must enter the valid username and password to access the Web pages. For default authentication details, see Default Logon Credentials on page 30.

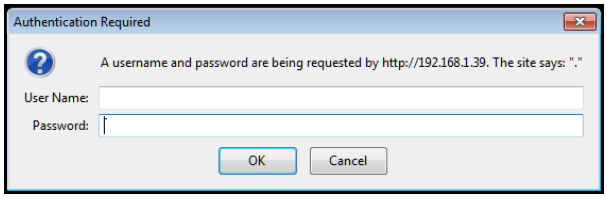


Figure 8: Entering Logon Credentials

Following a successful logon, the screen shown in Figure 9 is displayed.

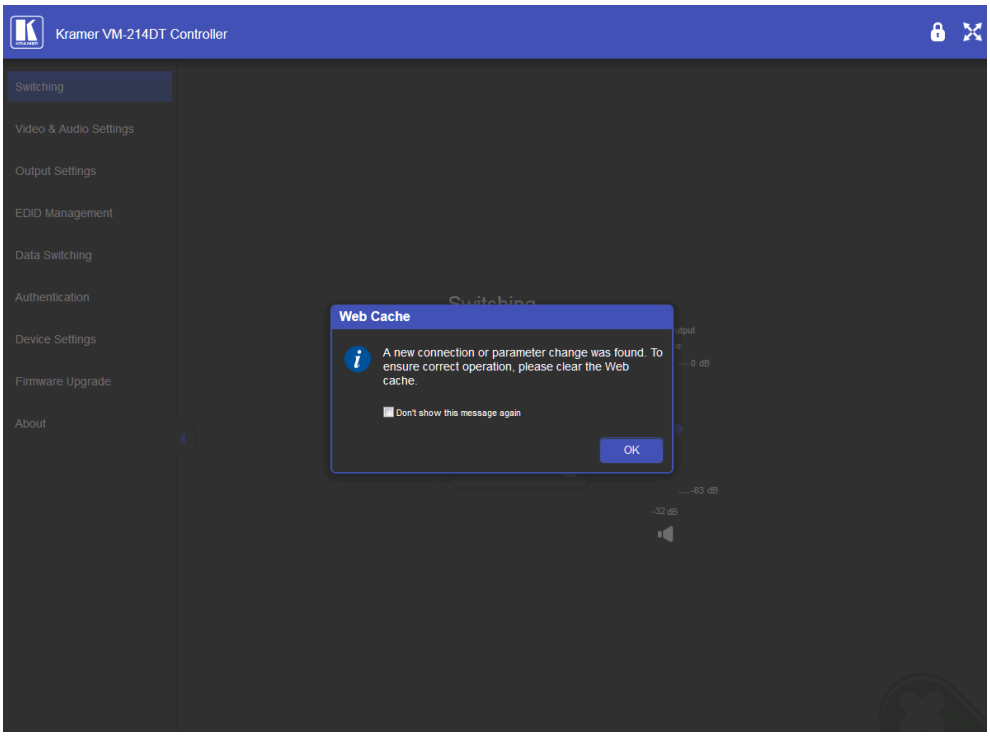


Figure 9: The Default Page

3. Click OK to continue.
   The Switching page appears as shown in Figure 10.

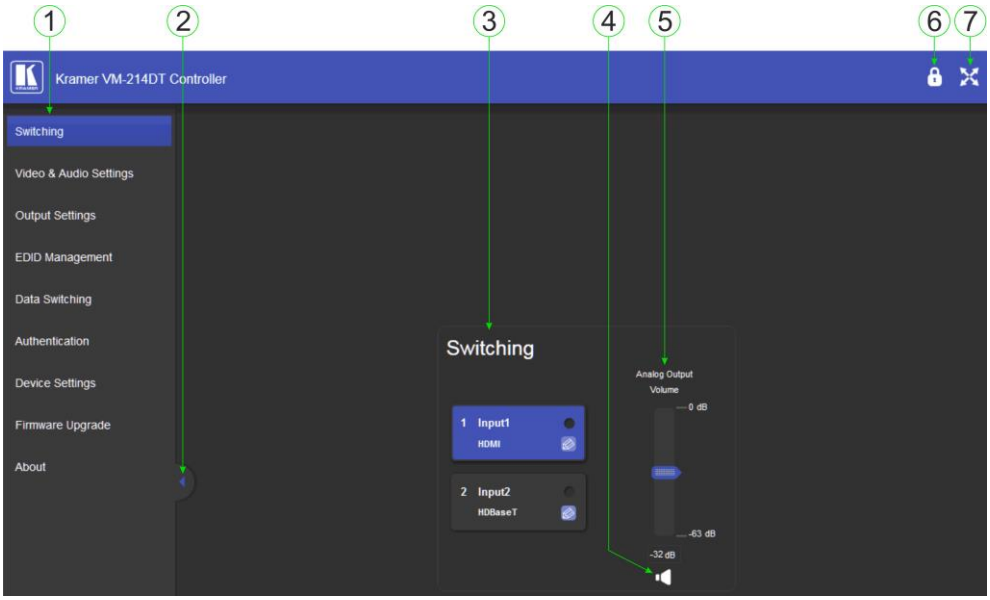


Figure 10: The Main Switching Page

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	Page Selection Panel Hide/Reveal Button	Click the arrow to open or close the page selection panel.
3	*Switching* Selection	Click one of the buttons to select an input.
4	Mute Button	Click to mute the audio, Click again to unmute the audio.
5	*Analog Output Volume* Control	Use the slider to control the audio volume.
6	Security Indicator	Indicates whether security is enabled (locked) or disabled (unlocked).
7	Full Screen Button	Click to maximize the page.

There are nine Web pages described in the following sections:

- Switching (see The Switching Page on page 15).
- Video and Audio Settings (see The Video and Audio Settings Page on page 16).
- Output Settings (see The Output Settings Page on page 17).
- EDID Management (see The EDID Management Page on page 18).
- Data Switching (see The Data Switching Page on page 20).
- Authentication (see The Authentication Page on page 22).
- Device Settings (see The Device Settings Page on page 23).
- Firmware Upgrade (see The Firmware Upgrade Page on page 26)..
- About (see The About Us Page on page 27)

The Switching Page

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

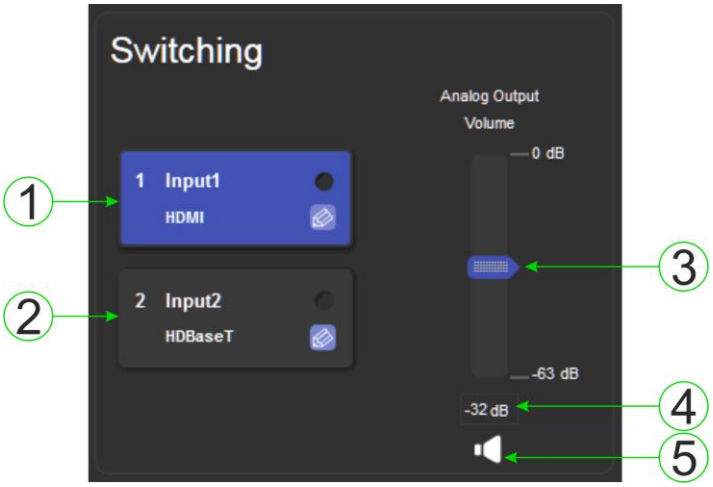


Figure 11: The Switching Page

#	Item	Description
1	*Input 1 HDMI* Button	Click to select the HDMI input. The color of the button indicates whether or not the input is selected. The color circle indicates whether or not there is a live signal on the input.
2	*Input 2 HDBaseT* Button	Click to select the HDBaseT input. The color of the button indicates whether or not the input is selected. The color circle indicates whether or not there is a live signal on the input.
3	*Analog Output Volume* Slider	Slide up to increase the analog output volume or down to decrease the volume.
4	Audio Output Level	Indicates the current audio output level in dB.
5	Mute Button	Click to mute or unmute the output audio.

The input selection buttons function as described below.

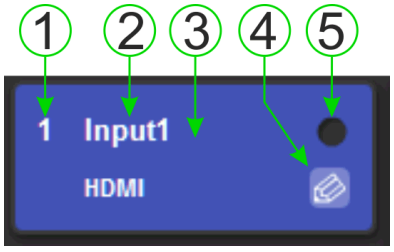


Figure 12: Input Button

#	Description
1	Input number.
2	Customizable input button label. See description below.
3	Button background color. When the input is selected the background changes from gray to blue.
4	Label edit button.
5	Live signal indicator. Lights when the input has a live signal on the input.

To edit the button label:

1. **Click the relevant edit button**.
   The popup shown in Figure 13 appears.

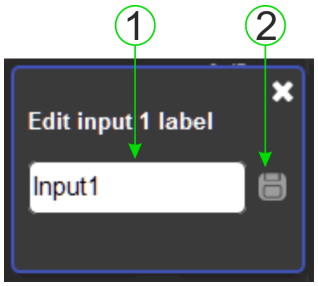


Figure 13: Input Button Label Editor

2. Enter the required label.
3. Click Enter or the Save button.

#	Description
1	Label text entry box.
2	Save button. Click button to save changes after entering the required label text.

The Video and Audio Settings Page

The Video and Audio Settings page lets you modify the output power off delay, HDCP support per input, and audio de-embedding.

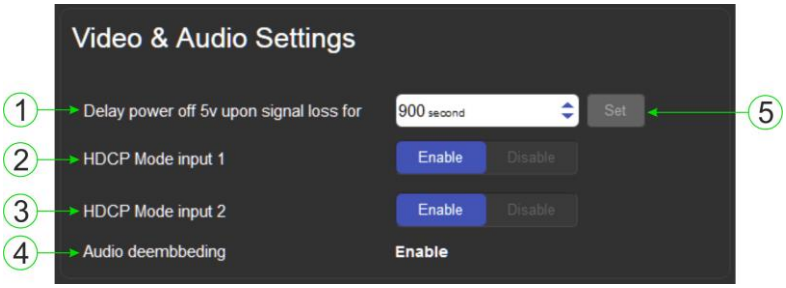


Figure 14: The Audio Settings Page

#	Item	Description
1	*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.
2	*HDCP Mode input 1* Buttons	For Input 1: Enable—HDCP support is dictated by the display. Disabled—HDCP encrypted content is not passed.
3	*HDCP Mode input 2* Button	For input 2: Enable—HDCP support is dictated by the display. Disabled—HDCP encrypted content is not passed.
4	*Audio de-embedding* Indicator	Click enable to de-embed the digital audio.
5	*Set* Button for 5V control upon signal loss, (see item 1)	Enter the delay in seconds or use the increment/decrement buttons, then press Set to save the value.

The Output Settings Page

The Output Settings page allows you to custom label the output buttons individually.

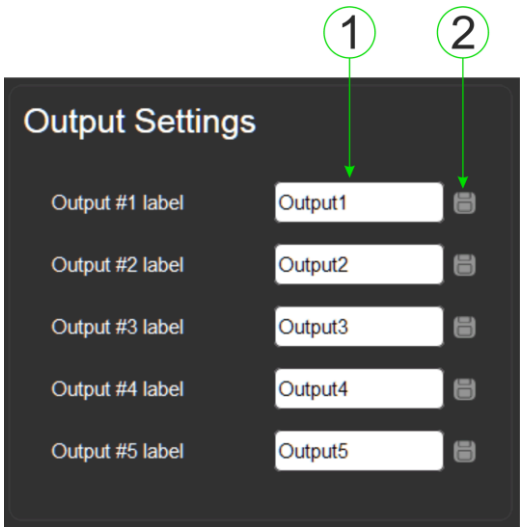


Figure 15: The Output Settings Page

#	Item	Description
1	Output Label	Enter the name required for each output.
2	Save Button	Click to save the current label.

Note: Performing a factory reset returns the labels to their default values.

The EDID Management Page

The EDID page lets you copy EDID data to an input from any of the following:

- Output
- Input
- EDID data file

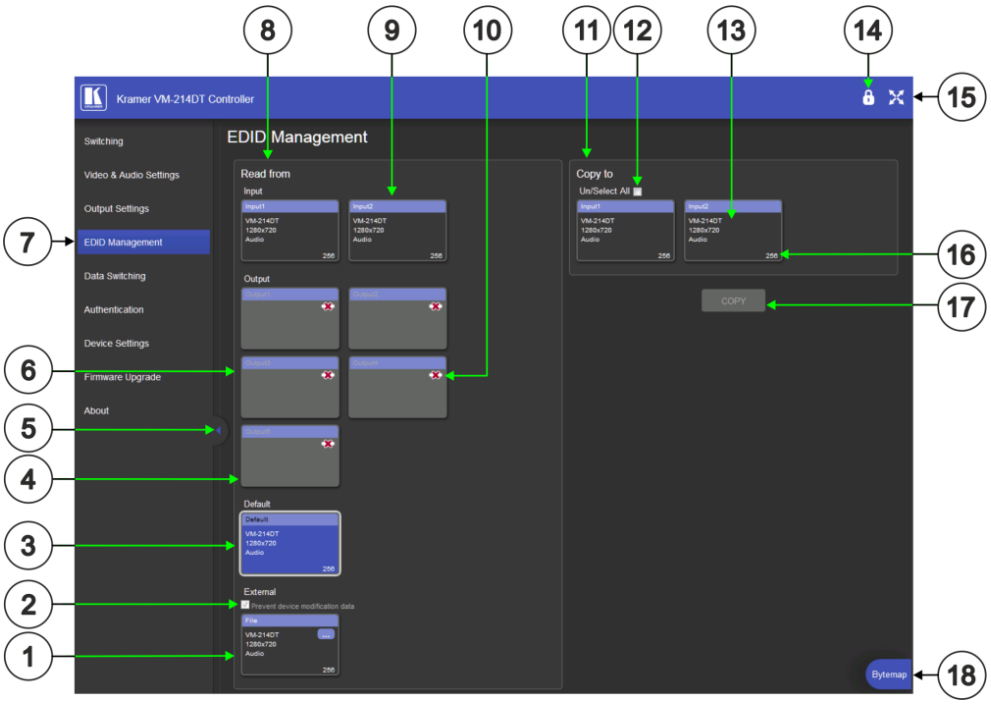


Figure 16: The EDID Management Page

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 11 in the following table).

#	Item	Description
1	*File* Selector	Click to browse saved EDID files on the computer.
2	Prevent Modification Checkbox	Click to prevent modification of data.
3	*Default* EDID Button	Click to read the default EDID.
4	*Output* Buttons 1 and 2	2 buttons to select the output (highlighted when selected).
5	Connection Indicator	Lights green when connected, grey when off.
6	EDID Source Information	Device model, resolution, if audio connected.
7	Web Page Selector	Click to show the desired Web page.
8	*Read From* Section	From this section select the required EDID source to read from.
9	Input Buttons (1-2)	Click to display the 2 input buttons for input selection, and port and signal identification.
10	Output Connection Status	Shows whether output is connected or not.
11	*Copy To* Section	From this section select the required EDID destination to which to copy.
12	*Un/Select All* Checkbox	Check to select or unselect copying EDID to all inputs.

#	Item	Description
13	EDID Information	Device model, resolution, if audio connected.
14	Security Icon	Open lock indicates security not active, closed lock indicates active security (set security on the Authentication tab).
15	Full Screen Icon	Click to toggle full screen on/off.
16	Audio Bitrate	Indicates the audio bitrate on the input or output.
17	*Copy* Button	Click to copy the EDID from the selected source to the selected input.
18	*Bytemap* Button	Click to open a window showing the selected EDID raw information.

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

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

1. Click the source button from which to copy the EDID (Output or Input).
   The button changes color and the EDID summary information reflects the EDID data.
2. Click one or more destination Inputs, or select all Inputs by checking the Inputs check-box.
   All selected Input buttons change color and the EDID summary information reflects the Input selection(s).
3. Click the Copy button.
   The “EDID was copied” success message is displayed and the EDID data are copied to the selected Input(s).
4. Click OK.

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

1. Click the source Browse button.
   The Windows Browser opens.
2. Browse to the required file.
3. Select the required file and click Open.
   The EDID summary information reflects the selection.
4. Click one or more destination Inputs, or select all Inputs by checking the Inputs check-box.
   All selected Input buttons change color and the EDID summary information reflects the Input selection(s).
5. Click the Copy button.
   The “EDID was copied” success message is displayed and the EDID data are copied to the selected Input(s).
6. Click OK.

The Data Switching Page

The Data Switching page lets you route the RS-232 and IR inputs and outputs.

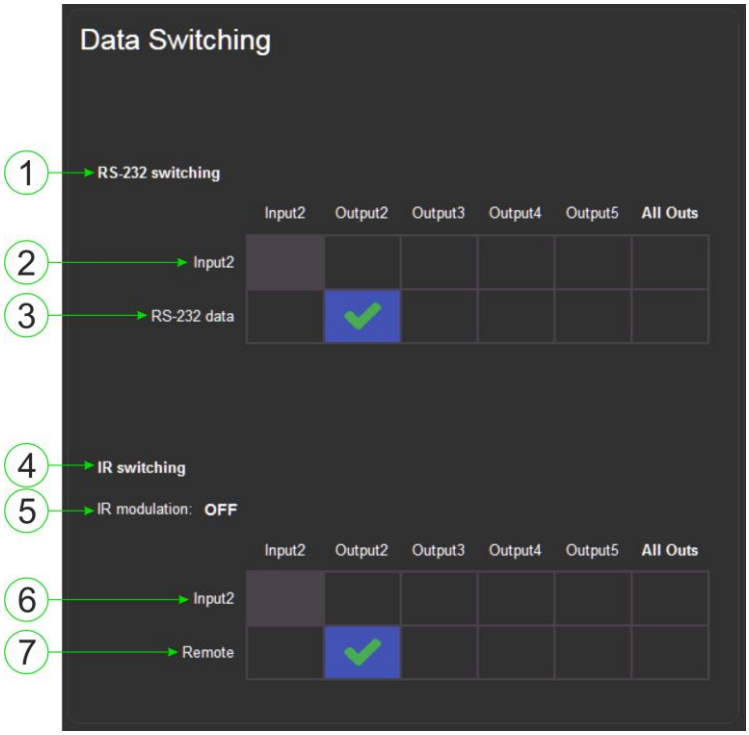


Figure 17: The Data Switching Page

#	Item		Description
1	RS-232 Switching area		
2		*Input 2* selection row	Click a box to enable the routing of RS-232 data from Input 2 to the selected output(s).
3		*RS-232 data* selection row	Click a box to enable the routing of RS-232 data from the RS-232 Data port to the selected output(s).
4	IR Switching area		
5		*IR modulation* indicator	Indicates whether IR modulation is enabled or disabled).
6		*Input 2* selection row	Click a box to enable the routing of IR data between a sensor/emitter on the HDBaseT device that is connected to Input 2, and the selected output(s).
7		*Remote* IR selection row	Click a box to enable the routing of IR data from the IR sensor on the front panel to the HDBT input or selected output(s). If a sensor/emitter cable is connected to the IR 3.5mm connection, click to enable routing between that sensor/emitter and HDBT devices connected to the selected Input 2 and outputs.

RS-232 Switching Example

In the example configuration shown in Figure 18 RS-232 data is routed from the RS-232 Data 3-pin terminal block to the HDBT Output 3.

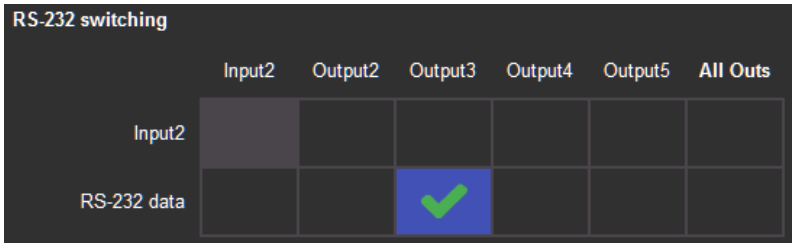


Figure 18: RS-232 Switching Example

IR Switching Example

In the example configuration shown in Figure 19 IR data is routed from the IR sensor on the front panel or the IR 3.5mm mini jack on the rear panel to all outputs (HDBT Output 2, 3, 4, and 5).

If an emitter is connected to the rear panel of the device, IR data can be routed from the selected outputs to the input.

Figure 19: IR Switching Example

The Authentication Page

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

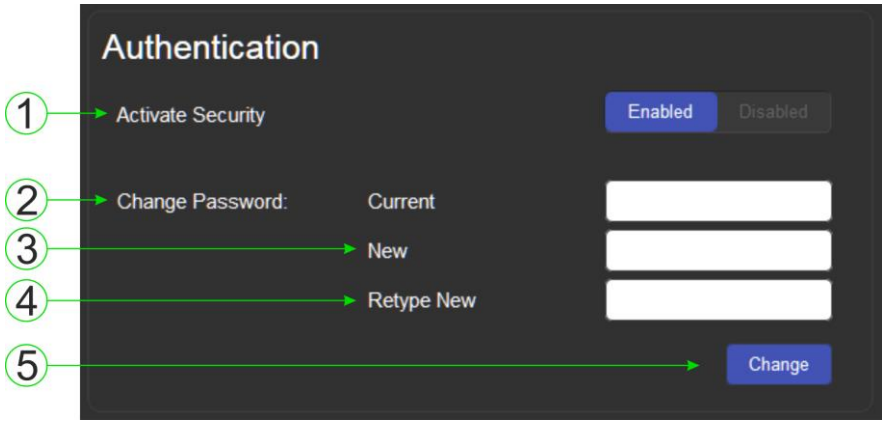


Figure 20: The Authentication Page

#	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`1234.
2	*Change Password* Section	*Current* Password box	Enter the current password.
3		*New* Password box	Enter the new password, (up to 15 printable ASCII characters with no spaces).
4		*Retype New* Password box	Retype the new password.
5	*CHANGE* button		Click CHANGE to save the new authentication details.

Note: If the Authentication page is left open for more than five minutes additional windows may open. After entering your logon credentials, close the other windows.

The Device Settings Page

The Device Settings page lets you view and/or modify the device settings, for example, the device name and IP address.

Figure 21: The Device Settings Page

#	Item	Description
1	*Device Settings* Section	Displays information regarding the device, (model, firmware version, and serial number).
2	*Unit 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 Default Logon Credentials on page 30).
3	*DHCP* Buttons	Click to turn DHCP on and off.
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 address*	The network mask of the device. To set a new mask, enter the new valid mask and click Set.
6	*Gateway address*	The network gateway for the device. To set a new network gateway, enter the new valid gateway and click Set.
7	*Set* IP Parameter Changes Button	Click to save changes made any of the IP parameters.
8	*Mac Address*	Displays the MAC address of the device.
9	*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.
10	*Save* Configuration Button	Click to save the current configuration as a preset.

#	Item	Description
11	*Load* Configuration Button	Click to load a previously saved configuration.
12	*Factory Reset* Button	Click to reset the device to factory default parameters. After the success message is displayed, power cycle the device.
13	*Set* Name Button	Click to save changes to the device name.
14	*Set* UDP Port Number Button	Click to save changes to the UDP port number.

Changing the DHCP mode or the static IP address of the device will result in the warning shown in Figure 22.

The changes will not take effect until after you reset the device.

Communication with the device will be lost and you will be required to enter the new address in your browser.

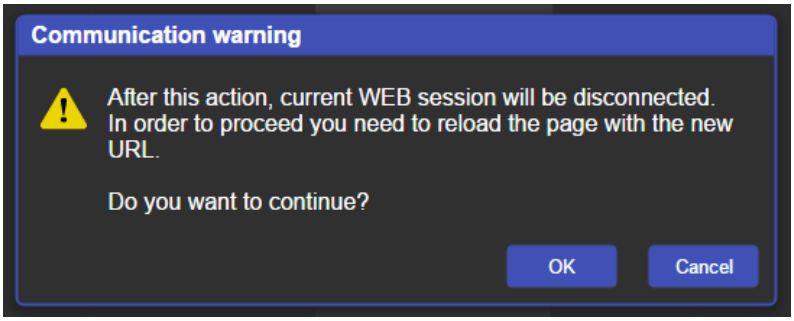


Figure 22: The IP Address Changes Popup Warning

The Load/Save Configuration Facility

The Upload/Save Configuration facility lets you retrieve and save a configuration.

To load a configuration:

1. Click the Load button.
   The Load 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

Note: When saving the configuration using Internet Explorer 11 press CTRL+S.

To reset the VM-214DT to factory default parameters:

1. Click the Factory reset button.
   The confirmation message shown in Figure 23 is displayed.

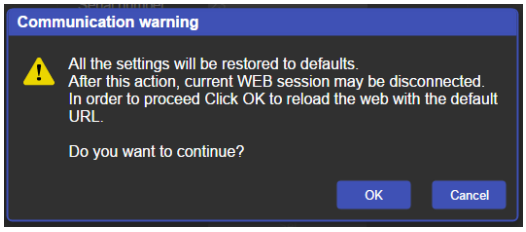


Figure 23: The Factory Reset Popup Warning

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.

The Firmware Upgrade Page

The Firmware Upgrade page lets you upgrade the firmware of the device.

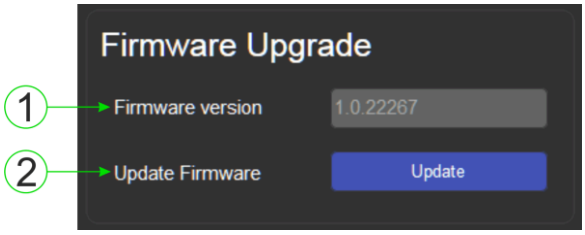


Figure 24: The Firmware Upgrade Window

#	Item	Description
1	*Firmware Version*	Displays the current firmware version.
2	*Update Firmware* Button	Click to start the upgrade process.

To upgrade the firmware:

1. Click the Update button.
   The file 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 the warning message shown in Figure 25 appears.

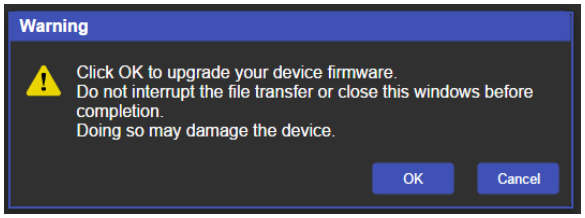


Figure 25: The Firmware Upgrade Warning Popup

5. Click OK to continue or Cancel to exit the procedure.
6. After clicking OK, the progress message shown in Figure 26 appears.

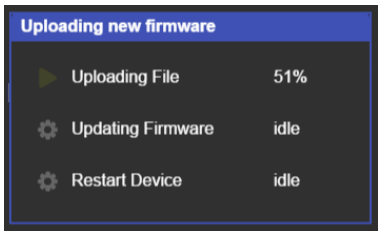


Figure 26: The Firmware Upgrade Process Popup

Do not interrupt the process or the **VM-214DT** may be damaged.

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

The About Us Page

The **VM-214DT** About Us page displays the Web page version and Kramer Electronics Ltd company details.

Figure 27: The About Us Page

Configuring the VM-214DT

Setting the DIP-switch

A switch that is down is on; a switch that is up is off. By default, all the switches are up (off).

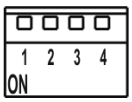


Figure 28: The Configuration DIP-switch

#	Feature	DIP-switch
1	IR modulation	Off—Pass-through IR signal (up, default) On—Enable 38kHz IR signal modulation (down)
2	Extra range	Off—Disable extra range (up, default) On—Enable extra range (down)
3	Compressed audio/ Audio de-embedding	Off—De-embed audio (up, default) On—Enable compressed audio (down)
4	Reserved	

Some devices require that the IR signal be specifically modulated or unmodulated. If there is a problem with the IR signal not being transmitted all the way from the IR transmitter to the final IR receiver, try setting the modulation on.

Performing a Factory Reset

To perform a factory reset of the VM-214DT:

1. Turn off the device.
2. Press and hold the Reset button on the rear of the device.
3. Turn on the device and keep the Reset button depressed for a few seconds.
4. Release the button.
   The parameters are reset.

You can also perform a factory reset of the device by using the Web pages, (see The Device Settings Page on page 23) or by sending a Protocol 3000 command, (see Performing a Factory Reset on page 28). To implement the change, the device must be turned off and on again.

Technical Specifications

INPUTS:	1 HDMI™ connector 1 HDBT twisted pair on an RJ-45 connector
OUTPUTS:	1 HDMI connector 4 HDBT twisted pair on RJ-45 connectors
MAX.DATA RATE:	10.2Gbps (3.4Gbps per graphic channel, HDMI)
COMPLIANCE WITH HDMI STANDARDS:	Supports HDMI and HDCP
CONTROLS:	Input select button, EDID select button, RS-232, remote IR controls
INDICATOR LEDs:	IR communication, Power, IN 1 HDMI, IN 2 HDBT, OUTPUT 1, 2, 3, 4, and 5, EDID TYPE Default, External, Output
POWER CONSUMPTION:	100-240V AC 50/60Hz 16VA
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:	Forced air, fan
ENCLOSURE TYPE:	Aluminium
RACK MOUNT:	With included rack “ears”
DIMENSIONS:	43.64cm x 18.3cm x 4.36cm, W, D, H (19" x 1U)
PRODUCT WEIGHT:	1.56kg (3.44lbs) approx.
SHIPPING WEIGHT:	2.7kg (5.95lbs) approx.
VIBRATION:	ISTA 1A in carton (International Safe Transit Association)
SAFETY REGULATORY COMPLIANCE:	CE
ENVIRONMENTAL REGULATORY COMPLIANCE:	Complies with appropriate requirements of RoHs and WEEE
INCLUDED ACCESSORIES:	Power cord Rack “ears”
Specifications are subject to change without notice at www.kramerav.com	

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 Logon Credentials

Parameter	Values
Name	Admin
Password	Admin

Supported PC Web Browsers

Platform	Version
Windows 7 and higher	• Internet Explorer (32/64 bit) version 10 • Firefox version 30 • Chrome version 35
Mac	• Firefox version 30 • Chrome version 35 • Safari version 7 **Note**: Minimum browser window size 1024 x 768

Default EDID

Each input on the **VM-214DT** is loaded with a factory default EDID.

```
Monitor
  Model name..... VM-214DT
  Manufacturer..... KMR
  Plug and Play ID..... KMR1200
  Serial number..... 295-883450100
  Manufacture date..... 2014, ISO week 255
  Filter driver..... None
  ------------------------
  EDID revision..... 1.4
  Input signal type..... Digital
  Color bit depth..... Undefined
  Color encoding formats... RGB 4:4:4
  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.. 1920x1080p 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..... Not supported
  YCbCr 4:2:2..... Not supported
  Native formats..... 1
  Detailed timing #1..... 1920x1080p at 60Hz (16:10)
    Modeline..... "1920x1080" 148.500 1920 2008 2052 2200 1080 1084 1089 1125 +hsync +vsync
  Detailed timing #2..... 1920x1080i at 60Hz (16:10)
    Modeline..... "1920x1080" 74.250 1920 2008 2052 2200 1080 1084 1094 1124 interlace +hsync +vsync
  Detailed timing #3..... 1280x720p at 60Hz (16:10)
    Modeline..... "1280x720" 74.250 1280 1390 1430 1650 720 725 730 750 +hsync +vsync
  Detailed timing #4..... 720x480p at 60Hz (16:10)
    Modeline..... "720x480" 27.000 720 736 798 858 480 489 495 525 -hsync -vsync
CE audio data (formats supported)
  LPCM    2-channel, 16/20/24 bit depths at 32/44/48 kHz
CE video 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..... 18/02/2016
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,B2,00,12,01,01,01,01,FF,18,01,04,80,34,20,78,E2,B3,25,AC,51,30,B4,26,
10,50,54,FF,FF,80,81,8F,81,99,A9,40,61,59,45,59,31,59,71,4A,81,40,01,1D,00,72,51,D0,1E,20,6E,28,
55,00,07,44,21,00,00,1E,00,00,00,FF,00,32,39,35,2D,38,38,33,34,35,30,31,30,30,00,00,00,FC,00,56,
4D,2D,32,31,34,44,54,20,20,20,20,20,00,00,00,FD,00,38,4C,1E,53,11,00,0A,20,20,20,20,20,20,01,DF,
02,03,1B,C1,23,09,07,07,48,10,05,84,03,02,07,16,01,65,03,0C,00,10,00,83,01,00,00,02,3A,80,18,71,
38,2D,40,58,2C,45,00,07,44,21,00,00,1E,01,1D,80,18,71,1C,16,20,58,2C,25,00,07,44,21,00,00,9E,01,
1D,00,72,51,D0,1E,20,6E,28,55,00,07,44,21,00,00,1E,8C,0A,D0,8A,20,E0,2D,10,10,3E,96,00,07,44,21,
00,00,18,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,77

Protocol 3000

The 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 Kramer Protocol 3000 Syntax on page 33).
- Kramer Protocol 3000 commands (see Kramer Protocol 3000 Commands on page 36).

Kramer Protocol 3000 Syntax

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 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

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

CR = Carriage return (ASCII 13 = 0x0D)

LF = Line feed (ASCII 10 = 0x0A)

SP = Space (ASCII 32 = 0x20)

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.

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.

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.

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.

Maximum String Length

64 characters

Kramer Protocol 3000 Commands

Command	Description
#	Protocol handshaking
AUD-LVL	Set/get audio level in specific amplifier stage
AV-SW-TIMEOUT	Set/get video auto-switch timeout
BUILD-DATE?	Read device build date
CPEDID	Copy EDID data from the output to the input
DIR	List files in device
DISPLAY?	Get output HPD status
DPSW-STATUS?	Get the DIP-switch status
ETH-PORT	Set/get Ethernet port protocol
FACTORY	Reset to factory default configuration
FPGA-VER?	Get current FPGA version
FS-FREE?	Get file system free space
GEDID	Read EDID data
GET	Get file
HDCP-MOD	Set/get HDCP mode
HDCP-STAT?	Get HDCP signal status
HELP?	Get command list
LDEDID	Write EDID data to input
LOGIN	Set/get protocol permission
LOGOUT	Cancel current permission level
MODEL?	Read device model
MUTE	Set/get audio mute
NAME	Set/get machine (DNS) name
NAME-RST	Reset machine name to factory default (DNS)
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
PASS	Set/get Password
PING	Sends ICMP ECHO
PROT-VER?	Get device protocol version
RESET	Reset device
ROUTE	Set/get layer routing
SECUR	Start/Stop Security
SIGNAL?	Get input signal lock status
SN?	Read device serial number
VERSION?	Read device firmware version

#

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			
Use to validate the Protocol 3000 connection and get the machine number			

AUD-LVL

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 - 'IN, 'OUT' *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			

AV-SW-TIMEOUT

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 *timeout* - timeout in seconds			
Response Triggers			
Notes			

BUILD-DATE?

Command Name		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			

CPEDID

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)

- 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' 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

DIR

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

DISPLAY?

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			

DPSW-STATUS?

Command Name		Permission	Transparency
Set:	**-**	-	-
Get:	**DPSW-STATUS?**	End User	Public
Description		**Syntax**	
Set:	-	-	
Get :	Get the DIP-switch state	# **DPSW-STATUS?** SP *dp_sw_id* CR	
Response			
~nn @ **DPSW-STATUS?** SP *dp_sw_id, status* CR LF			
Parameters			
dp_sw_id - 1….num of DIP switches *status* - 0: up 1: down			
Response Triggers			
Notes			

ETH-PORT?

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			

FACTORY

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

FPGA-VER?

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			

FS-FREE?

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			

GEDID

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 002 CR LF is received

GET

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

HDCP-MOD

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			

HDCP-STAT

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			

HELP

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

LDEDID

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.

LOGIN

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			

LOGOUT

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			

MODEL?

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			

MUTE

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			

NAME

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)			

NAME-RST

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			

NET-DHCP

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			

NET-GATE

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			

NET-IP

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			

NET-MAC

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			

NET-MASK

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			

PASS

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* SP **OK** 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			

PROT-VER?

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			

RESET

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.			

ROUTE

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 –

- 1 Video
- 2 Audio
- 3 Data
- 4 IR
- 5 USBsee

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)

SECUR

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

Set: ~nn@**SECUR** SP *security_mode* SP **OK** CR LF

Get: ~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

SIGNAL

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			

SN

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			

VERSION?

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			

The warranty obligations of Kramer Electronics Inc. ("Kramer Electronics") for this product are limited to the terms set forth below:

What is Covered

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

What is Not Covered

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

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

How Long this Coverage Lasts

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

1. All Kramer VIA hardware products are covered by a standard three (3) year warranty for the VIA hardware and a standard three (3) year warranty for firmware and software updates; all Kramer VIA accessories, adapters, tags, and dongles are covered by a standard one (1) year warranty.
2. All Kramer fiber optic cables, adapter-size fiber optic extenders, pluggable optical modules, active cables, cable retractors, all ring mounted adapters, all Kramer speakers and Kramer touch panels are covered by a standard one (1) year warranty.
3. All Kramer Cobra products, all Kramer Calibre products, all Kramer Minicom digital signage products, all HighSecLabs products, all streaming, and all wireless products are covered by a standard three (3) year warranty.
4. All Sierra Video MultiViewers are covered by a standard five (5) year warranty.
5. Sierra switchers & control panels are covered by a standard seven (7) year warranty (excluding power supplies and fans that are covered for three (3) years).
6. K-Touch software is covered by a standard one (1) year warranty for software updates.
7. All Kramer passive cables are covered by a ten (10) year warranty.

Who is Covered

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

What Kramer Electronics Will Do

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

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

What Kramer Electronics Will Not Do Under This Limited Warranty

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

How to Obtain a Remedy Under This Limited Warranty

To obtain a remedy under this limited warranty, you must contact either the authorized Kramer Electronics reseller from whom you purchased this product or the Kramer Electronics office nearest you. For a list of authorized Kramer Electronics resellers and/or Kramer Electronics authorized service providers, visit our web site at www.kramerav.com or contact the Kramer Electronics office nearest you.

In order to pursue any remedy under this limited warranty, you must possess an original, dated receipt as proof of purchase from an authorized Kramer Electronics reseller. If this product is returned under this limited warranty, a return authorization number, obtained from Kramer Electronics, will be required (RMA number). You may also be directed to an authorized reseller or a person authorized by Kramer Electronics to repair the product.

If it is decided that this product should be returned directly to Kramer Electronics, this product should be properly packed, preferably in the original carton, for shipping. Cartons not bearing a return authorization number will be refused.

Limitation of Liability

THE MAXIMUM LIABILITY OF KRAMER ELECTRONICS UNDER THIS LIMITED WARRANTY SHALL NOT EXCEED THE ACTUAL PURCHASE PRICE PAID FOR THE PRODUCT. TO THE MAXIMUM EXTENT PERMITTED BY LAW, KRAMER ELECTRONICS IS NOT RESPONSIBLE FOR DIRECT, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES RESULTING FROM ANY BREACH OF WARRANTY OR CONDITION, OR UNDER ANY OTHER LEGAL THEORY. Some countries, districts or states do not allow the exclusion or limitation of relief, special, incidental, consequential or indirect damages, or the limitation of liability to specified amounts, so the above limitations or exclusions may not apply to you.

Exclusive Remedy

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Other Conditions

This limited warranty gives you specific legal rights, and you may have other rights which vary from country to country or state to state.

This limited warranty is void if (i) the label bearing the serial number of this product has been removed or defaced, (ii) the product is not distributed by Kramer Electronics or (iii) this product is not purchased from an authorized Kramer Electronics reseller. If you are unsure whether a reseller is an authorized Kramer Electronics reseller, visit our web site at www.kramerav.com or contact a Kramer Electronics office from the list at the end of this document.

Your rights under this limited warranty are not diminished if you do not complete and return the product registration form or complete and submit the online product registration form. Kramer Electronics thanks you for purchasing a Kramer Electronics product. We hope it will give you years of satisfaction.

KRAMER

P/N: 2900-300423 Rev: 5

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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