KRAMER ELECTRONICS LTD.

USER MANUAL

MODEL:

VM-8HN
1:8+2 HDMI Looping DA

P/N: 2900-300427 Rev 6
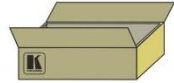
VM-8HN Quick Start Guide

This guide helps you install and use your product for the first time. For more detailed information, go to http://www.kramerav.com/manual/VM-8HN to download the latest manual or scan the QR code on the left.

Step 1: Check what's in the box

- ☑ **VM-8HN** 1:8+2 HDMI Looping DA
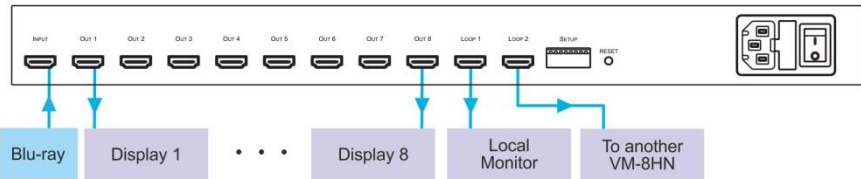- ☑ 1 Power cord
- ☑ 1 Quick Start sheet
- ☑ 4 Rubber feet

Step 2: Install the VM-8HN

Mount the **VM-8HN** in a rack (using the included rack "ears") or attach the rubber feet and place on a table.

Step 3: Connect the inputs and outputs

Always switch off the power on each device before connecting it to your **VM-8HN**.

INPUT   Out 1   Out 2   Out 3   Out 4   Out 5   Out 6   Out 7   Out 8   Loop 1   Loop 2   SETUP   RESET

Blu-ray | Display 1 | • • • | Display 8 | Local Monitor | To another VM-8HN

Always use Kramer high-performance cables for connecting AV equipment to the **VM-8HN.**

Step 4: Connect the power

Connect the power cord to the **VM-8HN** and plug it into the mains electricity.

Step 5: Operate the VM-8HN

1. Press the EDID SELECT button to cycle through the EDID sources in the following order:
   - Out 1 (Output 1 LED lights)
   - Out 2 (Output 2 LED lights)
   - ...
   - Out 8 (Output 8 LED lights)
   - Loop 1 (Loop 1 LED lights)
   - Loop 2 (Loop 2 LED lights)
   - Default EDID (all LEDs flash)

2. To store the EDID, press EDID READ and the EDID is acquired.

3. Set the DIP-switches as follows:

DIP 1	DIP 2	Video Wall Delay
up	up	Video wall off – 0 delay
down	up	On – 10 sec delay
up	down	On – 15 sec delay
down	down	On – 17 sec delay

DIP 3	DIP 4	Output 5V Off Delay
up	up	15 mins
up	down	1 min
down	up	15 sec
down	down	5 sec

DIP 5	MAC Mode
up	MAC on
down	MAC off

Note: MAC mode does not support HDCP

DIP 6	Force RGB
up	Use monitor EDID
down	Use monitor EDID & force RGB support

Note: After setting Force RGB, reset the device

DIP 8	FW Update
up	Normal operation
down	Factory only

SETUP

1 2 3 4 5 6 7 8

Note: DIP 7 reserved for future use

Contents

Figures

1   Introduction

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

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

Congratulations on purchasing your Kramer **VM-8HN** *1:8+2 HDMI Looping DA*, which is ideal for the following typical applications:

* Simple distribution of high-resolution 4K signals in corporate, education, hospitality and government market segments

2 Getting Started

We recommend that you:

- Unpack the equipment carefully and save the original box and packaging materials for possible future shipment

- Review the contents of this user manual

Go to www.kramerav.com/downloads/VM-8HN to check for up-to-date user manuals, application programs, and to check if firmware upgrades are available (where appropriate).

2.1 Achieving the Best Performance

To achieve the best performance:

- For optimum range and performance, use the recommended Kramer cables available at www.kramerav.com/product/VM-8HN

- 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-8HN** 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 **VM−8HN** is a 1:8 distribution amplifier, with two loop ports, for 4K@60Hz (4:2:0) HDMI 2.0 signals complying with HDCP 1.4 content protection standard. The unit takes one HDMI input, equalizes and reclocks the signal and distributes it to eight identical outputs and two additional looping outputs.

In particular, the **VM-8HN** features:

- High Performance Distributor - High−quality professional 1:10 HDMI distribution of max 4K@60Hz (4:2:0) video resolution signals. One HDMI 2.0 HDCP 1.4 input signal is amplified and distributed to eight identical outputs and two additional looping outputs signals, with signals rebuilt using Kramer Equalization & re−Klocking™ Technology to gain longer distances.

- HDMI Signal Transmission - HDMI 2.0 and HDCP 1.4 compliant signal, supporting deep color, x.v.Color™, lip sync, 7.1 PCM, Dolby TrueHD, DTS−HD, 2K, 4K, and 3D. EDID and CEC (OUT 1 only) signals are passed through from the source to the displays.

- I−EDIDPro™ Kramer Intelligent EDID Processing™ - Intelligent EDID handling, processing and pass−through algorithm that ensures Plug and Play operation for HDMI source and display systems.

- User-Friendly Operation - Comprehensive signal distribution features and signal mode−forcing options such as RGB forcing, HDCP authorization and video−wall synced−operation control. Intuitive EDID acquisition, selection and setting using front panel buttons and LED indications.

- Cost−Effective Field Maintenance - Mini−USB connection for simple field firmware upgrade using the Kramer K−Upload tool and easy EDID handling using the Kramer EDID−Designer tool. Selectable distributor maintenance options and status indicators for fast and effective troubleshooting.

- Easy Installation - 19" enclosure for rack mounting a unit in a 1U rack space with included rack ears and universal 100−240V AC power connection.

3.1 Defining the VM-8HN 1:8+2 HDMI Looping DA

This section defines the **VM-8HN**.
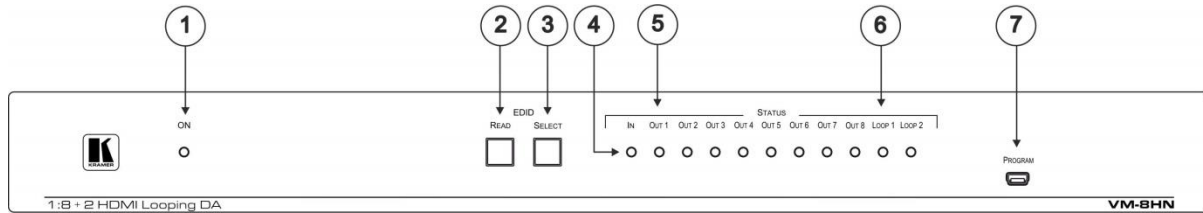
Figure 1: VM-8HN 1:8+2 HDMI Looping DA Front Panel

#	Feature	Function
1	*ON* LED	Lights green when the device is powered on
2	*EDID READ* Button	Press to select the chosen output (see Section 6)
3	*EDID SELECT* Button	Press to sequentially cycle through the outputs (see Section 6)
4	*IN* LED	Lights green when an active input signal is detected
5	*OUT* LED (1-8)	Lights green when an active output acceptor is detected, flashes when HDCP is not supported by the acceptor
6	*LOOP* LED (1-2)	Lights green when an active output loop acceptor is detected
7	*PROGRAM* mini USB Connector	Use to upgrade the device firmware, also works with the EDID Designer
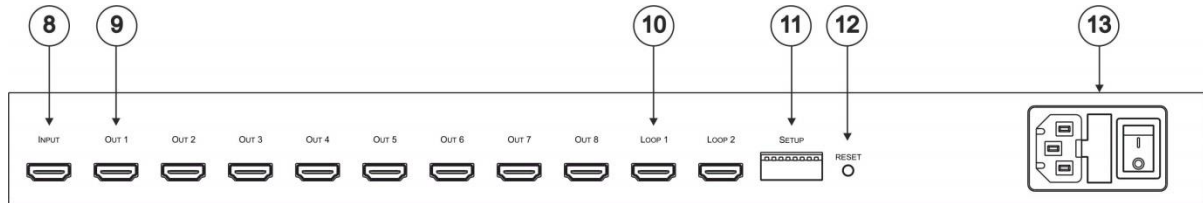
Figure 2: VM-8HN 1:8+2 HDMI Looping DA Rear Panel

#	Feature	Function
8	*INPUT* Connector	Connects to the HDMI source
9	*OUT* Connector (1-8)	Connect to up to 8 HDMI acceptors
10	*LOOP* Connector (1-2)	Connect to up to 2 HDMI loop acceptors
11	*SETUP* DIP-Switches	Set the DIP-switches (see Section 6.1)
12	*RESET* Button	Press to return to factory default and default EDID settings.
13	Power Socket, Fuse and Switch	Connects power to and switches the unit on and off

4 Mounting the VM-8HN in a Rack

This section provides instructions for rack mounting the unit.

Before installing in a rack, be sure that the environment is within the recommended range:

OPERATING TEMPERATURE:	0° to +40ºC (32° to 104ºF)
STORAGE TEMPERATURE:	-40° to +70ºC (-40° to 158ºF)
HUMIDITY:	10% to 90%, RHL non-condensing

CAUTION!

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

1. It is located within the recommended environmental conditions, as the operating ambient temperature of a closed or multi unit rack assembly may exceed the room ambient temperature.

2. Once rack mounted, enough air will still flow around the machine.

3. The machine is placed straight in the correct horizontal position.

4. You do not overload the circuit(s). When connecting the machine to the supply circuit, overloading the circuits might 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.

5. The machine is earthed (grounded) in a reliable way and is connected only to an electricity socket with grounding. Pay particular attention to situations where electricity is supplied indirectly (when the power cord is not plugged directly into the socket in the wall), for example, when using an extension cable or a power strip, and that you use only the power cord that is supplied with the machine.

To rack-mount a machine:

1. Attach both ear brackets to the machine. To do so, remove the screws from each side of the machine (3 on each side), and replace those screws through the ear brackets.
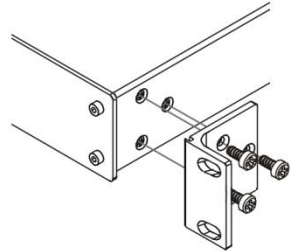
2. Place the ears of the machine against the rack rails, and insert the proper screws (not provided) through each of the four holes in the rack ears.

Note:
• In some models, the front panel may feature built-in rack ears
• Detachable rack ears can be removed for desktop use
• Always mount the machine in the rack before you attach any cables or connect the machine to the power
• If you are using a Kramer rack adapter kit (for a machine that is not 19"), see the Rack Adapters user manual for installation instructions available from our Web site

5 Connecting the VM-8HN

Always switch off the power to each device before connecting it to your **VM-8HN**. After connecting your **VM-8HN**, connect its power and then switch on the power to each device.

To connect the **VM-8HN**, do the following:

1. Set the DIP-switches as needed (see Section 6).

2. Connect an HDMI source (for example, a DVD player) to the INPUT connector**.**

3. Connect the eight OUT connectors to up to eight HDMI acceptors (for example, plasma displays).

   Not all outputs need to be connected.

4. Connect the two LOOP connectors to up to two HDMI loop acceptors (for example, adjacent daisy-chained VM-8HN unit or local loop plasma displays).

   The loop connectors do not provide the video wall delay or automatic 5V turn-off features.

5. Connect the power cord to the mains electricity.

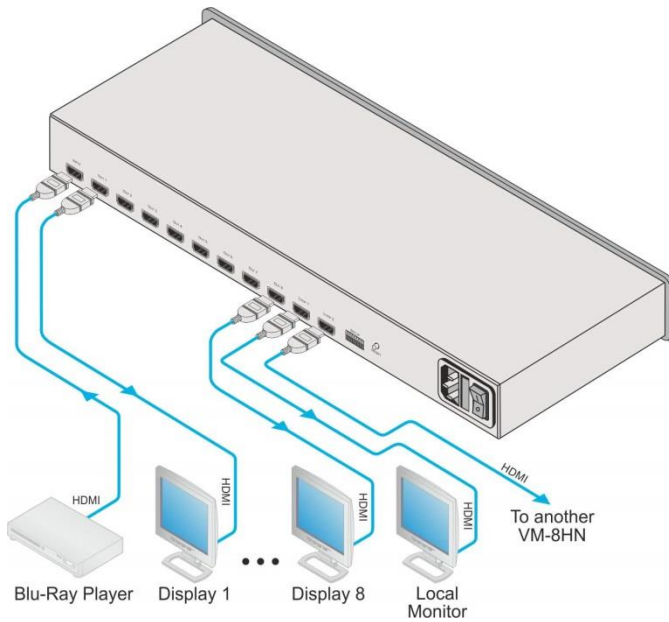6. Turn ON the POWER.

7. Acquire the EDID (see Section 6.2).

Figure 3: Connecting the VM-8HN 1:8+2 HDMI Looping DA

6 Operating the VM-8HN

User operation consists of setting the DIP-switches and acquiring an EDID as needed.

6.1 Setting the DIP-Switches

The eight DIP-switches located on the back panel are used for video wall, 5V DC, HDCP settings and force RGB. Normally all DIP-switches are shipped from the factory in an up (off) setting as shown in bold in the table below.

> The DIP-switch status is sampled when the device is reset. The unit must be powered off and on for the new settings to activate.

Function		DIP 1	DIP 2	DIP 3	DIP 4	DIP 5	DIP 6	DIP7	DIP 8
Video Wall Delay	Off – 0 delay	**up**	**up**						
	On – 10 sec delay	down	up						
	On – 15 sec delay	up	down						
	On – 17 sec delay	down	down						
Output 5V Off Delay	15 mins			**up**	**up**				
	1 min			up	down				
	15 sec			down	up				
	5 sec			down	down				
	Flexible output delay options control the coherent and simultaneous unmuted content presentation on all video wall output displays.								
HDCP on Input	Off					**up**			
	On					down			
	Note: When set to off, the input does not support HDCP. DIP 5 enables the user to control the appearance of an HDCP or non−HDCP input to the source to permit delivery of protection−free content, such as personal clips and charts, without HDCP encryption. HDCP protected content is not passed in non−HDCP mode.								
Force RGB	Use monitor EDID						**up**		
	Use monitor EDID and force RGB support						down		
	Note: After setting force RGB, you must reset the device. When the display lacks YCbCr capabilities, the user can force native delivery of the RGB color format in HDMI content to improve picture quality.								

Function		DIP 1	DIP 2	DIP 3	DIP 4	DIP 5	DIP 6	DIP7	DIP 8
Reserved								N/A	
Firmware Update	Normal operation								**up**
	Production programming, factory use only								down

6.2 Acquiring a User-Selected EDID

VM-8HN has the following display modes of the output port LEDs:

- Status display mode – During normal operation, each port LED lights when an active device is connected.

- Used EDID display mode – Press EDID SELECT. The output LED that lights is using the EDID of the input. If the default EDID is currently in use, all output LEDs flash.

- EDID selection display mode – Pressing SELECT again sequentially lights the port LED from which EDID is read.

To acquire an EDID, press the EDID SELECT button as follows:

1. When first pressing the EDID SELECT button:

    - The EDID SELECT and READ buttons light

    - The output port LEDs change to used EDID display mode and the output port LED of the currently used EDID lights. If the currently used EDID is the default EDID, then the LEDs of all ports flash

2. To select a different output port as the EDID source, continue pressing the EDID SELECT button. The output port LEDs light in sequence (even for unconnected ports) until the desired output port is reached. An additional button press after the last port enables selection of the default EDID and all output port LEDs flash. Another press selects the 1st output port and the sequence begins again.

3. When the desired EDID source is reached, press the EDID READ button. **VM-8HN** reads the EDID for a few seconds and syncs the displays. When finished, the EDID SELECT and READ LEDs turn OFF and all LEDs return to the status display mode.

If an unconnected output port is chosen or the EDID cannot be read, the **VM-8HN** loads the default EDID.

> **Note**: The **VM-8HN** is supported by EDID Designer that can be downloaded from the Kramer Web site at: www.kramerav.com/products/model.asp?pid=2826&pname= edid%20designer.

6.3 Firmware Update

You can update to the latest version of firmware via the mini-USB port and DIP-switch 8 switched up using **K-Upload**.

For instructions on updating the firmware of the **VM-8HN**, refer to the **K-Upload** *Software Guide* (available for download from www.kramerav.com).

7 Protocol 3000 Syntax

With Kramer Protocol 3000 you can control a device from any standard terminal software (for example, the Windows® HyperTerminal Application) or from TCP/UDP clients connected to default TCP port 5000 or UDP port 50000 (port numbers can been changed by the user). RS-232/RS-485 communications protocol uses a data rate of 115200 bps, no parity, 8 data bits, and 1 stop bit.

The Kramer Protocol 3000 syntax uses the following delimiters:

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

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

The Protocol 3000 syntax is in the following format:

- Host Message Format:

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

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

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

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

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

- Device Message Format:

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

- Device Long Response – Echoing command:

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

7.1 Command Terms

Protocol 3000 commands are structured according to the following:

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

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

- **Message string –** Every command entered as part of a message string begins with a message starting character and ends with a message closing character.

  > A string can contain more than one command. Commands are separated by a pipe (`|`) character.
  >
  > The maximum string length is 64 characters.

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

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

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

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

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

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

- **Brackets** - Reserved characters '[' and ']' that define a list of parameters as in [a,b,c,d].

7.2 Entering Commands

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

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

7.3 Bidirectional Definition

All commands are bidirectional. That is, if the device receives the code, it performs the instruction. If the instruction is performed (due to a keystroke operation on the front panel or IR controller) these codes are sent to the PC or other RS-232 / Ethernet / USB controller.

7.4 Command Chaining

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** once only, 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.

7.5 Maximum String Length

64 characters (except for special commands that are defined in the command syntax description).

7.6   Command List

The **VM-8HN** supports the following Protocol 3000 commands:

Command	Description	Type	Permission
CPEDID	Copy EDID data from the output to the input EEPROM	EDID Handling	End User
DISPLAY?	Get output HPD status	System	End User
FACTORY	Reset device to factory default configuration	System-mandatory	End User
HDCP-STAT?	Get HDCP signal status	System	End User
RESET	Reset device	System-mandatory	End User
SIGNAL?	Get input signal lock status	System	End User
SN?	Get device serial number	System-mandatory	End User

7.7   Command Details

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: `0` (input), `1` (output), `2` (default EDID), `3` (custom EDID)
src_id - number of chosen source stage (1.. max number of inputs/outputs)
dst_type - EDID destination type: `0` (input), `1` (output), `2` (default EDID), `3` (custom 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

K-Config Example

Copy the EDID data from the HDMI Out 2 (EDID source) to HDMI IN:
"#CPEDID 1,2,0,0x1",0x0D

VM-8HN - Protocol 3000 Syntax

Command - **DISPLAY?**			Command Type - System	
Command Name		**Permission**		**Transparency**
Set:	-	-		-
Get	DISPLAY?	End User		Public
Description		**Syntax**		
Set:	-	-		
Get:	Get output HPD status	#DISPLAY?␠*out_id*␍		
Response				
~ nn@DISPLAY␠*out_id,status* ␍ ␊				
Parameters				
out_id - output number *status* - HPD status according to signal validation: 0 (signal or sink is not valid), 1 (signal or sink is valid), 2 (sink and EDID is valid)				
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				
K-Config Example				
Get the output HPD status of HDMI 1 Out: "#DISPLAY? 1",0x0D				

Command - **FACTORY**		Command Type - System-mandatory	
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.			
K-Config Example			
"#FACTORY",0x0D			

Command - **HDCP-STAT**		Command Type - System	
Command Name		**Permission**	**Transparency**
Set:	–	-	-
Get:	`HDCP-STAT?`	End User	Public
Description		**Syntax**	
Set:	-	-	
Get:	Get HDCP signal status	`#HDCP-STAT?`SP`stage,stage_id`CR	
Response			
Set / Get: ~ nn`@HDCP-STAT`SP`stage,stage_id,status`CR LF			
Parameters			
`stage` – 0 (input), 1 (output), 2 (reserved), 3 (reserved) `stage_id` - number of chosen stage (1.. max number of inputs/outputs) `status` - signal encryption status - 0 (HDCP off), 1 (HDCP on)			
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			
K-Config Example			
Get the HDCP input signal status of the source device connected to HDMI In: `"#HDCP-STAT? 0,1",0x0D`			

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.			
K-Config Example			
"#RESET",0x0D			

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: 0 (signal or sink is not valid), 1 (signal or sink is valid), 2 (sink and EDID is valid)			
Response Triggers			
After execution, a response is sent to the com port from which the Get was received Response is sent after every change in input signal status ON to OFF, or OFF to ON			
Notes			
K-Config Example			
Get the input signal lock status of HDMI In: "#SIGNAL? 1",0x0D			

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			
K-Config Example			
"#SN?",0x0D			

8 Technical Specifications

INPUT:	1 HDMI on HDMI connector
OUTPUTS:	8 output HDMI and 2 loop output HDMI on HDMI connectors
VIDEO:	Up to 10.2Gbps bandwidth (3.4Gbps per graphic channel) Up to 4K @60Hz (4:2:0) 24bpp resolution HDMI 2.0 and HDCP 1.4 signal compliance.
CONTROLS:	EDID SELECT and READ buttons
INDICATION LEDs:	OUTPUTS 1 to 8, LOOP 1 and 2 and ACTIVE input LED
POWER SOURCE:	100−240V AC, 50/60Hz 28VA
POWER CONSUMPTION:	100-240V AC, 50/60Hz, 26VA
ENCLOSURE:	Aluminum
COOLING:	Fan ventilation
OPERATING TEMPERATURE:	0° to +40°C (32° to 104°F)
STORAGE TEMPERATURE:	-40° to +70°C (-40° to 158°F)
HUMIDITY:	10% to 90%, RHL non-condensing
DIMENSIONS:	19" x 7" x 1U
WEIGHT:	1.5kg (3.3lbs)
INCLUDED ACCESSORIES:	Power cord, rack ears
Specifications are subject to change without notice at http://www.kramerAV.com	

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 products are covered by a standard three (3) year warranty for VIA hardware and a standard one (1) year warranty for firmware and software updates. (An extended software warranty plan for an additional 2 years can be purchased separately).

2. All Kramer fiber optic cables and 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

TO THE MAXIMUM EXTENT PERMITTED BY LAW, THIS LIMITED WARRANTY AND THE REMEDIES SET FORTH ABOVE ARE EXCLUSIVE AND IN LIEU OF ALL OTHER WARRANTIES, REMEDIES AND CONDITIONS, WHETHER ORAL OR WRITTEN, EXPRESS OR IMPLIED. TO THE MAXIMUM EXTENT PERMITTED BY LAW, KRAMER ELECTRONICS SPECIFICALLY DISCLAIMS ANY AND ALL IMPLIED WARRANTIES, INCLUDING, WITHOUT LIMITATION, WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. IF KRAMER ELECTRONICS CANNOT LAWFULLY DISCLAIM OR EXCLUDE IMPLIED WARRANTIES UNDER APPLICABLE LAW, THEN ALL IMPLIED WARRANTIES COVERING THIS PRODUCT, INCLUDING WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, SHALL APPLY TO THIS PRODUCT AS PROVIDED UNDER APPICABLE LAW.

IF ANY PRODUCT TO WHICH THIS LIMITED WARRANTY APPLIES IS A "CONSUMER PRODUCT" UNDER THE MAGNUSON-MOSS WARRANTY ACT (15 U.S.C.A. §2301, ET SEQ.) OR OTHER APPICABLE LAW, THE FOREGOING DISCLAIMER OF IMPLIED WARRANTIES SHALL NOT APPLY TO YOU, AND ALL IMPLIED WARRANTIES ON THIS PRODUCT, INCLUDING WARRANTIES OF MERCHANTABILITY AND FITNESS FOR THE PARTICULAR PURPOSE, SHALL APPLY AS PROVIDED UNDER APPLICABLE LAW.

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

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.
Web site: www.kramerAV.com
E-mail: info@kramerAV.com

CE

SAFETY WARNING
Disconnect the unit from the power supply before opening and servicing

P/N: 2900- 300427   Rev: 6